

```

#calling all the libraries that would be required to run the app
library(shiny)
library(DT)
library(shinyWidgets)
library(shinyjs)

if (race=="Non-Hispanic White" & mbeat3=="Normal sinus" & nyha=="Class I" &
manufacturer=="Medtronic")
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })

  predict.risk.PVT <- expression({
    lp <- 1-0.948173^exp(
      (-0.0660511) * (agey-63.13125) +
      (0.3467898) * (sex=="Male"-0.7661) +
      (0.2984812) * (htn=="Yes"-0.6935) +
      (-0.537758) * (diabetes=="Yes"-0.3621) +
      (-0.1233915) * (cva=="Yes"-0.1105) +
      (-0.8228998) * (af=="Yes"-0.339) +
      (-1.151641) * (bb_usage=="Yes"-0.8512) +
      (-16.47702) * (aa_usage=="Yes"-0.1440) +
      (1.087283) * (ACEI=="Yes"-0.5227) +
      (1.262122) * (ARB=="Yes"-0.2039) +
      (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
      (0.002684) * (vt_zone_bpm-177.8278) +
      (-0.0085447) * (vf_zone_bpm-224.5021) +
      (0.0383147) * (HRbpm-71.55304) +
      (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
      (0.4405619) * (PVCany=="Yes"-0.1897) +
    )
  })
}

```

```

(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Non-Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class I' &
manufacturer=='Guidant/Boston Scientific')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(0.2984812) * (htn=="Yes"-0.6935) +

```

```

(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Non-Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class I' &
manufacturer=='St. Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +

```

```

(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Non-Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class I' &
manufacturer=='Biotronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(0.2283616) * (manufacturer=="Biotronic"-0.018) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +

```

```

(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})
}
}

if (race=='Non-Hispanic White' & mbeat3=='Normal sinus' & nyha== 'Class II' &
manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({

```

```

lp <- 1-0.8292047^exp(
  (-0.0219907) * (agey-63.13125) +
  (0.325852) * (sex=="Male"-0.7661) +
  (0.0438932) * (nyha=="Class II"-0.3964) +
  (0.4276305) * (htn=="Yes"-0.6935) +
  (-0.1804765) * (diabetes=="Yes"-0.3621) +
  (0.1593888) * (cva=="Yes"-0.1105) +
  (0.4687373) * (af=="Yes"-0.339) +
  (0.5464825) * (bb_usage=="Yes"-0.8512) +
  (0.0620628) * (aa_usage=="Yes"-0.1440) +
  (-0.2058735) * (ACEI=="Yes"-0.5227) +
  (-0.641419) * (ARB=="Yes"-0.2039) +
  (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
  (-0.0185014) * (vt_zone_bpm-177.8278) +
  (-0.0000623) * (vf_zone_bpm-224.5021) +
  (-0.0057464) * (HRbpm-71.55304) +
  (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
  (0.6952856) * (PVCany=="Yes"-0.1897) +
  (-0.0021566) * (QTch-448.5279) +
  (-0.2024031) * (revascularization=="Yes"-0.4308) +
  (-0.0209583) * (mi=="Yes"-0.4913) +
  (-1.28567) * (ccbs=="Yes"-0.0798) +
  (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
  (-0.0175218) * (bun-24.68193) +
  (0.0417666) * (atp=="ON"-0.8579) +
  (0.0001828) * (areaQRSTAngle_deg-141.8829) +
  (0.0035389) * (areaSVGElevation_deg-87.59344) +
  (-0.019313) * (areaSVG_mVms-41.09404) +
  (-0.0004595) * (SAIQRST-194.9203) +
  (-0.0127859) * (exact_lvef-28.24665) +
  (0.0048715) * (QRSduration_ms-117.0333) +
  (-0.000486) * (aSVGaz-42.42782) +
  (-0.0086773) * (egfr-70.35064)
)
)

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
  )
)

```

```

        (-0.0184298) * (areaSVG_mVms-41.09404) +
        (0.0041371) * (SAIQRST-194.9203) +
        (0.0535254) * (exact_lvef-28.24665) +
        (0.0072088) * (QRSduration_ms-117.0333) +
        (-0.0025816) * (aSVGaz-42.42782) +
        (-0.021884) * (egfr-70.35064)
    )
})
}

if (race=='Non-Hispanic White' & mbeat3=='Normal sinus' & nyha== 'Class II' &
manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +

```

```

(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Non-Hispanic White' & mbeat3=='Normal sinus' & nyha== 'Class II' &
manufacturer=='St. Jude/Abbott')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (0.0438932) * (nyha=="Class II"-0.3964) +
    (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    (-0.0127859) * (exact_lvef-28.24665) +
    (0.0048715) * (QRSduration_ms-117.0333) +
    (-0.000486) * (aSVGaz-42.42782) +
    (-0.0086773) * (egfr-70.35064)
)
})
}

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511)*(agey-63.13125) +
    (0.3467898)*(sex=="Male"-0.7661) +
    (0.8890844)*(nyha=="Class II"-0.3964) ++
    (1.019888)*(manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812)*(htn=="Yes"-0.6935) +
    (-0.537758)*(diabetes=="Yes"-0.3621) +
    (-0.1233915)*(cva=="Yes"-0.1105) +
    (-0.8228998)*(af=="Yes"-0.339) +
    (-1.151641)*(bb_usage=="Yes"-0.8512) +
    (-16.47702)*(aa_usage=="Yes"-0.1440) +
    (1.087283)*(ACEI=="Yes"-0.5227) +
    (1.262122)*(ARB=="Yes"-0.2039) +
    (-0.0188273)*(icd_type=="CRT-D"-0.3627) +
    (0.002684)*(vt_zone_bpm-177.8278) +
    (-0.0085447)*(vf_zone_bpm-224.5021) +
    (0.0383147)*(HRbpm-71.55304) +
    (-0.6453979)*(progr=="Delayed Therapy"-0.3270) +
    (0.4405619)*(PVCany=="Yes"-0.1897) +
    (-0.0018592)*(QTch-448.5279) +
    (2.020529)*(revascularization=="Yes"-0.4308) +
    (-0.7344092)*(mi=="Yes"-0.4913) +
    (-1.223912)*(ccbs=="Yes"-0.0798) +
    (0.4746157)*(aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977)*(bun-24.68193) +
    (-0.1398414)*(atp=="ON"-0.8579) +
    (0.0109526)*(areaQRSTAngle_deg-141.8829) +
    (-0.0069049)*(areaSVGElevation_deg-87.59344) +
    (-0.0184298)*(areaSVG_mVms-41.09404) +
    (0.0041371)*(SAIQRST-194.9203) +
    (0.0535254)*(exact_lvef-28.24665) +
    (0.0072088)*(QRSduration_ms-117.0333) +
    (-0.0025816)*(aSVGaz-42.42782) +
    (-0.021884)*(egfr-70.35064)
  )
})
}

if (race=='Non-Hispanic White' & mbeat3=='Normal sinus' & nyha== 'Class II' &
  manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907)*(agey-63.13125) +
      (0.325852)*(sex=="Male"-0.7661) +
      (0.0438932)*(nyha=="Class II"-0.3964) +
      (0.2283616)*(manufacturer=="Biotronic"-0.018) +
      (0.4276305)*(htn=="Yes"-0.6935) +
      (-0.1804765)*(diabetes=="Yes"-0.3621) +
      (0.1593888)*(cva=="Yes"-0.1105) +
      (0.4687373)*(af=="Yes"-0.339) +
      (0.5464825)*(bb_usage=="Yes"-0.8512) +
      (0.0620628)*(aa_usage=="Yes"-0.1440) +
      (-0.2058735)*(ACEI=="Yes"-0.5227) +
      (-0.641419)*(ARB=="Yes"-0.2039) +
      (-0.5173946)*(icd_type=="CRT-D"-0.3627) +
      (-0.0185014)*(vt_zone_bpm-177.8278) +
      (-0.0000623)*(vf_zone_bpm-224.5021) +
      (-0.0057464)*(HRbpm-71.55304) +
      (-1.246902)*(progr=="Delayed Therapy"-0.3270) +
      (0.6952856)*(PVCany=="Yes"-0.1897) +
      (-0.0021566)*(QTch-448.5279) +
      (-0.2024031)*(revascularization=="Yes"-0.4308) +

```

```

(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSvGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSvGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Non-Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class III' &
  manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +

```

```

(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
}
)

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
}
)
```

```

        )
    })
}

if (race=='Non-Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class III' &
manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
  )
})

```

```

(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Non-Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class III' &
manufacturer=='St. Jude/Abbott')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(-0.0445497) * (nyha=="Class III"-0.4316) +
(0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(0.788116) * (nyha=="Class III"-0.4316) +

```

```

(1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Non-Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class III' &
manufacturer=='Biotronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(-0.0445497) * (nyha=="Class III"-0.4316) +
(0.2283616) * (manufacturer=="Biotronic"-0.018) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +

```

```

        (-0.019313) * (areaSVG_mVms-41.09404) +
        (-0.0004595) * (SAIQRST-194.9203) +
        (-0.0127859) * (exact_lvef-28.24665) +
        (0.0048715) * (QRSduration_ms-117.0333) +
        (-0.000486) * (aSVGaz-42.42782) +
        (-0.0086773) * (egfr-70.35064)
    )
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
}

if (race=='Non-Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class IV' &
  manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +

```

```

(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Non-Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class IV' &
manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({

```

```

lp <- 1-0.8292047^exp(
  (-0.0219907) * (agey-63.13125) +
  (0.325852) * (sex=="Male"-0.7661) +
  (-0.1619379) * (nyha=="Class IV"-0.0273) +
  (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
  (0.4276305) * (htn=="Yes"-0.6935) +
  (-0.1804765) * (diabetes=="Yes"-0.3621) +
  (0.1593888) * (cva=="Yes"-0.1105) +
  (0.4687373) * (af=="Yes"-0.339) +
  (0.5464825) * (bb_usage=="Yes"-0.8512) +
  (0.0620628) * (aa_usage=="Yes"-0.1440) +
  (-0.2058735) * (ACEI=="Yes"-0.5227) +
  (-0.641419) * (ARB=="Yes"-0.2039) +
  (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
  (-0.0185014) * (vt_zone_bpm-177.8278) +
  (-0.0000623) * (vf_zone_bpm-224.5021) +
  (-0.0057464) * (HRbpm-71.55304) +
  (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
  (0.6952856) * (PVCany=="Yes"-0.1897) +
  (-0.0021566) * (QTch-448.5279) +
  (-0.2024031) * (revascularization=="Yes"-0.4308) +
  (-0.0209583) * (mi=="Yes"-0.4913) +
  (-1.28567) * (ccbs=="Yes"-0.0798) +
  (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
  (-0.0175218) * (bun-24.68193) +
  (0.0417666) * (atp=="ON"-0.8579) +
  (0.0001828) * (areaQRSTAngle_deg-141.8829) +
  (0.0035389) * (areaSVGElevation_deg-87.59344) +
  (-0.019313) * (areaSVG_mVms-41.09404) +
  (-0.0004595) * (SAIQRST-194.9203) +
  (-0.0127859) * (exact_lvef-28.24665) +
  (0.0048715) * (QRSduration_ms-117.0333) +
  (-0.000486) * (aSVGaz-42.42782) +
  (-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
  )
}
)
```

```

(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Non-Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class IV' &
manufacturer=='St. Jude/Abbott')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(-0.1619379) * (nyha=="Class IV"-0.0273) +
(0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-14.86976) * (nyha=="Class IV"-0.0273) +
(1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +

```

```

(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
}
}
}
if (race=='Non-Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class IV' &
manufacturer=='Biotronic')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (-0.1619379) * (nyha=="Class IV"-0.0273) +
    (0.2283616) * (manufacturer=="Biotronic"-0.018) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    (-0.0127859) * (exact_lvef-28.24665) +
    (0.0048715) * (QRSduration_ms-117.0333) +
    (-0.000486) * (aSVGaz-42.42782) +
    (-0.0086773) * (egfr-70.35064)
)
}
}
}

```

```

})
```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})
}

if (race=='Non-Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class I' & manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
    )
  )
}
}

```

```

(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Non-Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class I' & manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +

```

```

(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
}
)

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
  )
}
)
```

```

        (-0.021884) * (egfr-70.35064)
    )
})
}
if (race=='Non-Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class I' & manufacturer=='St. Jude/Abbott')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    (-0.0127859) * (exact_lvef-28.24665) +
    (0.0048715) * (QRSduration_ms-117.0333) +
    (-0.000486) * (aSVGaz-42.42782) +
    (-0.0086773) * (egfr-70.35064)
  )
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
  )
})

```

```

(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Non-Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class I' & manufacturer=='Biotronic')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.2283616) * (manufacturer=="Biotronic"-0.018) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    (-0.0127859) * (exact_lvef-28.24665) +
    (0.0048715) * (QRSduration_ms-117.0333) +
    (-0.000486) * (aSVGaz-42.42782) +
    (-0.0086773) * (egfr-70.35064)
)
})
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +

```

```

    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    (-0.0127859) * (exact_lvef-28.24665) +
    (0.0048715) * (QRSduration_ms-117.0333) +
    (-0.000486) * (aSVGaz-42.42782) +
    (-0.0086773) * (egfr-70.35064)
)
})
```

```

(1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(-16.48323) * (manufacturer=="Biotronic"-0.018) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Non-Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class II' & manufacturer=='Medtronic')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.0438932) * (nyha=="Class II"-0.3964) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (-0.0085447) * (HRbpm-71.55304) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})
}
```

```

(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Non-Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class II' & manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +

```

```

(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
}
)

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
)
}
)
```

```

}

if (race=='Non-Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class
II' & manufacturer=='St. Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +

```

```

(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Non-Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class II' & manufacturer=='Biotronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(0.0438932) * (nyha=="Class II"-0.3964) +
(0.2283616) * (manufacturer=="Biotronic"-0.018) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +

```

```

(1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(0.8890844) * (nyha=="Class II"-0.3964) +
(-16.48323) * (manufacturer=="Biotronic"-0.018) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Non-Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class
III' & manufacturer=='Medtronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(-0.0445497) * (nyha=="Class III"-0.4316) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +

```

```

(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Non-Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class III' & manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +

```

```

(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
)
}
```

```

})
}
if (race=='Non-Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class
III' & manufacturer=='St. Jude/Abbott')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (-0.0445497) * (nyha=="Class III"-0.4316) +
    (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    (-0.0127859) * (exact_lvef-28.24665) +
    (0.0048715) * (QRSduration_ms-117.0333) +
    (-0.000486) * (aSGaz-42.42782) +
    (-0.0086773) * (egfr-70.35064)
  )
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
  )
})

```

```

(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Non-Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class III' & manufacturer=='Biotronic')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (-0.0445497) * (nyha=="Class III"-0.4316) +
    (0.2283616) * (manufacturer=="Biotronic"-0.018) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    (-0.0127859) * (exact_lvef-28.24665) +
    (0.0048715) * (QRSduration_ms-117.0333) +
    (-0.000486) * (aSVGaz-42.42782) +
    (-0.0086773) * (egfr-70.35064)
)
})
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +

```

```

(0.3467898) * (sex=="Male"-0.7661) +
(1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(0.788116) * (nyha=="Class III"-0.4316) +
(-16.48323) * (manufacturer=="Biotronic"-0.018) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Non-Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class IV' & manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +

```

```

(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Non-Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class IV' & manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +

```

```

(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

```

```

        )
    })
}

if (race=='Non-Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class
IV' & manufacturer=='St. Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.0086773) * (egfr-70.35064)
  )
})

```

```

(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Non-Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class IV' & manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(

```

```

(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(-14.86976) * (nyha=="Class IV"-0.0273) +
(-16.48323) * (manufacturer=="Biotronic"-0.018) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Non-Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class I' &
manufacturer=='Medtronic')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
  )
})
```

```

(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Non-Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class I' &
  manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +

```

```

(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
}

}

```

```

if (race=='Non-Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class I' &
manufacturer=='St. Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
  )
})

```

```

(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Non-Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class I' &
manufacturer=='Biotronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.2283616) * (manufacturer=="Biotronic"-0.018) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
(-16.48323) * (manufacturer=="Biotronic"-0.018) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +

```

```

(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
}
}
}

if (race=='Non-Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class II' &
manufacturer=='Medtronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.0438932) * (nyha=="Class II"-0.3964) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +

```

```

(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSvGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.8890844) * (nyha=="Class II"-0.3964) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSvGElevation_deg-87.59344) +
(-0.0184298) * (areaSvG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSvGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})

if (race=='Non-Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class II' &
manufacturer=='Guidant/Boston Scientific')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.0438932) * (nyha=="Class II"-0.3964) +
(0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
}
)
```

```

(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
}
)

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
)
}
)
```

```

}

if (race=='Non-Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class II' &
manufacturer=='St. Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
  )
})

```

```

(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSvGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Non-Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class II' &
manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSvGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.2233912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
}
}

if (race=='Non-Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class III' &
  manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +

```

```

(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSvGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSvGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
}

if (race=='Non-Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class III' &
manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +

```

```

(-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
(-0.0445497) * (nyha=="Class III"-0.4316) +
(0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.788116) * (nyha=="Class III"-0.4316) +
(-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +

```

```

(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Non-Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class III' &
manufacturer=='St. Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +

```

```

(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
}

if (race=='Non-Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class III' &
manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +

```

```

(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSvGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.788116) * (nyha=="Class III"-0.4316) +
(-16.48323) * (manufacturer=="Biotronic"-0.018) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSvGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})

if (race=='Non-Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class IV' &
manufacturer=='Medtronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
(-0.1619379) * (nyha=="Class IV"-0.0273) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +

```

```

(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
}
}
```

```

if (race=='Non-Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class IV' &
manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
  )
})

```

```

(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Non-Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class IV' &
manufacturer=='St. Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({

```

```

lp <- 1-0.948173^exp(
  (-0.0660511) * (agey-63.13125) +
  (0.3467898) * (sex=="Male"-0.7661) +
  (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
  (-14.86976) * (nyha=="Class IV"-0.0273) +
  (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
  (0.2984812) * (htn=="Yes"-0.6935) +
  (-0.537758) * (diabetes=="Yes"-0.3621) +
  (-0.1233915) * (cva=="Yes"-0.1105) +
  (-0.8228998) * (af=="Yes"-0.339) +
  (-1.151641) * (bb_usage=="Yes"-0.8512) +
  (-16.47702) * (aa_usage=="Yes"-0.1440) +
  (1.087283) * (ACEI=="Yes"-0.5227) +
  (1.262122) * (ARB=="Yes"-0.2039) +
  (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
  (0.002684) * (vt_zone_bpm-177.8278) +
  (-0.0085447) * (vf_zone_bpm-224.5021) +
  (0.0383147) * (HRbpm-71.55304) +
  (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
  (0.4405619) * (PVCany=="Yes"-0.1897) +
  (-0.0018592) * (QTch-448.5279) +
  (2.020529) * (revascularization=="Yes"-0.4308) +
  (-0.7344092) * (mi=="Yes"-0.4913) +
  (-1.223912) * (ccbs=="Yes"-0.0798) +
  (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
  (-0.0546977) * (bun-24.68193) +
  (-0.1398414) * (atp=="ON"-0.8579) +
  (0.0109526) * (areaQRSTAngle_deg-141.8829) +
  (-0.0069049) * (areaSVGElevation_deg-87.59344) +
  (-0.0184298) * (areaSVG_mVms-41.09404) +
  (0.0041371) * (SAIQRST-194.9203) +
  (0.0535254) * (exact_lvef-28.24665) +
  (0.0072088) * (QRSduration_ms-117.0333) +
  (-0.0025816) * (aSVGaz-42.42782) +
  (-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Non-Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class IV' &
manufacturer=='Biotronic')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-0.1619379) * (nyha=="Class IV"-0.0273) +
    (0.2283616) * (manufacturer=="Biotronic"-0.018) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
  )
}
}
```

```

(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Black' & mbeat3=='Normal sinus' & nyha=='Class I' & manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +

```

```

(0.3888513) * (race=="Black"-0.0967) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(0.8912569) * (race=="Black"-0.0967) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +

```

```

(0.0072088) * (QRSduration_ms-117.0333) +  

(-0.0025816) * (aSVGaz-42.42782) +  

(-0.021884) * (egfr-70.35064)  

)  

})  

}  

  

if (race=='Black' & mbeat3=='Normal sinus' & nyha=='Class I' &  

manufacturer=='Guidant/Boston Scientific')  

{  

predict.risk.MMVT <- expression({  

lp <- 1-0.8292047^exp(  

(-0.0219907) * (agey-63.13125) +  

(0.325852) * (sex=="Male"-0.7661) +  

(0.3888513) * (race=="Black"-0.0967) +  

(0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +  

(0.4276305) * (htn=="Yes"-0.6935) +  

(-0.1804765) * (diabetes=="Yes"-0.3621) +  

(0.1593888) * (cva=="Yes"-0.1105) +  

(0.4687373) * (af=="Yes"-0.339) +  

(0.5464825) * (bb_usage=="Yes"-0.8512) +  

(0.0620628) * (aa_usage=="Yes"-0.1440) +  

(-0.2058735) * (ACEI=="Yes"-0.5227) +  

(-0.641419) * (ARB=="Yes"-0.2039) +  

(-0.5173946) * (icd_type=="CRT-D"-0.3627) +  

(-0.0185014) * (vt_zone_bpm-177.8278) +  

(-0.0000623) * (vf_zone_bpm-224.5021) +  

(-0.0057464) * (HRbpm-71.55304) +  

(-1.246902) * (progr=="Delayed Therapy"-0.3270) +  

(0.6952856) * (PVCany=="Yes"-0.1897) +  

(-0.0021566) * (QTch-448.5279) +  

(-0.2024031) * (revascularization=="Yes"-0.4308) +  

(-0.0209583) * (mi=="Yes"-0.4913) +  

(-1.28567) * (ccbs=="Yes"-0.0798) +  

(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +  

(-0.0175218) * (bun-24.68193) +  

(0.0417666) * (atp=="ON"-0.8579) +  

(0.0001828) * (areaORSTAngle_deg-141.8829) +  

(0.0035389) * (areaSVGElevation_deg-87.59344) +  

(-0.019313) * (areaSVG_mVms-41.09404) +  

(-0.0004595) * (SAIQRST-194.9203) +  

(-0.0127859) * (exact_lvef-28.24665)+  

(0.0048715) * (QRSduration_ms-117.0333) +  

(-0.000486) * (aSVGaz-42.42782) +  

(-0.0086773) * (egfr-70.35064)  

)  

})  

  

predict.risk.PVT <- expression({  

lp <- 1-0.948173^exp(  

(-0.0660511) * (agey-63.13125) +  

(0.3467898) * (sex=="Male"-0.7661) +  

(0.8912569) * (race=="Black"-0.0967) +  

(-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +  

(0.2984812) * (htn=="Yes"-0.6935) +  

(-0.537758) * (diabetes=="Yes"-0.3621)+  

(-0.1233915) * (cva=="Yes"-0.1105) +  

(-0.8228998) * (af=="Yes"-0.339) +  

(-1.151641) * (bb_usage=="Yes"-0.8512) +  

(-16.47702) * (aa_usage=="Yes"-0.1440) +  

(1.087283) * (ACEI=="Yes"-0.5227) +  

(1.262122) * (ARB=="Yes"-0.2039) +  

(-0.0188273) * (icd_type=="CRT-D"-0.3627) +

```

```

(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Black' & mbeat3=='Normal sinus' & nyha=='Class I' & manufacturer=='St.
Jude/Abbott')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (0.3888513) * (race=="Black"-0.0967) +
    (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    (-0.0127859) * (exact_lvef-28.24665) +
    (0.0048715) * (QRSduration_ms-117.0333) +
    (-0.000486) * (aSVGaz-42.42782) +
    (-0.0086773) * (egfr-70.35064)
)
})
}

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})
}

if (race=='Black' & mbeat3=='Normal sinus' & nyha=='Class I' & manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +

```

```

(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.2233912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Black' & mbeat3=='Normal sinus' & nyha=='Class II' & manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +

```

```

(0.0438932) * (nyha=="Class II"-0.3964) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(0.8912569) * (race=="Black"-0.0967) +
(0.8890844) * (nyha=="Class II"-0.3964) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +

```

```

(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Black' & mbeat3=='Normal sinus' & nyha=='Class II' &
manufacturer=='Guidant/Boston Scientific')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.3888513) * (race=="Black"-0.0967) +
(0.0438932) * (nyha=="Class II"-0.3964) +
(0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(0.8912569) * (race=="Black"-0.0967) +
(0.8890844) * (nyha=="Class II"-0.3964) +
(-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +

```

```

(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
}
}
}

if (race=='Black' & mbeat3=='Normal sinus' & nyha=='Class II' & manufacturer=='St.
Jude/Abbott')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.3888513) * (race=="Black"-0.0967) +
(0.0438932) * (nyha=="Class II"-0.3964) +
(0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +

```

```

        (-0.000486) * (aSVGaz-42.42782) +
        (-0.0086773) * (egfr-70.35064)
    )

}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
}

if (race=='Black' & mbeat3=='Normal sinus' & nyha=='Class II' & manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +

```

```

(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})
}
)
```

```

if (race=='Black' & mbeat3=='Normal sinus' & nyha=='Class III' &
manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
  )
})

```

```

(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Black' & mbeat3=='Normal sinus' & nyha=='Class III' &
manufacturer=='Guidant/Boston Scientific')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.3888513) * (race=="Black"-0.0967) +
(-0.0445497) * (nyha=="Class III"-0.4316) +
(0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(0.8912569) * (race=="Black"-0.0967) +

```

```

(0.788116) * (nyha=="Class III"-0.4316) +
(-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Black' & mbeat3=='Normal sinus' & nyha=='Class III' & manufacturer=='St.
Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +

```

```

        (-0.0175218) * (bun-24.68193) +
        (0.0417666) * (atp=="ON"-0.8579) +
        (0.0001828) * (areaQRSTAngle_deg-141.8829) +
        (0.0035389) * (areaSVGElevation_deg-87.59344) +
        (-0.019313) * (areaSVG_mVms-41.09404) +
        (-0.0004595) * (SAIQRST-194.9203) +
        (-0.0127859) * (exact_lvef-28.24665) +
        (0.0048715) * (QRSduration_ms-117.0333) +
        (-0.000486) * (aSVGaz-42.42782) +
        (-0.0086773) * (egfr-70.35064)
    )
})
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})
}

if (race=='Black' & mbeat3=='Normal sinus' & nyha=='Class III' &
  manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +

```

```

(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
  )
})
```

```

(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Black' & mbeat3=='Normal sinus' & nyha=='Class IV' & manufacturer=='Medtronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.3888513) * (race=="Black"-0.0967) +
(-0.1619379) * (nyha=="Class IV"-0.0273) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaORSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(0.8912569) * (race=="Black"-0.0967) +
(-14.86976) * (nyha=="Class IV"-0.0273) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +

```

```

(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Black' & mbeat3=='Normal sinus' & nyha=='Class IV' &
manufacturer=='Guidant/Boston Scientific')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (0.3888513) * (race=="Black"-0.0967) +
    (-0.1619379) * (nyha=="Class IV"-0.0273) +
    (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    (-0.0127859) * (exact_lvef-28.24665) +
    (0.0048715) * (QRSduration_ms-117.0333) +
    (-0.000486) * (aSVGaz-42.42782) +
    (-0.0086773) * (egfr-70.35064)
)
}

```

```

})
```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})
}

if (race=='Black' & mbeat3=='Normal sinus' & nyha=='Class IV' & manufacturer=='St.
Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
    )
  )
}
}

```

```

(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Black' & mbeat3=='Normal sinus' & nyha=='Class IV' & manufacturer=='Biotronic')
{

```

```

predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (0.3888513) * (race=="Black"-0.0967) +
    (-0.1619379) * (nyha=="Class IV"-0.0273) +
    (0.2283616) * (manufacturer=="Biotronic"-0.018) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    (-0.0127859) * (exact_lvef-28.24665) +
    (0.0048715) * (QRSduration_ms-117.0333) +
    (-0.000486) * (aSVGaz-42.42782) +
    (-0.0086773) * (egfr-70.35064)
  )
})

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +

```

```

(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Black' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class I' &
manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })

  predict.risk.PVT <- expression({
    lp <- 1-0.948173^exp(
      (-0.0660511) * (agey-63.13125) +
      (0.3467898) * (sex=="Male"-0.7661) +
      (0.8912569) * (race=="Black"-0.0967) +
      (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (0.2984812) * (htn=="Yes"-0.6935) +

```

```

(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST_194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Black' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class I' &
manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +

```

```

(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Black' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class I' &
  manufacturer=='St. Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +

```

```

(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.0086773) * (egfr-70.35064)
  )
})

```

```

        (-0.021884) * (egfr-70.35064)
    )
}
}

if (race=='Black' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class I' &
manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +

```

```

(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Black' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class II' &
manufacturer=='Medtronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.3888513) * (race=="Black"-0.0967) +
(-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(0.0438932) * (nyha=="Class II"-0.3964) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
}

```

```

})
```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})
```

```

if (race=='Black' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class II' &
manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
    )
  )
}
```

```

(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})
}

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(0.8912569) * (race=="Black"-0.0967) +
(1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(0.8890844) * (nyha=="Class II"-0.3964) +
(-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
}
```

```

if (race=='Black' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class II' &
manufacturer=='St. Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
  )
})

```

```

(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSvGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Black' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class II' &
manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSvGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})
}

if (race=='Black' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class III' &
manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +

```

```

(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
))

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
)
))

if (race=='Black' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class III' &
manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({

```

```

lp <- 1-0.8292047^exp(
  (-0.0219907) * (agey-63.13125) +
  (0.325852) * (sex=="Male"-0.7661) +
  (0.3888513) * (race=="Black"-0.0967) +
  (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
  (-0.0445497) * (nyha=="Class III"-0.4316) +
  (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
  (0.4276305) * (htn=="Yes"-0.6935) +
  (-0.1804765) * (diabetes=="Yes"-0.3621) +
  (0.1593888) * (cva=="Yes"-0.1105) +
  (0.4687373) * (af=="Yes"-0.339) +
  (0.5464825) * (bb_usage=="Yes"-0.8512) +
  (0.0620628) * (aa_usage=="Yes"-0.1440) +
  (-0.2058735) * (ACEI=="Yes"-0.5227) +
  (-0.641419) * (ARB=="Yes"-0.2039) +
  (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
  (-0.0185014) * (vt_zone_bpm-177.8278) +
  (-0.0000623) * (vf_zone_bpm-224.5021) +
  (-0.0057464) * (HRbpm-71.55304) +
  (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
  (0.6952856) * (PVCany=="Yes"-0.1897) +
  (-0.0021566) * (QTch-448.5279) +
  (-0.2024031) * (revascularization=="Yes"-0.4308) +
  (-0.0209583) * (mi=="Yes"-0.4913) +
  (-1.28567) * (ccbs=="Yes"-0.0798) +
  (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
  (-0.0175218) * (bun-24.68193) +
  (0.0417666) * (atp=="ON"-0.8579) +
  (0.0001828) * (areaQRSTAngle_deg-141.8829) +
  (0.0035389) * (areaSVElevation_deg-87.59344) +
  (-0.019313) * (areaSVG_mVms-41.09404) +
  (-0.0004595) * (SAIQRST-194.9203) +
  (-0.0127859) * (exact_lvef-28.24665) +
  (0.0048715) * (QRSduration_ms-117.0333) +
  (-0.000486) * (aSVGaz-42.42782) +
  (-0.0086773) * (egfr-70.35064)
)
}
)

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
  )
)

```

```

(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Black' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class III' &
manufacturer=='St. Jude/Abbott')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.3888513) * (race=="Black"-0.0967) +
(-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(-0.0445497) * (nyha=="Class III"-0.4316) +
(0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +

```

```

(0.8912569) * (race=="Black"-0.0967) +
(1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(0.788116) * (nyha=="Class III"-0.4316) +
(1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Black' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class III' &
manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +

```

```

(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSvGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSvGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Black' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class IV' &
manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +

```

```

(0.325852) * (sex=="Male"-0.7661) +
(0.3888513) * (race=="Black"-0.0967) +
(-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(-0.1619379) * (nyha=="Class IV"-0.0273) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
  )
})

```

```

(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
}
}

if (race=='Black' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class IV' &
manufacturer=='Guidant/Boston Scientific')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.3888513) * (race=="Black"-0.0967) +
(-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(-0.1619379) * (nyha=="Class IV"-0.0273) +
(0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(0.8912569) * (race=="Black"-0.0967) +
(1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(-14.86976) * (nyha=="Class IV"-0.0273) +
(-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +

```

```

(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
}

if (race=='Black' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class IV' &
manufacturer=='St. Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +

```

```

(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Black' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class IV' &
  manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +

```

```

(0.2283616) * (manufacturer=="Biotronic"-0.018) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(0.8912569) * (race=="Black"-0.0967) +
(1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(-14.86976) * (nyha=="Class IV"-0.0273) +
(-16.48323) * (manufacturer=="Biotronic"-0.018) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.2233912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +

```

```

        (-0.0184298) * (areaSVG_mVms-41.09404) +
        (0.0041371) * (SAIQRST-194.9203) +
        (0.0535254) * (exact_lvef-28.24665) +
        (0.0072088) * (QRSduration_ms-117.0333) +
        (-0.0025816) * (aSVGaz-42.42782) +
        (-0.021884) * (egfr-70.35064)
    )
})
}

if (race=='Black' & mbeat3=='Ventricular pacing' & nyha=='Class I' &
manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +

```

```

(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
}
}
}

if (race=='Black' & mbeat3=='Ventricular pacing' & nyha=='Class I' &
manufacturer=='Guidant/Boston Scientific')
{
predict.risk.MMVT <- expression(
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (0.3888513) * (race=="Black"-0.0967) +
    (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    (-0.0127859) * (exact_lvef-28.24665) +
    (0.0048715) * (QRSduration_ms-117.0333) +
  )
)
}
}
}

```

```

        (-0.000486) * (aSVGaz-42.42782) +
        (-0.0086773) * (egfr-70.35064)
    )

}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
}

if (race=='Black' & mbeat3=='Ventricular pacing' & nyha=='Class I' & manufacturer=='St.
Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +

```

```

(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})
)

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})
}
)
```

```

if (race=='Black' & mbeat3=='Ventricular pacing' & nyha=='Class I' &
manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
  )
})

```

```

(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Black' & mbeat3=='Ventricular pacing' & nyha=='Class II' &
manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(

```

```

(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(0.8912569) * (race=="Black"-0.0967) +
(-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.8890844) * (nyha=="Class II"-0.3964) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
}
}
}

if (race=='Black' & mbeat3=='Ventricular pacing' & nyha=='Class II' &
manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +

```

```

(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Black' & mbeat3=='Ventricular pacing' & nyha=='Class II' & manufacturer=='St. Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(

```

```

(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.3888513) * (race=="Black"-0.0967) +
(-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.0438932) * (nyha=="Class II"-0.3964) +
(0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
  )
})
```

```

(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Black' & mbeat3=='Ventricular pacing' & nyha=='Class II' &
manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +

```

```

(-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.8890844) * (nyha=="Class II"-0.3964) +
(-16.48323) * (manufacturer=="Biotronic"-0.018) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
}

if (race=='Black' & mbeat3=='Ventricular pacing' & nyha=='Class III' &
manufacturer=='Medtronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.3888513) * (race=="Black"-0.0967) +
(-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
(-0.0445497) * (nyha=="Class III"-0.4316) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +

```

```

        (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
        (-0.0175218) * (bun-24.68193) +
        (0.0417666) * (atp=="ON"-0.8579) +
        (0.0001828) * (areaQRSTAngle_deg-141.8829) +
        (0.0035389) * (areaSVGElevation_deg-87.59344) +
        (-0.019313) * (areaSVG_mVms-41.09404) +
        (-0.0004595) * (SAIQRST-194.9203) +
        (-0.0127859) * (exact_lvef-28.24665) +
        (0.0048715) * (QRSduration_ms-117.0333) +
        (-0.000486) * (aSVGaz-42.42782) +
        (-0.0086773) * (egfr-70.35064)
    )
}
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
}
}

if (race=='Black' & mbeat3=='Ventricular pacing' & nyha=='Class III' &
manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +

```

```

(-0.0445497) * (nyha=="Class III"-0.4316) +
(0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
  )
})
```

```

(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Black' & mbeat3=='Ventricular pacing' & nyha=='Class III' & manufacturer=='St.
Jude/Abbott')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.3888513) * (race=="Black"-0.0967) +
(-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
(-0.0445497) * (nyha=="Class III"-0.4316) +
(0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(0.8912569) * (race=="Black"-0.0967) +
(-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.788116) * (nyha=="Class III"-0.4316) +
(1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.2984812) * (htn=="Yes"-0.6935) +

```

```

(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
}

if (race=='Black' & mbeat3=='Ventricular pacing' & nyha=='Class III' &
manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +

```

```

(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Black' & mbeat3=='Ventricular pacing' & nyha=='Class IV' &
  manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.4276305) * (htn=="Yes"-0.6935) +

```

```

(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    )
  )
})
```

```

(0.0072088) * (QRSduration_ms-117.0333) +  

(-0.0025816) * (aSVGaz-42.42782) +  

(-0.021884) * (egfr-70.35064)  

)  

})  

}  

  

if (race=='Black' & mbeat3=='Ventricular pacing' & nyha=='Class IV' &  

manufacturer=='Guidant/Boston Scientific')  

{  

predict.risk.MMVT <- expression({  

lp <- 1-0.8292047^exp(  

(-0.0219907) * (agey-63.13125) +  

(0.325852) * (sex=="Male"-0.7661) +  

(0.3888513) * (race=="Black"-0.0967) +  

(-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +  

(-0.1619379) * (nyha=="Class IV"-0.0273) +  

(0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +  

(0.4276305) * (htn=="Yes"-0.6935) +  

(-0.1804765) * (diabetes=="Yes"-0.3621) +  

(0.1593888) * (cva=="Yes"-0.1105) +  

(0.4687373) * (af=="Yes"-0.339) +  

(0.5464825) * (bb_usage=="Yes"-0.8512) +  

(0.0620628) * (aa_usage=="Yes"-0.1440) +  

(-0.2058735) * (ACEI=="Yes"-0.5227) +  

(-0.641419) * (ARB=="Yes"-0.2039) +  

(-0.5173946) * (icd_type=="CRT-D"-0.3627) +  

(-0.0185014) * (vt_zone_bpm-177.8278) +  

(-0.0000623) * (vf_zone_bpm-224.5021) +  

(-0.0057464) * (HRbpm-71.55304) +  

(-1.246902) * (progr=="Delayed Therapy"-0.3270) +  

(0.6952856) * (PVCany=="Yes"-0.1897) +  

(-0.0021566) * (QTch-448.5279) +  

(-0.2024031) * (revascularization=="Yes"-0.4308) +  

(-0.0209583) * (mi=="Yes"-0.4913) +  

(-1.28567) * (ccbs=="Yes"-0.0798) +  

(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +  

(-0.0175218) * (bun-24.68193) +  

(0.0417666) * (atp=="ON"-0.8579) +  

(0.0001828) * (areaQRSTAngle_deg-141.8829) +  

(0.0035389) * (areaSVGElevation_deg-87.59344) +  

(-0.019313) * (areaSVG_mVms-41.09404) +  

(-0.0004595) * (SAIQRST-194.9203) +  

(-0.0127859) * (exact_lvef-28.24665)+  

(0.0048715) * (QRSduration_ms-117.0333) +  

(-0.000486) * (aSVGaz-42.42782) +  

(-0.0086773) * (egfr-70.35064)  

)  

})  

}  

  

predict.risk.PVT <- expression({  

lp <- 1-0.948173^exp(  

(-0.0660511) * (agey-63.13125) +  

(0.3467898) * (sex=="Male"-0.7661) +  

(0.8912569) * (race=="Black"-0.0967) +  

(-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +  

(-14.86976) * (nyha=="Class IV"-0.0273) +  

(-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +  

(0.2984812) * (htn=="Yes"-0.6935) +  

(-0.537758) * (diabetes=="Yes"-0.3621)+  

(-0.1233915) * (cva=="Yes"-0.1105) +  

(-0.8228998) * (af=="Yes"-0.339) +  

(-1.151641) * (bb_usage=="Yes"-0.8512) +

```

```

        (-16.47702) * (aa_usage=="Yes"-0.1440) +
        (1.087283) * (ACEI=="Yes"-0.5227) +
        (1.262122) * (ARB=="Yes"-0.2039) +
        (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
        (0.002684) * (vt_zone_bpm-177.8278) +
        (-0.0085447) * (vf_zone_bpm-224.5021) +
        (0.0383147) * (HRbpm-71.55304) +
        (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
        (0.4405619) * (PVCany=="Yes"-0.1897) +
        (-0.0018592) * (QTch-448.5279) +
        (2.020529) * (revascularization=="Yes"-0.4308) +
        (-0.7344092) * (mi=="Yes"-0.4913) +
        (-1.223912) * (ccbs=="Yes"-0.0798) +
        (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
        (-0.0546977) * (bun-24.68193) +
        (-0.1398414) * (atp=="ON"-0.8579) +
        (0.0109526) * (areaQRSTAngle_deg-141.8829) +
        (-0.0069049) * (areaSVGElevation_deg-87.59344) +
        (-0.0184298) * (areaSVG_mVms-41.09404) +
        (0.0041371) * (SAIQRST-194.9203) +
        (0.0535254) * (exact_lvef-28.24665) +
        (0.0072088) * (QRSduration_ms-117.0333) +
        (-0.0025816) * (aSVGaz-42.42782) +
        (-0.021884) * (egfr-70.35064)
    )
}
}

if (race=='Black' & mbeat3=='Ventricular pacing' & nyha=='Class IV' & manufacturer=='St.
Jude/Abbott')
{
  predict.risk.MMVT <- expression(
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +

```

```

        (-0.0127859) * (exact_lvef-28.24665) +
        (0.0048715) * (QRSduration_ms-117.0333) +
        (-0.000486) * (aSVGaz-42.42782) +
        (-0.0086773) * (egfr-70.35064)
    )
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Black' & mbeat3=='Ventricular pacing' & nyha=='Class IV' &
  manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.3888513) * (race=="Black"-0.0967) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +

```

```

(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (0.8912569) * (race=="Black"-0.0967) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.0086773) * (egfr-70.35064)
  )
})

```

```

        (-0.021884) * (egfr-70.35064)
    )
})
}

if (race=='Asian' & mbeat3=='Normal sinus' & nyha=='Class I' & manufacturer=='Medtronic')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (0.5327577) * (race=="Asian"-0.0449) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    (-0.0127859) * (exact_lvef-28.24665) +
    (0.0048715) * (QRSduration_ms-117.0333) +
    (-0.000486) * (aSVGaz-42.42782) +
    (-0.0086773) * (egfr-70.35064)
  )
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +

```

```

(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Asian' & mbeat3=='Normal sinus' & nyha=='Class I' &
manufacturer=='Guidant/Boston Scientific')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.5327577) * (race=="Asian"-0.0449) +
(0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-15.87776) * (race=="Asian"-0.0449) +
(-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +

```

```

(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Asian' & mbeat3=='Normal sinus' & nyha=='Class I' & manufacturer=='St.
Jude/Abbott')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.5327577) * (race=="Asian"-0.0449) +
(0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +

```

```

(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
}
}

if (race=='Asian' & mbeat3=='Normal sinus' & nyha=='Class I' & manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.5327577) * (race=="Asian"-0.0449) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +

```

```

(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.2233912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Asian' & mbeat3=='Normal sinus' & nyha=='Class II' & manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({

```

```

lp <- 1-0.8292047^exp(
  (-0.0219907) * (agey-63.13125) +
  (0.325852) * (sex=="Male"-0.7661) +
  (0.5327577) * (race=="Asian"-0.0449) +
  (0.0438932) * (nyha=="Class II"-0.3964) +
  (0.4276305) * (htn=="Yes"-0.6935) +
  (-0.1804765) * (diabetes=="Yes"-0.3621) +
  (0.1593888) * (cva=="Yes"-0.1105) +
  (0.4687373) * (af=="Yes"-0.339) +
  (0.5464825) * (bb_usage=="Yes"-0.8512) +
  (0.0620628) * (aa_usage=="Yes"-0.1440) +
  (-0.2058735) * (ACEI=="Yes"-0.5227) +
  (-0.641419) * (ARB=="Yes"-0.2039) +
  (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
  (-0.0185014) * (vt_zone_bpm-177.8278) +
  (-0.0000623) * (vf_zone_bpm-224.5021) +
  (-0.0057464) * (HRbpm-71.55304) +
  (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
  (0.6952856) * (PVCany=="Yes"-0.1897) +
  (-0.0021566) * (QTch-448.5279) +
  (-0.2024031) * (revascularization=="Yes"-0.4308) +
  (-0.0209583) * (mi=="Yes"-0.4913) +
  (-1.28567) * (ccbs=="Yes"-0.0798) +
  (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
  (-0.0175218) * (bun-24.68193) +
  (0.0417666) * (atp=="ON"-0.8579) +
  (0.0001828) * (areaQRSTAngle_deg-141.8829) +
  (0.0035389) * (areaSVGElevation_deg-87.59344) +
  (-0.019313) * (areaSVG_mVms-41.09404) +
  (-0.0004595) * (SAIQRST-194.9203) +
  (-0.0127859) * (exact_lvef-28.24665) +
  (0.0048715) * (QRSduration_ms-117.0333) +
  (-0.000486) * (aSVGaz-42.42782) +
  (-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
  )
)

```

```

(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Asian' & mbeat3=='Normal sinus' & nyha=='Class II' &
manufacturer=='Guidant/Boston Scientific')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.5327577) * (race=="Asian"-0.0449) +
(0.0438932) * (nyha=="Class II"-0.3964) +
(0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-15.87776) * (race=="Asian"-0.0449) +
(0.8890844) * (nyha=="Class II"-0.3964) +
(-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +

```

```

(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Asian' & mbeat3=='Normal sinus' & nyha=='Class II' & manufacturer=='St.
Jude/Abbott')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.5327577) * (race=="Asian"-0.0449) +
(0.0438932) * (nyha=="Class II"-0.3964) +
(0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +

```

```

        (-0.000486) * (aSVGaz-42.42782) +
        (-0.0086773) * (egfr-70.35064)
    )
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
}
}

if (race=='Asian' & mbeat3=='Normal sinus' & nyha=='Class II' & manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.5327577) * (race=="Asian"-0.0449) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +

```

```

(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Asian' & mbeat3=='Normal sinus' & nyha=='Class III' &
  manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({

```

```

lp <- 1-0.8292047^exp(
  (-0.0219907) * (agey-63.13125) +
  (0.325852) * (sex=="Male"-0.7661) +
  (0.5327577) * (race=="Asian"-0.0449) +
  (-0.0445497) * (nyha=="Class III"-0.4316) +
  (0.4276305) * (htn=="Yes"-0.6935) +
  (-0.1804765) * (diabetes=="Yes"-0.3621) +
  (0.1593888) * (cva=="Yes"-0.1105) +
  (0.4687373) * (af=="Yes"-0.339) +
  (0.5464825) * (bb_usage=="Yes"-0.8512) +
  (0.0620628) * (aa_usage=="Yes"-0.1440) +
  (-0.2058735) * (ACEI=="Yes"-0.5227) +
  (-0.641419) * (ARB=="Yes"-0.2039) +
  (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
  (-0.0185014) * (vt_zone_bpm-177.8278) +
  (-0.0000623) * (vf_zone_bpm-224.5021) +
  (-0.0057464) * (HRbpm-71.55304) +
  (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
  (0.6952856) * (PVCany=="Yes"-0.1897) +
  (-0.0021566) * (QTch-448.5279) +
  (-0.2024031) * (revascularization=="Yes"-0.4308) +
  (-0.0209583) * (mi=="Yes"-0.4913) +
  (-1.28567) * (ccbs=="Yes"-0.0798) +
  (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
  (-0.0175218) * (bun-24.68193) +
  (0.0417666) * (atp=="ON"-0.8579) +
  (0.0001828) * (areaQRSTAngle_deg-141.8829) +
  (0.0035389) * (areaSVGElevation_deg-87.59344) +
  (-0.019313) * (areaSVG_mVms-41.09404) +
  (-0.0004595) * (SAIQRST-194.9203) +
  (-0.0127859) * (exact_lvef-28.24665) +
  (0.0048715) * (QRSduration_ms-117.0333) +
  (-0.000486) * (aSVGaz-42.42782) +
  (-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
  )
)

```

```

(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Asian' & mbeat3=='Normal sinus' & nyha=='Class III' &
manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.5327577) * (race=="Asian"-0.0449) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +

```

```

(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Asian' & mbeat3=='Normal sinus' & nyha=='Class III' & manufacturer=='St.
Jude/Abbott')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (0.5327577) * (race=="Asian"-0.0449) +
    (-0.0445497) * (nyha=="Class III"-0.4316) +
    (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    (-0.0127859) * (exact_lvef-28.24665) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (-0.0041371) * (SAIQRST-194.9203) +
    (-0.0535254) * (exact_lvef-28.24665) +
    (-0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})
}

```

```

(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-15.87776) * (race=="Asian"-0.0449) +
(0.788116) * (nyha=="Class III"-0.4316) +
(1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Asian' & mbeat3=='Normal sinus' & nyha=='Class III' &
manufacturer=='Biotronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.5327577) * (race=="Asian"-0.0449) +
(-0.0445497) * (nyha=="Class III"-0.4316) +
(0.2283616) * (manufacturer=="Biotronic"-0.018) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +

```

```

(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Asian' & mbeat3=='Normal sinus' & nyha=='Class IV' &
  manufacturer=='Medtronic')
}

```

```
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (0.5327577) * (race=="Asian"-0.0449) +
    (-0.1619379) * (nyha=="Class IV"-0.0273) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    (-0.0127859) * (exact_lvef-28.24665) +
    (0.0048715) * (QRSduration_ms-117.0333) +
    (-0.000486) * (aSVGaz-42.42782) +
    (-0.0086773) * (egfr-70.35064)
  )
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
  )
})
```

```

(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Asian' & mbeat3=='Normal sinus' & nyha=='Class IV' &
manufacturer=='Guidant/Boston Scientific')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.5327577) * (race=="Asian"-0.0449) +
(-0.1619379) * (nyha=="Class IV"-0.0273) +
(0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-15.87776) * (race=="Asian"-0.0449) +
(-14.86976) * (nyha=="Class IV"-0.0273) +
(-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +

```

```

(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Asian' & mbeat3=='Normal sinus' & nyha=='Class IV' & manufacturer=='St.
Jude/Abbott')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (0.5327577) * (race=="Asian"-0.0449) +
    (-0.1619379) * (nyha=="Class IV"-0.0273) +
    (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
}

```

```

        (-0.0127859) * (exact_lvef-28.24665) +
        (0.0048715) * (QRSduration_ms-117.0333) +
        (-0.000486) * (aSvGaz-42.42782) +
        (-0.0086773) * (egfr-70.35064)
    )
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSvGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
}

if (race=='Asian' & mbeat3=='Normal sinus' & nyha=='Class IV' &
  manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.5327577) * (race=="Asian"-0.0449) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +

```

```

(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
}

if (race=='Asian' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class I' &

```

```

manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907)*(agey-63.13125) +
      (0.325852)*(sex=="Male"-0.7661) +
      (0.5327577)*(race=="Asian"-0.0449) +
      (-0.2482811)*(mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (0.4276305)*(htn=="Yes"-0.6935) +
      (-0.1804765)*(diabetes=="Yes"-0.3621) +
      (0.1593888)*(cva=="Yes"-0.1105) +
      (0.4687373)*(af=="Yes"-0.339) +
      (0.5464825)*(bb_usage=="Yes"-0.8512) +
      (0.0620628)*(aa_usage=="Yes"-0.1440) +
      (-0.2058735)*(ACEI=="Yes"-0.5227) +
      (-0.641419)*(ARB=="Yes"-0.2039) +
      (-0.5173946)*(icd_type=="CRT-D"-0.3627) +
      (-0.0185014)*(vt_zone_bpm-177.8278) +
      (-0.0000623)*(vf_zone_bpm-224.5021) +
      (-0.0057464)*(HRbpm-71.55304) +
      (-1.246902)*(progr=="Delayed Therapy"-0.3270) +
      (0.6952856)*(PVCany=="Yes"-0.1897) +
      (-0.0021566)*(QTch-448.5279) +
      (-0.2024031)*(revascularization=="Yes"-0.4308) +
      (-0.0209583)*(mi=="Yes"-0.4913) +
      (-1.28567)*(ccbs=="Yes"-0.0798) +
      (-0.5852881)*(aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218)*(bun-24.68193) +
      (0.0417666)*(atp=="ON"-0.8579) +
      (0.0001828)*(areaQRSTAngle_deg-141.8829) +
      (0.0035389)*(areaSVElevation_deg-87.59344) +
      (-0.019313)*(areaSVG_mVms-41.09404) +
      (-0.0004595)*(SAIQRST-194.9203) +
      (-0.0127859)*(exact_lvef-28.24665) +
      (0.0048715)*(QRSduration_ms-117.0333) +
      (-0.000486)*(aSVGaz-42.42782) +
      (-0.0086773)*(egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511)*(agey-63.13125) +
    (0.3467898)*(sex=="Male"-0.7661) +
    (-15.87776)*(race=="Asian"-0.0449) +
    (1.926322)*(mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.2984812)*(htn=="Yes"-0.6935) +
    (-0.537758)*(diabetes=="Yes"-0.3621) +
    (-0.1233915)*(cva=="Yes"-0.1105) +
    (-0.8228998)*(af=="Yes"-0.339) +
    (-1.151641)*(bb_usage=="Yes"-0.8512) +
    (-16.47702)*(aa_usage=="Yes"-0.1440) +
    (1.087283)*(ACEI=="Yes"-0.5227) +
    (1.262122)*(ARB=="Yes"-0.2039) +
    (-0.0188273)*(icd_type=="CRT-D"-0.3627) +
    (0.002684)*(vt_zone_bpm-177.8278) +
    (-0.0085447)*(vf_zone_bpm-224.5021) +
    (0.0383147)*(HRbpm-71.55304) +
    (-0.6453979)*(progr=="Delayed Therapy"-0.3270) +
    (0.4405619)*(PVCany=="Yes"-0.1897) +
    (-0.0018592)*(QTch-448.5279) +
    (2.020529)*(revascularization=="Yes"-0.4308) +
    (-0.7344092)*(mi=="Yes"-0.4913) +
    (-1.223912)*(ccbs=="Yes"-0.0798) +
  )
})

```

```

(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Asian' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class I' &
manufacturer=='Guidant/Boston Scientific')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.5327577) * (race=="Asian"-0.0449) +
(-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-15.87776) * (race=="Asian"-0.0449) +
(1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.2984812) * (htn=="Yes"-0.6935) +

```

```

(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Asian' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class I' &
manufacturer=='St. Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.5327577) * (race=="Asian"-0.0449) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +

```

```

(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSvGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-15.87776) * (race=="Asian"-0.0449) +
(1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSvGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})

if (race=='Asian' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class I' &
manufacturer=='Biotronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.5327577) * (race=="Asian"-0.0449) +
(-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(0.2283616) * (manufacturer=="Biotronic"-0.018) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +

```

```

(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
}
)
```

```

if (race=='Asian' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class II' &
manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.5327577) * (race=="Asian"-0.0449) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
  )
})

```

```

(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Asian' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class II' &
manufacturer=='Guidant/Boston Scientific')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.5327577) * (race=="Asian"-0.0449) +
(-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(0.0438932) * (nyha=="Class II"-0.3964) +
(0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +

```

```

(-15.87776) * (race=="Asian"-0.0449) +
(1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(0.8890844) * (nyha=="Class II"-0.3964) +
(-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Asian' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class II' &
manufacturer=='St. Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.5327577) * (race=="Asian"-0.0449) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +

```

```

(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-15.87776) * (race=="Asian"-0.0449) +
(1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(0.8890844) * (nyha=="Class II"-0.3964) +
(1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})

if (race=='Asian' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class II' &
manufacturer=='Biotronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.5327577) * (race=="Asian"-0.0449) +
(-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(0.0438932) * (nyha=="Class II"-0.3964) +

```

```

(0.2283616) * (manufacturer=="Biotronic"-0.018) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-15.87776) * (race=="Asian"-0.0449) +
(1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(0.8890844) * (nyha=="Class II"-0.3964) +
(-16.48323) * (manufacturer=="Biotronic"-0.018) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.2233912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +

```

```

(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Asian' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class III' &
manufacturer=='Medtronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.5327577) * (race=="Asian"-0.0449) +
(-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(-0.0445497) * (nyha=="Class III"-0.4316) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-15.87776) * (race=="Asian"-0.0449) +
(1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(0.788116) * (nyha=="Class III"-0.4316) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +

```

```

(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Asian' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class III' &
manufacturer=='Guidant/Boston Scientific')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (0.5327577) * (race=="Asian"-0.0449) +
    (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (-0.0445497) * (nyha=="Class III"-0.4316) +
    (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    (-0.0127859) * (exact_lvef-28.24665) +
    (0.0048715) * (QRSduration_ms-117.0333) +
    (-0.000486) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})
}
```

```

(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})
}

if (race=='Asian' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class III' &
  manufacturer=='St. Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.5327577) * (race=="Asian"-0.0449) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +

```

```

(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSvGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSvGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Asian' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class III' &

```

```

manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.5327577) * (race=="Asian"-0.0449) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
  )
})

```

```

(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Asian' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class IV' &
manufacturer=='Medtronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.5327577) * (race=="Asian"-0.0449) +
(-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(-0.1619379) * (nyha=="Class IV"-0.0273) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +

```

```

(-15.87776) * (race=="Asian"-0.0449) +
(1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(-14.86976) * (nyha=="Class IV"-0.0273) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Asian' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class IV' &
manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.5327577) * (race=="Asian"-0.0449) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +

```

```

(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Asian' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class IV' &
  manufacturer=='St. Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.5327577) * (race=="Asian"-0.0449) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +

```

```

(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    )
  )
})
```

```

(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Asian' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class IV' &
manufacturer=='Biotronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.5327577) * (race=="Asian"-0.0449) +
(-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(-0.1619379) * (nyha=="Class IV"-0.0273) +
(0.2283616) * (manufacturer=="Biotronic"-0.018) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-15.87776) * (race=="Asian"-0.0449) +
(1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(-14.86976) * (nyha=="Class IV"-0.0273) +
(-16.48323) * (manufacturer=="Biotronic"-0.018) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +

```

```

(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Asian' & mbeat3=='Ventricular pacing' & nyha=='Class I' &
manufacturer=='Medtronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.5327577) * (race=="Asian"-0.0449) +
(-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +

```

```

(-0.0086773) * (egfr-70.35064)
    )
  }

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
}

if (race=='Asian' & mbeat3=='Ventricular pacing' & nyha=='Class I' &
manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.5327577) * (race=="Asian"-0.0449) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +

```

```

(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-15.87776) * (race=="Asian"-0.0449) +
(-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
(-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})

if (race=='Asian' & mbeat3=='Ventricular pacing' & nyha=='Class I' & manufacturer=='St.
Jude/Abbott')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(

```

```

(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.5327577) * (race=="Asian"-0.0449) +
(-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-15.87776) * (race=="Asian"-0.0449) +
(-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
(1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})
```

```

(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Asian' & mbeat3=='Ventricular pacing' & nyha=='Class I' &
manufacturer=='Biotronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.5327577) * (race=="Asian"-0.0449) +
(-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.2283616) * (manufacturer=="Biotronic"-0.018) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-15.87776) * (race=="Asian"-0.0449) +
(-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
(-16.48323) * (manufacturer=="Biotronic"-0.018) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +

```

```

(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Asian' & mbeat3=='Ventricular pacing' & nyha=='Class II' &
manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression(
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.5327577) * (race=="Asian"-0.0449) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (-0.0018592) * (QTch-448.5279) +
      (2.020529) * (revascularization=="Yes"-0.4308) +
      (-0.7344092) * (mi=="Yes"-0.4913) +
      (-1.223912) * (ccbs=="Yes"-0.0798) +
      (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0546977) * (bun-24.68193) +
      (-0.1398414) * (atp=="ON"-0.8579) +
      (0.0109526) * (areaQRSTAngle_deg-141.8829) +
      (-0.0069049) * (areaSVGElevation_deg-87.59344) +
      (-0.0184298) * (areaSVG_mVms-41.09404) +
      (0.0041371) * (SAIQRST-194.9203) +
      (0.0535254) * (exact_lvef-28.24665) +
      (0.0072088) * (QRSduration_ms-117.0333) +
      (-0.0025816) * (aSVGaz-42.42782) +
      (-0.021884) * (egfr-70.35064)
    )
  )
}

```

```

(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-15.87776) * (race=="Asian"-0.0449) +
(-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.8890844) * (nyha=="Class II"-0.3964) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})

if (race=='Asian' & mbeat3=='Ventricular pacing' & nyha=='Class II' &
manufacturer=='Guidant/Boston Scientific')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.5327577) * (race=="Asian"-0.0449) +
(-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.0438932) * (nyha=="Class II"-0.3964) +
(0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +

```

```

(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
}
}
```

```

if (race=='Asian' & mbeat3=='Ventricular pacing' & nyha=='Class II' & manufacturer=='St.
Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.5327577) * (race=="Asian"-0.0449) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
  )
})

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
  )
})

```

```

(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Asian' & mbeat3=='Ventricular pacing' & nyha=='Class II' &
manufacturer=='Biotronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.5327577) * (race=="Asian"-0.0449) +
(-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.0438932) * (nyha=="Class II"-0.3964) +
(0.2283616) * (manufacturer=="Biotronic"-0.018) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(

```

```

(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-15.87776) * (race=="Asian"-0.0449) +
(-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.8890844) * (nyha=="Class II"-0.3964) +
(-16.48323) * (manufacturer=="Biotronic"-0.018) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Asian' & mbeat3=='Ventricular pacing' & nyha=='Class III' &
manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.5327577) * (race=="Asian"-0.0449) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +

```

```

(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

}

if (race=='Asian' & mbeat3=='Ventricular pacing' & nyha=='Class III' &
manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.5327577) * (race=="Asian"-0.0449) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +

```

```

(0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-15.87776) * (race=="Asian"-0.0449) +
(-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.788116) * (nyha=="Class III"-0.4316) +
(-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.2233912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +

```

```

        (-0.0184298) * (areaSVG_mVms-41.09404) +
        (0.0041371) * (SAIQRST-194.9203) +
        (0.0535254) * (exact_lvef-28.24665) +
        (0.0072088) * (QRSduration_ms-117.0333) +
        (-0.0025816) * (aSVGaz-42.42782) +
        (-0.021884) * (egfr-70.35064)
    )
})
}
if (race=='Asian' & mbeat3=='Ventricular pacing' & nyha=='Class III' & manufacturer=='St.
Jude/Abbott')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (0.5327577) * (race=="Asian"-0.0449) +
    (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-0.0445497) * (nyha=="Class III"-0.4316) +
    (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    (-0.0127859) * (exact_lvef-28.24665) +
    (0.0048715) * (QRSduration_ms-117.0333) +
    (-0.000486) * (aSVGaz-42.42782) +
    (-0.0086773) * (egfr-70.35064)
  )
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +

```

```

(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Asian' & mbeat3=='Ventricular pacing' & nyha=='Class III' &
manufacturer=='Biotronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.5327577) * (race=="Asian"-0.0449) +
(-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
(-0.0445497) * (nyha=="Class III"-0.4316) +
(0.2283616) * (manufacturer=="Biotronic"-0.018) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +

```

```

(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Asian' & mbeat3=='Ventricular pacing' & nyha=='Class IV' &
  manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.5327577) * (race=="Asian"-0.0449) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +

```

```

(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
}

if (race=='Asian' & mbeat3=='Ventricular pacing' & nyha=='Class IV' &

```

```

manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (0.5327577) * (race=="Asian"-0.0449) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +

```

```

(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Asian' & mbeat3=='Ventricular pacing' & nyha=='Class IV' & manufacturer=='St.
Jude/Abbott')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(0.5327577) * (race=="Asian"-0.0449) +
(-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
(-0.1619379) * (nyha=="Class IV"-0.0273) +
(0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +

```

```

(0.3467898) * (sex=="Male"-0.7661) +
(-15.87776) * (race=="Asian"-0.0449) +
(-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
(-14.86976) * (nyha=="Class IV"-0.0273) +
(1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Asian' & mbeat3=='Ventricular pacing' & nyha=='Class IV' &
manufacturer=='Biotronic')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (0.5327577) * (race=="Asian"-0.0449) +
    (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-0.1619379) * (nyha=="Class IV"-0.0273) +
    (0.2283616) * (manufacturer=="Biotronic"-0.018) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
}

```

```

(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-15.87776) * (race=="Asian"-0.0449) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.2233912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class I' &
  manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (0.4276305) * (htn=="Yes"-0.6935) +

```

```

(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
}
)

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    )
  )
}
)
```

```

        (-0.021884) * (egfr-70.35064)
    )
})
}

if (race=='Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class I' &
manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +

```

```

(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class I' & manufacturer=='St.
Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(

```

```

(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-1.320991) * (race=="Hispanic White"-0.0747) +
(1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class I' &
manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +

```

```

(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class II' &
  manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +

```

```

(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

```

```

}

if (race=='Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class II' &
manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
  )
})

```

```

(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class II' &
manufacturer=='St. Jude/Abbott')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(-0.7704543) * (race=="Hispanic White"-0.0747) +
(0.0438932) * (nyha=="Class II"-0.3964) +
(0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +

```

```

(-1.320991) * (race=="Hispanic White"-0.0747) +
(0.8890844) * (nyha=="Class II"-0.3964) +
(1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class II' &
manufacturer=='Biotronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(-0.7704543) * (race=="Hispanic White"-0.0747) +
(0.0438932) * (nyha=="Class II"-0.3964) +
(0.2283616) * (manufacturer=="Biotronic"-0.018) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +

```

```

(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class III' &
  manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +

```

```

(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
)

```

```

})
}

if (race=='Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class III' &
manufacturer=='Guidant/Boston Scientific')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (-0.7704543) * (race=="Hispanic White"-0.0747) +
    (-0.0445497) * (nyha=="Class III"-0.4316) +
    (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    (-0.0127859) * (exact_lvef-28.24665) +
    (0.0048715) * (QRSduration_ms-117.0333) +
    (-0.000486) * (aSGaz-42.42782) +
    (-0.0086773) * (egfr-70.35064)
  )
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
  )
})

```

```

(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class III' &
manufacturer=='St. Jude/Abbott')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (-0.7704543) * (race=="Hispanic White"-0.0747) +
    (-0.0445497) * (nyha=="Class III"-0.4316) +
    (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    (-0.0127859) * (exact_lvef-28.24665) +
    (0.0048715) * (QRSduration_ms-117.0333) +
    (-0.000486) * (aSVGaz-42.42782) +
    (-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +

```

```

(0.3467898) * (sex=="Male"-0.7661) +
(-1.320991) * (race=="Hispanic White"-0.0747) +
(0.788116) * (nyha=="Class III"-0.4316) +
(1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class III' &
manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +

```

```

(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class IV' &
  manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +

```

```

(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

```

```

        )
    })
}

if (race=='Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class IV' &
manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
  )
})

```

```

(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class IV' &
manufacturer=='St. Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(

```

```

(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-1.320991) * (race=="Hispanic White"-0.0747) +
(-14.86976) * (nyha=="Class IV"-0.0273) +
(1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
}
}

if (race=='Hispanic White' & mbeat3=='Normal sinus' & nyha=='Class IV' &
manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +

```

```

(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})
}

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-1.320991) * (race=="Hispanic White"-0.0747) +
(-14.86976) * (nyha=="Class IV"-0.0273) +
(-16.48323) * (manufacturer=="Biotronic"-0.018) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class I' &
manufacturer=='Medtronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(-0.7704543) * (race=="Hispanic White"-0.0747) +
(-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +

```

```

(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
}
)

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.0086773) * (egfr-70.35064)
  )
}
)
```

```

        (-0.021884) * (egfr-70.35064)
    )
}
}

if (race=='Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class I' &
manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +

```

```

(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class I' &
manufacturer=='St. Jude/Abbott')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(-0.7704543) * (race=="Hispanic White"-0.0747) +
(-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})
}
```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511)*(agey-63.13125) +
    (0.3467898)*(sex=="Male"-0.7661) +
    (-1.320991)*(race=="Hispanic White"-0.0747) +
    (1.926322)*(mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (1.019888)*(manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812)*(htn=="Yes"-0.6935) +
    (-0.537758)*(diabetes=="Yes"-0.3621) +
    (-0.1233915)*(cva=="Yes"-0.1105) +
    (-0.8228998)*(af=="Yes"-0.339) +
    (-1.151641)*(bb_usage=="Yes"-0.8512) +
    (-16.47702)*(aa_usage=="Yes"-0.1440) +
    (1.087283)*(ACEI=="Yes"-0.5227) +
    (1.262122)*(ARB=="Yes"-0.2039) +
    (-0.0188273)*(icd_type=="CRT-D"-0.3627) +
    (0.002684)*(vt_zone_bpm-177.8278) +
    (-0.0085447)*(vf_zone_bpm-224.5021) +
    (0.0383147)*(HRbpm-71.55304) +
    (-0.6453979)*(progr=="Delayed Therapy"-0.3270) +
    (0.4405619)*(PVCany=="Yes"-0.1897) +
    (-0.0018592)*(QTch-448.5279) +
    (2.020529)*(revascularization=="Yes"-0.4308) +
    (-0.7344092)*(mi=="Yes"-0.4913) +
    (-1.223912)*(ccbs=="Yes"-0.0798) +
    (0.4746157)*(aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977)*(bun-24.68193) +
    (-0.1398414)*(atp=="ON"-0.8579) +
    (0.0109526)*(areaQRSTAngle_deg-141.8829) +
    (-0.0069049)*(areaSVGElevation_deg-87.59344) +
    (-0.0184298)*(areaSVG_mVms-41.09404) +
    (0.0041371)*(SAIQRST-194.9203) +
    (0.0535254)*(exact_lvef-28.24665) +
    (0.0072088)*(QRSduration_ms-117.0333) +
    (-0.0025816)*(aSVGaz-42.42782) +
    (-0.021884)*(egfr-70.35064)
  )
})
}

if (race=='Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class I' &
manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907)*(agey-63.13125) +
      (0.325852)*(sex=="Male"-0.7661) +
      (-0.7704543)*(race=="Hispanic White"-0.0747) +
      (-0.2482811)*(mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (0.2283616)*(manufacturer=="Biotronic"-0.018) +
      (0.4276305)*(htn=="Yes"-0.6935) +
      (-0.1804765)*(diabetes=="Yes"-0.3621) +
      (0.1593888)*(cva=="Yes"-0.1105) +
      (0.4687373)*(af=="Yes"-0.339) +
      (0.5464825)*(bb_usage=="Yes"-0.8512) +
      (0.0620628)*(aa_usage=="Yes"-0.1440) +
      (-0.2058735)*(ACEI=="Yes"-0.5227) +
      (-0.641419)*(ARB=="Yes"-0.2039) +
      (-0.5173946)*(icd_type=="CRT-D"-0.3627) +
      (-0.0185014)*(vt_zone_bpm-177.8278) +
      (-0.0000623)*(vf_zone_bpm-224.5021) +
      (-0.0057464)*(HRbpm-71.55304) +
      (-1.246902)*(progr=="Delayed Therapy"-0.3270) +
      (0.6952856)*(PVCany=="Yes"-0.1897) +
      (-0.0021566)*(QTch-448.5279) +

```

```

(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSvGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSvGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class II' &
  manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +

```

```

(-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(0.0438932) * (nyha=="Class II"-0.3964) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0086773) * (egfr-70.35064)
  )
}

```

```

(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class II' &
manufacturer=='Guidant/Boston Scientific')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(-0.7704543) * (race=="Hispanic White"-0.0747) +
(-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(0.0438932) * (nyha=="Class II"-0.3964) +
(0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-1.320991) * (race=="Hispanic White"-0.0747) +
(1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(0.8890844) * (nyha=="Class II"-0.3964) +
(-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +

```

```

(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class II' &
manufacturer=='St. Jude/Abbott')
{
predict.risk.MMVT <- expression(
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (-0.7704543) * (race=="Hispanic White"-0.0747) +
    (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.0438932) * (nyha=="Class II"-0.3964) +
    (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    (-0.0127859) * (exact_lvef-28.24665) +
    (-0.021884) * (egfr-70.35064)
  )
)
}

```

```

(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class II' &
  manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
    )
  })
}

```

```

(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

```

```

}

if (race=='Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class III'
& manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
  )
})

```

```

(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class III' & manufacturer=='Guidant/Boston Scientific')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(-0.7704543) * (race=="Hispanic White"-0.0747) +
(-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(-0.0445497) * (nyha=="Class III"-0.4316) +
(0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +

```

```

(0.3467898) * (sex=="Male"-0.7661) +
(-1.320991) * (race=="Hispanic White"-0.0747) +
(1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(0.788116) * (nyha=="Class III"-0.4316) +
(-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class III' & manufacturer=='St. Jude/Abbott')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (-0.7704543) * (race=="Hispanic White"-0.0747) +
    (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (-0.0445497) * (nyha=="Class III"-0.4316) +
    (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
}

```

```

(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.2233912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class III' & manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +

```

```

(-0.0445497) * (nyha=="Class III"-0.4316) +
(0.2283616) * (manufacturer=="Biotronic"-0.018) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
  )
})
```

```

(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

if (race=='Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class IV' &
manufacturer=='Medtronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(-0.7704543) * (race=="Hispanic White"-0.0747) +
(-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(-0.1619379) * (nyha=="Class IV"-0.0273) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-1.320991) * (race=="Hispanic White"-0.0747) +
(1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
(-14.86976) * (nyha=="Class IV"-0.0273) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +

```

```

(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class IV' &
manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +

```

```

        (-0.000486) * (aSVGaz-42.42782) +
        (-0.0086773) * (egfr-70.35064)
    )

}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
}

if (race=='Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class IV' &
  manufacturer=='St. Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +

```

```

(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
}
}
```

```

if (race=='Hispanic White' & mbeat3=='Atrial fibrillation or flutter' & nyha=='Class IV' &
manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (-0.2482811) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (1.926322) * (mbeat3=="Atrial fibrillation or flutter"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
  )
})

```

```

(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class I' &
manufacturer=='Medtronic')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (-0.7704543) * (race=="Hispanic White"-0.0747) +
    (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    (-0.0127859) * (exact_lvef-28.24665) +
    (0.0048715) * (QRSduration_ms-117.0333) +
    (-0.000486) * (aSVGaz-42.42782) +
    (-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +

```

```

(-1.320991) * (race=="Hispanic White"-0.0747) +
(-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}

{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(-0.7704543) * (race=="Hispanic White"-0.0747) +
(-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +

```

```

(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class I' &
  manufacturer=='St. Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +

```

```

(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
  )
})
```

```

        (-0.021884) * (egfr-70.35064)
    )
})
}
if (race=='Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class I' &
manufacturer=='Biotronic')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (-0.7704543) * (race=="Hispanic White"-0.0747) +
    (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.2283616) * (manufacturer=="Biotronic"-0.018) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    (-0.0127859) * (exact_lvef-28.24665) +
    (0.0048715) * (QRSduration_ms-117.0333) +
    (-0.000486) * (aSGaz-42.42782) +
    (-0.0086773) * (egfr-70.35064)
  )
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (-0.0086773) * (egfr-70.35064)
  )
})

```

```

(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class II' &
manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({

```

```

lp <- 1-0.948173^exp(
  (-0.0660511) * (agey-63.13125) +
  (0.3467898) * (sex=="Male"-0.7661) +
  (-1.320991) * (race=="Hispanic White"-0.0747) +
  (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
  (0.8890844) * (nyha=="Class II"-0.3964) +
  (0.2984812) * (htn=="Yes"-0.6935) +
  (-0.537758) * (diabetes=="Yes"-0.3621) +
  (-0.1233915) * (cva=="Yes"-0.1105) +
  (-0.8228998) * (af=="Yes"-0.339) +
  (-1.151641) * (bb_usage=="Yes"-0.8512) +
  (-16.47702) * (aa_usage=="Yes"-0.1440) +
  (1.087283) * (ACEI=="Yes"-0.5227) +
  (1.262122) * (ARB=="Yes"-0.2039) +
  (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
  (0.002684) * (vt_zone_bpm-177.8278) +
  (-0.0085447) * (vf_zone_bpm-224.5021) +
  (0.0383147) * (HRbpm-71.55304) +
  (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
  (0.4405619) * (PVCany=="Yes"-0.1897) +
  (-0.0018592) * (QTch-448.5279) +
  (2.020529) * (revascularization=="Yes"-0.4308) +
  (-0.7344092) * (mi=="Yes"-0.4913) +
  (-1.223912) * (ccbs=="Yes"-0.0798) +
  (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
  (-0.0546977) * (bun-24.68193) +
  (-0.1398414) * (atp=="ON"-0.8579) +
  (0.0109526) * (areaQRSTAngle_deg-141.8829) +
  (-0.0069049) * (areaSVGElevation_deg-87.59344) +
  (-0.0184298) * (areaSVG_mVms-41.09404) +
  (0.0041371) * (SAIQRST-194.9203) +
  (0.0535254) * (exact_lvef-28.24665) +
  (0.0072088) * (QRSduration_ms-117.0333) +
  (-0.0025816) * (aSVGaz-42.42782) +
  (-0.021884) * (egfr-70.35064)
)
}
}

if (race=='Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class II' &
manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (0.0438932) * (nyha=="Class II"-0.3964) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +

```

```

(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSvGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.8890844) * (nyha=="Class II"-0.3964) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSvGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class II' &
  manufacturer=='St. Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +

```

```

(-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.0438932) * (nyha=="Class II"-0.3964) +
(0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-1.320991) * (race=="Hispanic White"-0.0747) +
(-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.8890844) * (nyha=="Class II"-0.3964) +
(1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +

```

```

(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class II' &
manufacturer=='Biotronic')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(-0.7704543) * (race=="Hispanic White"-0.0747) +
(-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.0438932) * (nyha=="Class II"-0.3964) +
(0.2283616) * (manufacturer=="Biotronic"-0.018) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-1.320991) * (race=="Hispanic White"-0.0747) +
(-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
(0.8890844) * (nyha=="Class II"-0.3964) +
(-16.48323) * (manufacturer=="Biotronic"-0.018) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +

```

```

(-0.1233915) * (cva=="Yes"-0.1105) +
(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class III' &
manufacturer=='Medtronic')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (-0.7704543) * (race=="Hispanic White"-0.0747) +
    (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-0.0445497) * (nyha=="Class III"-0.4316) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    )
  )
}

```

```

        (-0.0127859) * (exact_lvef-28.24665) +
        (0.0048715) * (QRSduration_ms-117.0333) +
        (-0.000486) * (aSvGaz-42.42782) +
        (-0.0086773) * (egfr-70.35064)
    )
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSvGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
}

if (race=='Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class III' &
  manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +

```

```

(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

```

```

}

if (race=='Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class III' &
manufacturer=='St. Jude/Abbott')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (0.788116) * (nyha=="Class III"-0.4316) +
    (1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
  )
})

```

```

(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class III' &
manufacturer=='Biotronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (-0.0445497) * (nyha=="Class III"-0.4316) +
      (0.2283616) * (manufacturer=="Biotronic"-0.018) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
      (-0.0209583) * (mi=="Yes"-0.4913) +
      (-1.28567) * (ccbs=="Yes"-0.0798) +
      (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
      (-0.0175218) * (bun-24.68193) +
      (0.0417666) * (atp=="ON"-0.8579) +
      (0.0001828) * (areaQRSTAngle_deg-141.8829) +
      (0.0035389) * (areaSVGElevation_deg-87.59344) +
      (-0.019313) * (areaSVG_mVms-41.09404) +
      (-0.0004595) * (SAIQRST-194.9203) +
      (-0.0127859) * (exact_lvef-28.24665) +
      (0.0048715) * (QRSduration_ms-117.0333) +
      (-0.000486) * (aSVGaz-42.42782) +
      (-0.0086773) * (egfr-70.35064)
    )
  })
}

predict.risk.PVT <- expression({

```

```

lp <- 1-0.948173^exp(
  (-0.0660511) * (agey-63.13125) +
  (0.3467898) * (sex=="Male"-0.7661) +
  (-1.320991) * (race=="Hispanic White"-0.0747) +
  (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
  (0.788116) * (nyha=="Class III"-0.4316) +
  (-16.48323) * (manufacturer=="Biotronic"-0.018) +
  (0.2984812) * (htn=="Yes"-0.6935) +
  (-0.537758) * (diabetes=="Yes"-0.3621) +
  (-0.1233915) * (cva=="Yes"-0.1105) +
  (-0.8228998) * (af=="Yes"-0.339) +
  (-1.151641) * (bb_usage=="Yes"-0.8512) +
  (-16.47702) * (aa_usage=="Yes"-0.1440) +
  (1.087283) * (ACEI=="Yes"-0.5227) +
  (1.262122) * (ARB=="Yes"-0.2039) +
  (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
  (0.002684) * (vt_zone_bpm-177.8278) +
  (-0.0085447) * (vf_zone_bpm-224.5021) +
  (0.0383147) * (HRbpm-71.55304) +
  (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
  (0.4405619) * (PVCany=="Yes"-0.1897) +
  (-0.0018592) * (QTch-448.5279) +
  (2.020529) * (revascularization=="Yes"-0.4308) +
  (-0.7344092) * (mi=="Yes"-0.4913) +
  (-1.2233912) * (ccbs=="Yes"-0.0798) +
  (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
  (-0.0546977) * (bun-24.68193) +
  (-0.1398414) * (atp=="ON"-0.8579) +
  (0.0109526) * (areaQRSTAngle_deg-141.8829) +
  (-0.0069049) * (areaSVGElevation_deg-87.59344) +
  (-0.0184298) * (areaSVG_mVms-41.09404) +
  (0.0041371) * (SAIQRST-194.9203) +
  (0.0535254) * (exact_lvef-28.24665) +
  (0.0072088) * (QRSduration_ms-117.0333) +
  (-0.0025816) * (aSVGaz-42.42782) +
  (-0.021884) * (egfr-70.35064)
)
}
}
if (race=='Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class IV' &
manufacturer=='Medtronic')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
      (-0.1619379) * (nyha=="Class IV"-0.0273) +
      (0.4276305) * (htn=="Yes"-0.6935) +
      (-0.1804765) * (diabetes=="Yes"-0.3621) +
      (0.1593888) * (cva=="Yes"-0.1105) +
      (0.4687373) * (af=="Yes"-0.339) +
      (0.5464825) * (bb_usage=="Yes"-0.8512) +
      (0.0620628) * (aa_usage=="Yes"-0.1440) +
      (-0.2058735) * (ACEI=="Yes"-0.5227) +
      (-0.641419) * (ARB=="Yes"-0.2039) +
      (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
      (-0.0185014) * (vt_zone_bpm-177.8278) +
      (-0.0000623) * (vf_zone_bpm-224.5021) +
      (-0.0057464) * (HRbpm-71.55304) +
      (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
      (0.6952856) * (PVCany=="Yes"-0.1897) +
      (-0.0021566) * (QTch-448.5279) +
      (-0.2024031) * (revascularization=="Yes"-0.4308) +
    )
  )
}

```

```

(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSvGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSvGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
})

if (race=='Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class IV' &
  manufacturer=='Guidant/Boston Scientific')
{
  predict.risk.MMVT <- expression({
    lp <- 1-0.8292047^exp(
      (-0.0219907) * (agey-63.13125) +
      (0.325852) * (sex=="Male"-0.7661) +
      (-0.7704543) * (race=="Hispanic White"-0.0747) +
      (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +

```

```

(-0.1619379) * (nyha=="Class IV"-0.0273) +
(0.5884312) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

```

```

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (-1.648756) * (manufacturer=="Guidant/Boston Scientific"-0.2430) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
  )
})
```

```

(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class IV' &
manufacturer=='St. Jude/Abbott')
{
predict.risk.MMVT <- expression({
lp <- 1-0.8292047^exp(
(-0.0219907) * (agey-63.13125) +
(0.325852) * (sex=="Male"-0.7661) +
(-0.7704543) * (race=="Hispanic White"-0.0747) +
(-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
(-0.1619379) * (nyha=="Class IV"-0.0273) +
(0.0390527) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.4276305) * (htn=="Yes"-0.6935) +
(-0.1804765) * (diabetes=="Yes"-0.3621) +
(0.1593888) * (cva=="Yes"-0.1105) +
(0.4687373) * (af=="Yes"-0.339) +
(0.5464825) * (bb_usage=="Yes"-0.8512) +
(0.0620628) * (aa_usage=="Yes"-0.1440) +
(-0.2058735) * (ACEI=="Yes"-0.5227) +
(-0.641419) * (ARB=="Yes"-0.2039) +
(-0.5173946) * (icd_type=="CRT-D"-0.3627) +
(-0.0185014) * (vt_zone_bpm-177.8278) +
(-0.0000623) * (vf_zone_bpm-224.5021) +
(-0.0057464) * (HRbpm-71.55304) +
(-1.246902) * (progr=="Delayed Therapy"-0.3270) +
(0.6952856) * (PVCany=="Yes"-0.1897) +
(-0.0021566) * (QTch-448.5279) +
(-0.2024031) * (revascularization=="Yes"-0.4308) +
(-0.0209583) * (mi=="Yes"-0.4913) +
(-1.28567) * (ccbs=="Yes"-0.0798) +
(-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0175218) * (bun-24.68193) +
(0.0417666) * (atp=="ON"-0.8579) +
(0.0001828) * (areaQRSTAngle_deg-141.8829) +
(0.0035389) * (areaSVGElevation_deg-87.59344) +
(-0.019313) * (areaSVG_mVms-41.09404) +
(-0.0004595) * (SAIQRST-194.9203) +
(-0.0127859) * (exact_lvef-28.24665) +
(0.0048715) * (QRSduration_ms-117.0333) +
(-0.000486) * (aSVGaz-42.42782) +
(-0.0086773) * (egfr-70.35064)
)
})

predict.risk.PVT <- expression({
lp <- 1-0.948173^exp(
(-0.0660511) * (agey-63.13125) +
(0.3467898) * (sex=="Male"-0.7661) +
(-1.320991) * (race=="Hispanic White"-0.0747) +
(-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
(-14.86976) * (nyha=="Class IV"-0.0273) +
(1.019888) * (manufacturer=="St. Jude/Abbott"-0.1337) +
(0.2984812) * (htn=="Yes"-0.6935) +
(-0.537758) * (diabetes=="Yes"-0.3621) +
(-0.1233915) * (cva=="Yes"-0.1105) +

```

```

(-0.8228998) * (af=="Yes"-0.339) +
(-1.151641) * (bb_usage=="Yes"-0.8512) +
(-16.47702) * (aa_usage=="Yes"-0.1440) +
(1.087283) * (ACEI=="Yes"-0.5227) +
(1.262122) * (ARB=="Yes"-0.2039) +
(-0.0188273) * (icd_type=="CRT-D"-0.3627) +
(0.002684) * (vt_zone_bpm-177.8278) +
(-0.0085447) * (vf_zone_bpm-224.5021) +
(0.0383147) * (HRbpm-71.55304) +
(-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
(0.4405619) * (PVCany=="Yes"-0.1897) +
(-0.0018592) * (QTch-448.5279) +
(2.020529) * (revascularization=="Yes"-0.4308) +
(-0.7344092) * (mi=="Yes"-0.4913) +
(-1.223912) * (ccbs=="Yes"-0.0798) +
(0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
(-0.0546977) * (bun-24.68193) +
(-0.1398414) * (atp=="ON"-0.8579) +
(0.0109526) * (areaQRSTAngle_deg-141.8829) +
(-0.0069049) * (areaSVGElevation_deg-87.59344) +
(-0.0184298) * (areaSVG_mVms-41.09404) +
(0.0041371) * (SAIQRST-194.9203) +
(0.0535254) * (exact_lvef-28.24665) +
(0.0072088) * (QRSduration_ms-117.0333) +
(-0.0025816) * (aSVGaz-42.42782) +
(-0.021884) * (egfr-70.35064)
)
})
}
if (race=='Hispanic White' & mbeat3=='Ventricular pacing' & nyha=='Class IV' &
manufacturer=='Biotronic')
{
predict.risk.MMVT <- expression({
  lp <- 1-0.8292047^exp(
    (-0.0219907) * (agey-63.13125) +
    (0.325852) * (sex=="Male"-0.7661) +
    (-0.7704543) * (race=="Hispanic White"-0.0747) +
    (-0.1087567) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-0.1619379) * (nyha=="Class IV"-0.0273) +
    (0.2283616) * (manufacturer=="Biotronic"-0.018) +
    (0.4276305) * (htn=="Yes"-0.6935) +
    (-0.1804765) * (diabetes=="Yes"-0.3621) +
    (0.1593888) * (cva=="Yes"-0.1105) +
    (0.4687373) * (af=="Yes"-0.339) +
    (0.5464825) * (bb_usage=="Yes"-0.8512) +
    (0.0620628) * (aa_usage=="Yes"-0.1440) +
    (-0.2058735) * (ACEI=="Yes"-0.5227) +
    (-0.641419) * (ARB=="Yes"-0.2039) +
    (-0.5173946) * (icd_type=="CRT-D"-0.3627) +
    (-0.0185014) * (vt_zone_bpm-177.8278) +
    (-0.0000623) * (vf_zone_bpm-224.5021) +
    (-0.0057464) * (HRbpm-71.55304) +
    (-1.246902) * (progr=="Delayed Therapy"-0.3270) +
    (0.6952856) * (PVCany=="Yes"-0.1897) +
    (-0.0021566) * (QTch-448.5279) +
    (-0.2024031) * (revascularization=="Yes"-0.4308) +
    (-0.0209583) * (mi=="Yes"-0.4913) +
    (-1.28567) * (ccbs=="Yes"-0.0798) +
    (-0.5852881) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0175218) * (bun-24.68193) +
    (0.0417666) * (atp=="ON"-0.8579) +
    (0.0001828) * (areaQRSTAngle_deg-141.8829) +
    (0.0035389) * (areaSVGElevation_deg-87.59344) +
    (-0.019313) * (areaSVG_mVms-41.09404) +
    (-0.0004595) * (SAIQRST-194.9203) +
    )
  )
})
```

```

        (-0.0127859) * (exact_lvef-28.24665) +
        (0.0048715) * (QRSduration_ms-117.0333) +
        (-0.000486) * (aSVGaz-42.42782) +
        (-0.0086773) * (egfr-70.35064)
    )
}

predict.risk.PVT <- expression({
  lp <- 1-0.948173^exp(
    (-0.0660511) * (agey-63.13125) +
    (0.3467898) * (sex=="Male"-0.7661) +
    (-1.320991) * (race=="Hispanic White"-0.0747) +
    (-0.1683076) * (mbeat3=="Ventricular pacing"-0.1288) +
    (-14.86976) * (nyha=="Class IV"-0.0273) +
    (-16.48323) * (manufacturer=="Biotronic"-0.018) +
    (0.2984812) * (htn=="Yes"-0.6935) +
    (-0.537758) * (diabetes=="Yes"-0.3621) +
    (-0.1233915) * (cva=="Yes"-0.1105) +
    (-0.8228998) * (af=="Yes"-0.339) +
    (-1.151641) * (bb_usage=="Yes"-0.8512) +
    (-16.47702) * (aa_usage=="Yes"-0.1440) +
    (1.087283) * (ACEI=="Yes"-0.5227) +
    (1.262122) * (ARB=="Yes"-0.2039) +
    (-0.0188273) * (icd_type=="CRT-D"-0.3627) +
    (0.002684) * (vt_zone_bpm-177.8278) +
    (-0.0085447) * (vf_zone_bpm-224.5021) +
    (0.0383147) * (HRbpm-71.55304) +
    (-0.6453979) * (progr=="Delayed Therapy"-0.3270) +
    (0.4405619) * (PVCany=="Yes"-0.1897) +
    (-0.0018592) * (QTch-448.5279) +
    (2.020529) * (revascularization=="Yes"-0.4308) +
    (-0.7344092) * (mi=="Yes"-0.4913) +
    (-1.223912) * (ccbs=="Yes"-0.0798) +
    (0.4746157) * (aldosteroneAnt=="Yes"-0.2991) +
    (-0.0546977) * (bun-24.68193) +
    (-0.1398414) * (atp=="ON"-0.8579) +
    (0.0109526) * (areaQRSTAngle_deg-141.8829) +
    (-0.0069049) * (areaSVGElevation_deg-87.59344) +
    (-0.0184298) * (areaSVG_mVms-41.09404) +
    (0.0041371) * (SAIQRST-194.9203) +
    (0.0535254) * (exact_lvef-28.24665) +
    (0.0072088) * (QRSduration_ms-117.0333) +
    (-0.0025816) * (aSVGaz-42.42782) +
    (-0.021884) * (egfr-70.35064)
  )
}
}

library(shiny)
#following code connects the ui to the server
shinyServer(function(input, output){
  data <- eventReactive(input$goButton, {
    #event reactive is used for reactive expressions
    #displays error message when age is not within the placeholder mentioned in the ui
    #side
    #age should be a numeric value else shows it is invalid
    validate(need(!is.na(as.numeric(input$agey)) & as.numeric(input$agey)>=18 &
      as.numeric(input$agey)<=100, 'Please input a valid Age.'))
    agey= as.numeric(input$agey)

    sex = factor(input$sex, levels = c('Female', 'Male'))
    race = factor(input$race, levels = c('Non-Hispanic White','Hispanic White',
      'Black','Asian'))
    htn = factor(input$htn, levels = c('No', 'Yes'))
  })
})

```

```

diabetes = factor(input$diabetes, levels = c('No', 'Yes'))
cva=factor(input$cva, levels = c('No', 'Yes'))
af= factor(input$af, levels = c('No', 'Yes'))
mi = factor(input$mi, levels = c('No', 'Yes'))
revascularization = factor(input$revascularization, levels = c('No', 'Yes'))
nyha = factor(input$nyha, levels = c('Class I','Class II', 'Class III','Class IV'))

validate(need(!is.na(as.numeric(input$exact_lvef)) & as.numeric(input$exact_lvef)>=7 &
as.numeric(input$exact_lvef)<=77, 'Please input a valid Left Ventricular Ejection Fraction (%) .'))
exact_lvef= as.numeric(input$exact_lvef)

validate(need(!is.na(as.numeric(input$bun)) & as.numeric(input$bun)>=2 &
as.numeric(input$bun)<=143, 'Please input a valid BUN (mg/dL).'))
bun= as.numeric(input$bun)

validate(need(!is.na(as.numeric(input$egfr)) & as.numeric(input$egfr)>=0.5 &
as.numeric(input$egfr)<=291, 'Please input a valid eGFR CKD-EPI (mL/min/1.73 m^2.)'))
egfr= as.numeric(input$egfr)

bb_usage = factor(input$bb_usage, levels = c('No', 'Yes'))
aa_usage = factor(input$aa_usage, levels = c('No', 'Yes'))
ACEI = factor(input$ACEI, levels = c('No', 'Yes'))
ARB = factor(input$ARB, levels = c('No', 'Yes'))
ccbs = factor(input$ccbs, levels = c('No', 'Yes'))
aldosteroneAnt=factor(input$aldosteroneAnt, levels = c('No', 'Yes'))
manufacturer=factor(input$manufacturer, levels = c('Medtronic', 'Guidant/Boston Scientific','St. Jude/Abbott',"Biotronic"))
icd_type=factor(input$icd_type, levels = c('ICD/S-ICD', 'CRT-D'))
atp = factor(input$atp, levels = c('OFF', 'ON'))
progr = factor(input$progr, levels = c('Historic Convention', 'Delayed Therapy'))

validate(need(!is.na(as.numeric(input$vt_zone_bpm)) &
as.numeric(input$vt_zone_bpm)>=105 & as.numeric(input$vt_zone_bpm)<=320, 'Please input a valid VT zone cut-off (bpm).'))
vt_zone_bpm= as.numeric(input$vt_zone_bpm)

validate(need(!is.na(as.numeric(input$vf_zone_bpm)) &
as.numeric(input$vf_zone_bpm)>=150 & as.numeric(input$vf_zone_bpm)<=300, 'Please input a valid VF zone cut-off (bpm).'))
vf_zone_bpm= as.numeric(input$vf_zone_bpm)

mbeat3=factor(input$mbeat3, levels = c('Normal sinus','Atrial fibrillation or flutter','Ventricular pacing'))

validate(need(!is.na(as.numeric(input$HRbpm)) & as.numeric(input$HRbpm)>=38 &
as.numeric(input$HRbpm)<=148, 'Please input a valid Heart rate (bpm).'))
HRbpm= as.numeric(input$HRbpm)

PVCany = factor(input$PVCany, levels = c('No', 'Yes'))

validate(need(!is.na(as.numeric(input$QTch)) & as.numeric(input$QTch)>=260 &
as.numeric(input$QTch)<=600, 'Please input a valid Hodges-corrected QT interval (ms).'))
QTch= as.numeric(input$QTch)

validate(need(!is.na(as.numeric(input$QRSduration_ms)) &
as.numeric(input$QRSduration_ms)>=50 & as.numeric(input$QRSduration_ms)<=330, 'Please input a valid QRS duration (ms).'))
QRSduration_ms= as.numeric(input$QRSduration_ms)

validate(need(!is.na(as.numeric(input$areaQRSTAngle_deg)) &
as.numeric(input$areaQRSTAngle_deg)>=2 & as.numeric(input$areaQRSTAngle_deg)<=179, 'Please input a valid Spatial QRS-T angle (degrees).'))
areaQRSTAngle_deg= as.numeric(input$areaQRSTAngle_deg)

```

```

validate(need(!is.na(as.numeric(input$areaSVGElevation_deg)) &
as.numeric(input$areaSVGElevation_deg)>=3 & as.numeric(input$areaSVGElevation_deg)<=177,
'Please input a valid Spatial Ventricular Gradient Elevation (degrees).')
areaSVGElevation_deg=as.numeric(input$areaSVGElevation_deg)

validate(need(!is.na(as.numeric(input$aSVGaz)) & as.numeric(input$aSVGaz)>=(-179) &
as.numeric(input$aSVGaz)<=(+179), 'Please input a valid Spatial Ventricular Gradient
Azimuth (degrees).')
aSVGaz=as.numeric(input$aSVGaz)

validate(need(!is.na(as.numeric(input$areaSVG_mVms)) &
as.numeric(input$areaSVG_mVms)>=1 & as.numeric(input$areaSVG_mVms)<=312, 'Please input a
valid Spatial Ventricular Gradient magnitude (mVms).')
areaSVG_mVms=as.numeric(input$areaSVG_mVms)

validate(need(!is.na(as.numeric(input$SAIQRST)) & as.numeric(input$SAIQRST)>=34 &
as.numeric(input$SAIQRST)<=824, 'Please input a valid Sum Absolute QRST integral
(mVms).')
SAIQRST=as.numeric(input$SAIQRST)

#creating a data frame in which we store various inputs
data <- data.frame(agey = agey,
sex = sex,
race = race,
htn = htn,
diabetes = diabetes,
cva=cva,
af= af,
mi = mi,
revascularization =revascularization,
nyha = nyha,
exact_lvef= exact_lvef,
bun = bun,
egfr= egfr,
bb_usage = bb_usage,
aa_usage = aa_usage,
ACEI = ACEI,
ARB = ARB,
ccbs = ccbs,
aldosteroneAnt=aldosteroneAnt,
manufacturer=manufacturer,
icd_type=icd_type,
atp = atp,
progr = progr,
vt_zone_bpm= vt_zone_bpm,
vf_zone_bpm= vf_zone_bpm,
mbeat3=mbeat3,
HRbpm=HRbpm,
PVCany =PVCany,
QTch= QTch,
QRSduration_ms=QRSduration_ms,
areaQRSTAngle_deg= areaQRSTAngle_deg,
areaSVGElevation_deg= areaSVGElevation_deg,
aSVGaz=aSVGaz,
areaSVG_mVms=areaSVG_mVms,
SAIQRST=SAIQRST)

data})

```

```

#DT:::renderDataTable makes a reactive version of the function that returns the data
frame to be rendered
output$result <- DT:::renderDataTable({
  data_df = data()
})
```

```

#we multiply the predicted value by 100 to get a percentage value
pred1 = eval(predict.risk.MMVT, envir = data_df)
pred1 = paste(round(pred1 * 100, 1), "%", sep='')

pred2 = eval(predict.risk.PVT, envir = data_df)
pred2 = paste(round(pred2 * 100, 1), "%", sep='')

#the final result is concatenated within one data frame which is then displayed when
the function is called in the ui side
res = data.frame(Result = c("Probability of MMVT","Probability of PVT/VT"),
                  Probability = c(pred1,pred2))

res}, options = list(
  pageLength = 10,
  lengthMenu = 0,

  searching = 0,
  info = 0,
  paging = 0,
  processing = 0,
  initComplete = I(
    "function(settings, json) {
      $(this.api().table().header()).css({'background-color': '#606060',
      'color': '#fff'});
    }"))
)

```