1. 腹部手术的筛选：

根据 ICD-9、ICD-10 编码筛选出腹部手术患者：肾上腺、胃肠、肝胆胰脾、泌尿、妇产（**排除浅表、未涉及腹腔内部者及相关检查者--这一部分为手动筛选剔除**）共 84030 条记录，去除同一次操作涉及多个编码记录者，余 56747 例。

肾上腺：

SELECT * FROM "mimic_hosp"."procedures-icd" WHERE "icd-code" in (SELECT icd-code FROM d-icd-procedures WHERE icd-code like ‘OG%’ OR icd-code like ‘07%’and long-title like ‘Adrenal%’ OR long-title like ‘adrenal%’)

胃肠:

SELECT * FROM "mimic_hosp"."procedures-icd" WHERE "icd-code" in (SELECT icd-code FROM d-icd-procedures WHERE icd-code like ‘43%’ OR icd-code like ‘44%’ OR icd-code like ‘45%’ OR icd-code like ‘46%’ OR icd-code like ‘47%’ OR icd-code like ‘48%’ OR icd-code like ‘53%’ OR icd-code like ‘54%’ AND icd-code like ‘OD%’)

肝胆胰脾：

SELECT * FROM "mimic_hosp"."procedures-icd" WHERE "icd-code" in (SELECT icd-code FROM d-icd-procedures WHERE icd-code like ‘50%’ OR icd-code like ‘51%’ OR icd-code like ‘52%’ AND icd-code like ‘OF%’)

泌尿：

SELECT * FROM "mimic_hosp"."procedures-icd" WHERE "icd-code" in (SELECT icd-code FROM d-icd-procedures WHERE icd-code like ‘55%’ OR icd-code like ‘56%’ OR icd-code like ‘57%’ AND icd-code like ‘OT%’)

妇产：

SELECT * FROM "mimic_hosp"."procedures-icd" WHERE "icd-code" in (SELECT icd-code FROM d-icd-procedures WHERE icd-code like ‘65%’ OR icd-code like ‘66%’ OR icd-code like ‘67%’ OR icd-code like ‘68%’ OR icd-code like ‘69%’ OR icd-code like ‘74%’ AND icd-code like ‘OU%’)

2. 脓毒症患者的筛选

根据 ICD-9、ICD-10 编码筛选出患脓毒症患者

SELECT * FROM "mimic_hosp"."diagnoses_icd" WHERE icd_code IN (SELECT icd-code FROM "mimic_hosp"."d_icd_diagnoses" WHERE "long_title" LIKE '%sepsis%' OR "long_title" LIKE '%Sepsis%' OR "long_title" LIKE '%septic shock%' OR "long_title" LIKE '%sever sepsis%' OR "long_title" LIKE '%Sever sepsis%' AND "long_title" LIKE '%Septic shock%')

3. 腹部手术术后脓毒症患者的筛选

导入并查询上述两表的重复 ID，为可疑术后脓毒症，进入下一步筛选：剔除术前（定为术前 30 天）SOFA 评分≥2 且可疑感染者，即剔除术前脓毒症。

1）获取 SOFA 评分

```
-- Variables used in SOFA:
--  GCS, MAP, FiO2, Ventilation status (sourced FROM mimic_icu.chartevents)
--  Creatinine, Bilirubin, FiO2, PaO2, Platelets (sourced FROM mimic_icu.labevents)
--  Dopamine, Dobutamine, Epinephrine, Norepinephrine (sourced FROM mimic_icu.inputevents_mv and INPUTEVENTS_CV)
--  Urine output (sourced from OUTPUTEVENTS)

create materialized view sofa as
WITH co AS
(
  select ih.stay_id, ie.hadm_id
  , hr
  -- start/endtime can be used to filter to values within this hour
  , DATETIME_SUB(ih.endtime, INTERVAL '1' HOUR) AS starttime
  , ih.endtime
  from icustay_hourly ih
  INNER JOIN mimic_icu.icustays ie
    ON ih.stay_id = ie.stay_id
```

```
)
, pafi as
(
  -- join blood gas to ventilation durations to determine if patient was vent
  select ie.stay_id
  , bg.charttime
  -- because pafi has an interaction between vent/PaO2:FiO2, we need two columns for the score
  -- it can happen that the lowest unventilated PaO2/FiO2 is 68, but the lowest ventilated PaO2/FiO2 is 120
  -- in this case, the SOFA score is 3, *not* 4.
  , case when vd.stay_id is null then pao2fio2ratio else null end pao2fio2ratio_novent
  , case when vd.stay_id is not null then pao2fio2ratio else null end pao2fio2ratio_vent
  FROM mimic_icu.icustays ie
  inner join bg bg
    on ie.subject_id = bg.subject_id
  left join ventilation vd
    on ie.stay_id = vd.stay_id
    and bg.charttime >= vd.starttime
    and bg.charttime <= vd.endtime
    and vd.ventilation_status = 'InvasiveVent'
  WHERE specimen_pred = 'ART.'
)
, vs AS
(

  select co.stay_id, co.hr
  -- vitals
  , min(vs.mbp) as meanbp_min
  from co
  left join vitalsign vs
    on co.stay_id = vs.stay_id
    and co.starttime < vs.charttime
    and co.endtime >= vs.charttime
  group by co.stay_id, co.hr
)
, gcs AS
(
  select co.stay_id, co.hr
  -- gcs
  , min(gcs.gcs) as gcs_min
  from co
  left join gcs gcs
    on co.stay_id = gcs.stay_id
    and co.starttime < gcs.charttime
    and co.endtime >= gcs.charttime
  group by co.stay_id, co.hr
)
, bili AS
(
  select co.stay_id, co.hr
  , max(enz.bilirubin_total) as bilirubin_max
  from co
  left join enzyme enz
    on co.hadm_id = enz.hadm_id
    and co.starttime < enz.charttime
    and co.endtime >= enz.charttime
  group by co.stay_id, co.hr
```

```
)
, cr AS
(
    select co.stay_id, co.hr
    , max(chem.creatinine) as creatinine_max
    from co
    left join chemistry chem
        on co.hadm_id = chem.hadm_id
        and co.starttime < chem.charttime
        and co.endtime >= chem.charttime
    group by co.stay_id, co.hr
)
, plt AS
(
    select co.stay_id, co.hr
    , min(cbc.platelet) as platelet_min
    from co
    left join complete_blood_count cbc
        on co.hadm_id = cbc.hadm_id
        and co.starttime < cbc.charttime
        and co.endtime >= cbc.charttime
    group by co.stay_id, co.hr
)
, pf AS
(
    select co.stay_id, co.hr
    , min(pafi.pao2fio2ratio_novent) AS pao2fio2ratio_novent
    , min(pafi.pao2fio2ratio_vent) AS pao2fio2ratio_vent
    from co
    -- bring in blood gases that occurred during this hour
    left join pafi
        on co.stay_id = pafi.stay_id
        and co.starttime < pafi.charttime
        and co.endtime    >= pafi.charttime
    group by co.stay_id, co.hr
)
-- sum uo separately to prevent duplicating values
, uo as
(
    select co.stay_id, co.hr
    -- uo
    , MAX(
          CASE WHEN uo.uo_tm_24hr >= 22 AND uo.uo_tm_24hr <= 30
               THEN uo.urineoutput_24hr / uo.uo_tm_24hr * 24
    END) as uo_24hr
    from co
    left join urine_output_rate uo
        on co.stay_id = uo.stay_id
        and co.starttime < uo.charttime
        and co.endtime >= uo.charttime
    group by co.stay_id, co.hr
)
-- collapse vasopressors into 1 row per hour
-- also ensures only 1 row per chart time
, vaso AS
(
      SELECT
            co.stay_id
```

```
        , co.hr
        , MAX(epi.vaso_rate) as rate_epinephrine
        , MAX(nor.vaso_rate) as rate_norepinephrine
        , MAX(dop.vaso_rate) as rate_dopamine
        , MAX(dob.vaso_rate) as rate_dobutamine
    FROM co
    LEFT JOIN epinephrine epi
        on co.stay_id = epi.stay_id
        and co.endtime > epi.starttime
        and co.endtime <= epi.endtime
    LEFT JOIN norepinephrine nor
        on co.stay_id = nor.stay_id
        and co.endtime > nor.starttime
        and co.endtime <= nor.endtime
    LEFT JOIN dopamine dop
        on co.stay_id = dop.stay_id
        and co.endtime > dop.starttime
        and co.endtime <= dop.endtime
    LEFT JOIN dobutamine dob
        on co.stay_id = dob.stay_id
        and co.endtime > dob.starttime
        and co.endtime <= dob.endtime
    WHERE epi.stay_id IS NOT NULL
    OR nor.stay_id IS NOT NULL
    OR dop.stay_id IS NOT NULL
    OR dob.stay_id IS NOT NULL
    GROUP BY co.stay_id, co.hr
)
, scorecomp as
(
  select
      co.stay_id
    , co.hr
    , co.starttime, co.endtime
    , pf.pao2fio2ratio_novent
    , pf.pao2fio2ratio_vent
    , vaso.rate_epinephrine
    , vaso.rate_norepinephrine
    , vaso.rate_dopamine
    , vaso.rate_dobutamine
    , vs.meanbp_min
    , gcs.gcs_min
    -- uo
    , uo.uo_24hr
    -- labs
    , bili.bilirubin_max
    , cr.creatinine_max
    , plt.platelet_min
  from co
  left join vs
    on co.stay_id = vs.stay_id
    and co.hr = vs.hr
  left join gcs
    on co.stay_id = gcs.stay_id
    and co.hr = gcs.hr
  left join bili
    on co.stay_id = bili.stay_id
    and co.hr = bili.hr
```

```
    left join cr
      on co.stay_id = cr.stay_id
      and co.hr = cr.hr
    left join plt
      on co.stay_id = plt.stay_id
      and co.hr = plt.hr
    left join pf
      on co.stay_id = pf.stay_id
      and co.hr = pf.hr
    left join uo
      on co.stay_id = uo.stay_id
      and co.hr = uo.hr
    left join vaso
      on co.stay_id = vaso.stay_id
      and co.hr = vaso.hr
)
, scorecalc as
(
    -- Calculate the final score
    -- note that if the underlying data is missing, the component is null
    -- eventually these are treated as 0 (normal), but knowing when data is missing is useful for
debugging
    select scorecomp.*
    -- Respiration
    , case
          when pao2fio2ratio_vent      < 100 then 4
          when pao2fio2ratio_vent      < 200 then 3
          when pao2fio2ratio_novent < 300 then 2
          when pao2fio2ratio_vent      < 300 then 2
          when pao2fio2ratio_novent < 400 then 1
          when pao2fio2ratio_vent      < 400 then 1
          when coalesce(pao2fio2ratio_vent, pao2fio2ratio_novent) is null then null
          else 0
        end as respiration

    -- Coagulation
    , case
          when platelet_min < 20    then 4
          when platelet_min < 50    then 3
          when platelet_min < 100 then 2
          when platelet_min < 150 then 1
          when platelet_min is null then null
          else 0
        end as coagulation

    -- Liver
    , case
          -- Bilirubin checks in mg/dL
            when bilirubin_max >= 12.0 then 4
            when bilirubin_max >= 6.0    then 3
            when bilirubin_max >= 2.0    then 2
            when bilirubin_max >= 1.2    then 1
            when bilirubin_max is null then null
            else 0
          end as liver

    -- Cardiovascular
    , case
```

```
        when rate_dopamine > 15 or rate_epinephrine >  0.1 or rate_norepinephrine >  0.1
then 4
        when rate_dopamine >  5 or rate_epinephrine <= 0.1 or rate_norepinephrine <= 0.1
then 3
        when rate_dopamine >  0 or rate_dobutamine > 0 then 2
        when meanbp_min < 70 then 1
        when coalesce(meanbp_min, rate_dopamine, rate_dobutamine, rate_epinephrine,
rate_norepinephrine) is null then null
        else 0
      end as cardiovascular

  -- Neurological failure (GCS)
  , case
        when (gcs_min >= 13 and gcs_min <= 14) then 1
        when (gcs_min >= 10 and gcs_min <= 12) then 2
        when (gcs_min >=  6 and gcs_min <=  9) then 3
        when  gcs_min <   6 then 4
        when  gcs_min is null then null
        else 0
      end as cns

  -- Renal failure - high creatinine or low urine output
  , case
    when (creatinine_max >= 5.0) then 4
    when uo_24hr < 200 then 4
    when (creatinine_max >= 3.5 and creatinine_max < 5.0) then 3
    when uo_24hr < 500 then 3
    when (creatinine_max >= 2.0 and creatinine_max < 3.5) then 2
    when (creatinine_max >= 1.2 and creatinine_max < 2.0) then 1
    when coalesce (uo_24hr, creatinine_max) is null then null
    else 0
  end as renal
  from scorecomp
)
, score_final as
(
  select s.*
    -- Combine all the scores to get SOFA
    -- Impute 0 if the score is missing
   -- the window function takes the max over the last 24 hours
    , coalesce(
          MAX(respiration) OVER (PARTITION BY stay_id ORDER BY HR
          ROWS BETWEEN 23 PRECEDING AND 0 FOLLOWING)
        ,0) as respiration_24hours
     , coalesce(
           MAX(coagulation) OVER (PARTITION BY stay_id ORDER BY HR
           ROWS BETWEEN 23 PRECEDING AND 0 FOLLOWING)
         ,0) as coagulation_24hours
    , coalesce(
          MAX(liver) OVER (PARTITION BY stay_id ORDER BY HR
          ROWS BETWEEN 23 PRECEDING AND 0 FOLLOWING)
        ,0) as liver_24hours
    , coalesce(
          MAX(cardiovascular) OVER (PARTITION BY stay_id ORDER BY HR
          ROWS BETWEEN 23 PRECEDING AND 0 FOLLOWING)
        ,0) as cardiovascular_24hours
    , coalesce(
          MAX(cns) OVER (PARTITION BY stay_id ORDER BY HR
```

```
            ROWS BETWEEN 23 PRECEDING AND 0 FOLLOWING)
          ,0) as cns_24hours
        , coalesce(
            MAX(renal) OVER (PARTITION BY stay_id ORDER BY HR
            ROWS BETWEEN 23 PRECEDING AND 0 FOLLOWING)
          ,0) as renal_24hours

        -- sum together data for final SOFA
        , coalesce(
            MAX(respiration) OVER (PARTITION BY stay_id ORDER BY HR
            ROWS BETWEEN 23 PRECEDING AND 0 FOLLOWING)
          ,0)
         + coalesce(
             MAX(coagulation) OVER (PARTITION BY stay_id ORDER BY HR
             ROWS BETWEEN 23 PRECEDING AND 0 FOLLOWING)
          ,0)
         + coalesce(
            MAX(liver) OVER (PARTITION BY stay_id ORDER BY HR
            ROWS BETWEEN 23 PRECEDING AND 0 FOLLOWING)
          ,0)
         + coalesce(
            MAX(cardiovascular) OVER (PARTITION BY stay_id ORDER BY HR
            ROWS BETWEEN 23 PRECEDING AND 0 FOLLOWING)
          ,0)
         + coalesce(
            MAX(cns) OVER (PARTITION BY stay_id ORDER BY HR
            ROWS BETWEEN 23 PRECEDING AND 0 FOLLOWING)
          ,0)
         + coalesce(
            MAX(renal) OVER (PARTITION BY stay_id ORDER BY HR
            ROWS BETWEEN 23 PRECEDING AND 0 FOLLOWING)
          ,0)
        as sofa_24hours
    from scorecalc s
    WINDOW W as
    (
        PARTITION BY stay_id
        ORDER BY hr
        ROWS BETWEEN 23 PRECEDING AND 0 FOLLOWING
    )
)
select * from score_final
where hr >= 0
```

2） 获取是否可疑感染 suspicion_of_infection

```
create materialized view if not exists suspicion_of_infection as
WITH ab_tbl AS
(
    select
          abx.subject_id, abx.hadm_id, abx.stay_id
        , abx.antibiotic
        , abx.starttime AS antibiotic_time
        -- date is used to match microbiology cultures with only date available
        , DATE_TRUNC('day', abx.starttime) AS antibiotic_date
        , abx.stoptime AS antibiotic_stoptime
        -- create a unique identifier for each patient antibiotic
        , ROW_NUMBER() OVER
```

```
      (
        PARTITION BY subject_id
        ORDER BY starttime, stoptime, antibiotic
      ) AS ab_id
  from antibiotic abx
)
, me as
(
  select micro_specimen_id
    -- the following columns are identical for all rows of the same micro_specimen_id
    -- these aggregates simply collapse duplicates down to 1 row
    , MAX(subject_id) AS subject_id
    , MAX(hadm_id) AS hadm_id
    , MAX(chartdate) AS chartdate
    , MAX(charttime) AS charttime
    , MAX(spec_type_desc) AS spec_type_desc
    , max(case when org_name is not null and org_name != '' then 1 else 0 end) as PositiveCulture
  from mimic_hosp.microbiologyevents
  group by micro_specimen_id
)
-- culture followed by an antibiotic
, me_then_ab AS
(
  select
    ab_tbl.subject_id
    , ab_tbl.hadm_id
    , ab_tbl.stay_id
    , ab_tbl.ab_id

    , me72.micro_specimen_id
    , coalesce(me72.charttime, me72.chartdate) as last72_charttime
    , me72.positiveculture as last72_positiveculture
    , me72.spec_type_desc as last72_specimen

    -- we will use this partition to select the earliest culture before this abx
    -- this ensures each antibiotic is only matched to a single culture
    -- and consequently we have 1 row per antibiotic
    , ROW_NUMBER() OVER
    (
      PARTITION BY ab_tbl.subject_id, ab_tbl.ab_id
      ORDER BY me72.chartdate, me72.charttime NULLS LAST
    ) AS micro_seq
  from ab_tbl
  -- abx taken after culture, but no more than 72 hours after
  LEFT JOIN me me72
    on ab_tbl.subject_id = me72.subject_id
    and
    (
      (
      -- if charttime is available, use it
            me72.charttime is not null
      and ab_tbl.antibiotic_time > me72.charttime
      and  ab_tbl.antibiotic_time <= DATETIME_ADD(me72.charttime, INTERVAL '72' HOUR)
      )
      OR
      (
```

```
        -- if charttime is not available, use chartdate
            me72.charttime is null
        and antibiotic_date >= me72.chartdate
        and antibiotic_date <= me72.chartdate + INTERVAL '3' DAY
        )
      )
)
, ab_then_me AS
(
  select
      ab_tbl.subject_id
    , ab_tbl.hadm_id
    , ab_tbl.stay_id
    , ab_tbl.ab_id

    , me24.micro_specimen_id
    , COALESCE(me24.charttime, me24.chartdate) as next24_charttime
    , me24.positiveculture as next24_positiveculture
    , me24.spec_type_desc as next24_specimen

    -- we will use this partition to select the earliest culture before this abx
    -- this ensures each antibiotic is only matched to a single culture
    -- and consequently we have 1 row per antibiotic
    , ROW_NUMBER() OVER
    (
      PARTITION BY ab_tbl.subject_id, ab_tbl.ab_id
      ORDER BY me24.chartdate, me24.charttime NULLS LAST
    ) AS micro_seq
  from ab_tbl
  -- culture in subsequent 24 hours
  LEFT JOIN me me24
    on ab_tbl.subject_id = me24.subject_id
    and
    (
      (
        -- if charttime is available, use it
        me24.charttime is not null
      and ab_tbl.antibiotic_time >= DATETIME_SUB(me24.charttime, INTERVAL '24'
HOUR)
      and ab_tbl.antibiotic_time < me24.charttime
      )
      OR
      (
        -- if charttime is not available, use chartdate
        me24.charttime is null
      and ab_tbl.antibiotic_date >= me24.chartdate-INTERVAL '1' DAY
      and ab_tbl.antibiotic_date <= me24.chartdate
      )
    )
)
SELECT
ab_tbl.subject_id
, ab_tbl.stay_id
, ab_tbl.hadm_id
, ab_tbl.ab_id
, ab_tbl.antibiotic
, ab_tbl.antibiotic_time
```

```
, CASE
   WHEN last72_specimen IS NULL AND next24_specimen IS NULL
      THEN 0
   ELSE 1
   END AS suspected_infection
-- time of suspected infection:
--       (1) the culture time (if before antibiotic)
--       (2) or the antibiotic time (if before culture)
, CASE
   WHEN last72_specimen IS NULL AND next24_specimen IS NULL
      THEN NULL
   ELSE COALESCE(last72_charttime, antibiotic_time)
   END AS suspected_infection_time

, COALESCE(last72_charttime, next24_charttime) AS culture_time

-- the specimen that was cultured
, COALESCE(last72_specimen, next24_specimen) AS specimen

-- whether the cultured specimen ended up being positive or not
, COALESCE(last72_positiveculture, next24_positiveculture) AS positive_culture

FROM ab_tbl
LEFT JOIN ab_then_me ab2me
      ON ab_tbl.subject_id = ab2me.subject_id
      AND ab_tbl.ab_id = ab2me.ab_id
      AND ab2me.micro_seq = 1
LEFT JOIN me_then_ab me2ab
      ON ab_tbl.subject_id = me2ab.subject_id
      AND ab_tbl.ab_id = me2ab.ab_id
      AND me2ab.micro_seq = 1
```

4. 指标提取

```
----------年龄----------
create materialized view age as
SELECT
    ad.subject_id
    , ad.hadm_id
    , ad.admittime
    , pa.anchor_age
    , pa.anchor_year
    , DATETIME_DIFF(ad.admittime, DATETIME(pa.anchor_year, 1, 1, 0, 0, 0), 'YEAR')
pa.anchor_age AS age
FROM mimic_core.admissions ad
INNER JOIN mimic_core.patients pa
    ON ad.subject_id = pa.subject_id

    ----------心衰----------
    CREATE MATERIALIZED VIEW heart_failure AS SELECT* FROM mimic_icu.inputevents
    WHERE hadm_id IS NOT NULL AND itemid IN
    (4289,I509,I50,39891,4280,4281,42820,42821,42822,42823,42830,42831,42832,42833,4284
    0,42841,42842,42843,I0981,I502,I5020,I5021,I5022,I5023,I503,I5030,I5031 ,I5032 ,I5033 ,I
    504 ,I5040 ,I5041 ,I5042 ,I5043 ,I508 ,I5081 ,I50810 ,I50811 ,I50812 ,I50813 ,I50814 ,I5082
    ,I5083 ,I5084 ,I5089 ,I9713 ,I97130 ,I97131,40201 ,40211 ,40291 ,40401 ,40403 ,40411 ,404
```

13 ,40491 ,40493 ,I110 ,I130 ,I132)
----------呼衰----------
CREATE MATERIALIZED VIEW respiration_failure AS SELECT* FROM mimic_icu.inputevents WHERE hadm_id IS NOT NULL AND itemid IN (51851,51853,51881,51883,51884,J9582,J95821,J95822,J96%)
----------糖尿病----------
CREATE MATERIALIZED VIEW diabetes AS SELECT* FROM mimic_icu.inputevents WHERE hadm_id IS NOT NULL AND itemid IN (E08%,E09%,E10%,E11%,E12%,E13%,250%,249%)
----------COPD----------
CREATE MATERIALIZED VIEW copd AS SELECT* FROM mimic_icu.inputevents WHERE hadm_id IS NOT NULL AND itemid IN (J44%,496)
----------肾脏疾病----------
CREATE MATERIALIZED VIEW renal_disease AS SELECT* FROM mimic_icu.inputevents WHERE hadm_id IS NOT NULL AND itemid IN (584%,585%,586,N17%,N18%,N19)
----------肝脏疾病----------
CREATE MATERIALIZED VIEW liver_disease AS SELECT* FROM mimic_icu.inputevents WHERE hadm_id IS NOT NULL AND itemid IN (K70%,K71%,K72%,K73%,K74%,K75%,K76%,K77%,1550,1552,B15%,B16%,B17%,B18%,B19%,070%,570,571%,572%,573%)
----------恶性肿瘤----------
CREATE MATERIALIZED VIEW cancer AS SELECT* FROM mimic_icu.inputevents WHERE hadm_id IS NOT NULL AND itemid IN (C%,14%,15%,16%,17%,18%,19%,20%)
----------输注血制品----------
CREATE MATERIALIZED VIEW transfusion AS SELECT* FROM mimic_icu.inputevents WHERE hadm_id IS NOT NULL AND itemid IN (220970, 221733, 225168, 225170, 225171,225173,225914,226367,226368,226369,226370,226371,226372,227070,227071,227072,227532)
----------液体复苏----------
CREATE MATERIALIZED VIEW input AS SELECT* FROM mimic_icu.d_items where "unitname" LIKE '%mL%' AND "linksto" LIKE '%inputevents%'
CREATE MATERIALIZED VIEW input1 AS SELECT* FROM mimic_icu.inputevents WHERE hadm_id IS NOT NULL AND itemid IN (select itemid from input)
----------住院期间体重----------
```
create materialized view if not exists weight_durations as
WITH wt_stg as
(
    SELECT
        c.stay_id
      , c.charttime
      , case when c.itemid = 226512 then 'admit'
            else 'daily' end as weight_type
      -- TODO: eliminate obvious outliers if there is a reasonable weight
      , c.valuenum as weight
    FROM mimic_icu.chartevents c
    WHERE c.valuenum IS NOT NULL
      AND c.itemid in
      (
          226512 -- Admit Wt
          , 224639 -- Daily Weight
      )
      AND c.valuenum > 0
)
-- assign ascending row number
, wt_stg1 as
(
  select
```

```
        stay_id
      , charttime
      , weight_type
      , weight
      , ROW_NUMBER() OVER (partition by stay_id, weight_type order by charttime) as rn
    from wt_stg
    WHERE weight IS NOT NULL
)
-- change charttime to intime for the first admission weight recorded
, wt_stg2 AS
(
    SELECT
        wt_stg1.stay_id
      , ie.intime, ie.outtime
      , wt_stg1.weight_type
      , case when wt_stg1.weight_type = 'admit' and wt_stg1.rn = 1
            then DATETIME_SUB(ie.intime, INTERVAL '2' HOUR)
        else wt_stg1.charttime end as starttime
      , wt_stg1.weight
    from wt_stg1
    INNER JOIN mimic_icu.icustays ie
      on ie.stay_id = wt_stg1.stay_id
)
, wt_stg3 as
(
    select
      stay_id
      , intime, outtime
      , starttime
      , coalesce(
            LEAD(starttime) OVER (PARTITION BY stay_id ORDER BY starttime),
            DATETIME_ADD(outtime, INTERVAL '2' HOUR)
        ) as endtime
      , weight
      , weight_type
    from wt_stg2
)
-- this table is the start/stop times from admit/daily weight in charted data
, wt1 as
(
    select
        stay_id
      , starttime
      , coalesce(endtime,
        LEAD(starttime) OVER (partition by stay_id order by starttime),
        -- impute ICU discharge as the end of the final weight measurement
        -- plus a 2 hour "fuzziness" window
        DATETIME_ADD(outtime, INTERVAL '2' HOUR)
      ) as endtime
      , weight
      , weight_type
    from wt_stg3
)
-- if the intime for the patient is < the first charted daily weight
-- then we will have a "gap" at the start of their stay
-- to prevent this, we look for these gaps and backfill the first weight
-- this adds (153255-149657)=3598 rows, meaning this fix helps for up to 3598 stay_id
, wt_fix as
```

```
(
    select ie.stay_id
        -- we add a 2 hour "fuzziness" window
        , DATETIME_SUB(ie.intime, INTERVAL '2' HOUR) as starttime
        , wt.starttime as endtime
        , wt.weight
        , wt.weight_type
    from mimic_icu.icustays ie
    inner join
    -- the below subquery returns one row for each unique stay_id
    -- the row contains: the first starttime and the corresponding weight
    (
        SELECT wt1.stay_id, wt1.starttime, wt1.weight
        , weight_type
        , ROW_NUMBER() OVER (PARTITION BY wt1.stay_id ORDER BY wt1.starttime) as
rn
        FROM wt1
    ) wt
        ON    ie.stay_id = wt.stay_id
        AND wt.rn = 1
        and ie.intime < wt.starttime
)
-- add the backfill rows to the main weight table
SELECT
wt1.stay_id
, wt1.starttime
, wt1.endtime
, wt1.weight
, wt1.weight_type
FROM wt1
UNION ALL
SELECT
wt_fix.stay_id
, wt_fix.starttime
, wt_fix.endtime
, wt_fix.weight
, wt_fix.weight_type
FROM wt_fix
--------------------------身高----------------------------------------
create materialized view if not exists height as
WITH ht_in AS
(
    SELECT
        c.subject_id, c.stay_id, c.charttime
        -- Ensure that all heights are in centimeters
        , ROUND((c.valuenum * 2.54 ):: numeric, 2) AS height
        , c.valuenum as height_orig
    FROM mimic_icu.chartevents c
    WHERE c.valuenum IS NOT NULL
    -- Height (measured in inches)
    AND c.itemid = 226707
)
, ht_cm AS
(
    SELECT
        c.subject_id, c.stay_id, c.charttime
        -- Ensure that all heights are in centimeters
        , ROUND(c.valuenum :: numeric, 2) AS height
```

```
    FROM mimic_icu.chartevents c
    WHERE c.valuenum IS NOT NULL
    -- Height cm
    AND c.itemid = 226730
)
-- merge cm/height, only take 1 value per charted row
, ht_stg0 AS
(
    SELECT
    COALESCE(h1.subject_id, h1.subject_id) as subject_id
    , COALESCE(h1.stay_id, h1.stay_id) AS stay_id
    , COALESCE(h1.charttime, h1.charttime) AS charttime
    , COALESCE(h1.height, h2.height) as height
    FROM ht_cm h1
    FULL OUTER JOIN ht_in h2
        ON h1.subject_id = h2.subject_id
        AND h1.charttime = h2.charttime
)
SELECT subject_id, stay_id, charttime, height
FROM ht_stg0
WHERE height IS NOT NULL
-- filter out bad heights
AND height > 120 AND height < 230

-------------------------凝血功能-------------------------------------
create materialized view coagulation as
SELECT
        MAX(subject_id) AS subject_id
    , MAX(hadm_id) AS hadm_id
    , MAX(charttime) AS charttime
    , le.specimen_id
    -- convert from itemid into a meaningful column
    , MAX(CASE WHEN itemid = 51196 THEN valuenum ELSE NULL END) AS d_dimer
    , MAX(CASE WHEN itemid = 51214 THEN valuenum ELSE NULL END) AS fibrinogen
    , MAX(CASE WHEN itemid = 51297 THEN valuenum ELSE NULL END) AS thrombin
    , MAX(CASE WHEN itemid = 51237 THEN valuenum ELSE NULL END) AS inr
    , MAX(CASE WHEN itemid = 51274 THEN valuenum ELSE NULL END) AS pt
    , MAX(CASE WHEN itemid = 51275 THEN valuenum ELSE NULL END) AS ptt
FROM mimic_hosp.labevents le
WHERE le.itemid IN
(
        -- 51149, 52750, 52072, 52073 -- Bleeding Time, no data as of MIMIC-IV v0.4
        51196, -- D-Dimer
        51214, -- Fibrinogen
        -- 51280, 52893, -- Reptilase Time, no data as of MIMIC-IV v0.4
        -- 51281, 52161, -- Reptilase Time Control, no data as of MIMIC-IV v0.4
        51297, -- thrombin
        51237, -- INR
        51274, -- PT
        51275 -- PTT
)
AND valuenum IS NOT NULL
GROUP BY le.specimen_id
-------------------------多巴酚丁胺-------------------------------------
create materialized view dobutamine as
select
stay_id, linkorderid
, rate as vaso_rate
```

```
, amount as vaso_amount
, starttime
, endtime
from mimic_icu.inputevents
where itemid = 221653
-------------------------多巴胺-------------------------------------
create materialized view dopamine as
select
stay_id, linkorderid
, rate as vaso_rate
, amount as vaso_amount
, starttime
, endtime
from mimic_icu.inputevents
where itemid = 221662
-------------------------肾上腺素-------------------------------------
create materialized view epinephrine as
select
stay_id, linkorderid
, rate as vaso_rate
, amount as vaso_amount
, starttime
, endtime
from mimic_icu.inputevents
where itemid = 221289
-------------------------去甲肾上腺素-------------------------------------
create materialized view norepinephrine as
select
   stay_id, linkorderid
   , rate as vaso_rate
   , amount as vaso_amount
   , starttime
   , endtime
from mimic_icu.inputevents
where itemid = 221906
-------------------------去氧肾上腺素-------------------------------------
create materialized view phenylephrine as
select
   stay_id, linkorderid
   , rate as vaso_rate
   , amount as vaso_amount
   , starttime
   , endtime
from mimic_icu.inputevents
where itemid = 221749
-------------------------血管加压素-------------------------------------
create materialized view vasopressin as
select
   stay_id, linkorderid
   , rate as vaso_rate
   , amount as vaso_amount
   , starttime
   , endtime
from mimic_icu.inputevents
where itemid = 222315
-------------------------肝素-------------------------------------
create materialized view vasopressin as
Select
```

```
  inputevents.subject_id,
  inputevents.hadm_id,
  inputevents.stay_id,
  inputevents.starttime,
  inputevents.endtime,
  inputevents.storetime,
  inputevents.itemid,
  inputevents.amount,
  inputevents.amountuom,
  inputevents.rate,
  inputevents.rateuom,
  inputevents.orderid,
  inputevents.linkorderid,
  inputevents.ordercategoryname,
  inputevents.secondaryordercategoryname,
  inputevents.ordercomponenttypedescription,
  inputevents.ordercategorydescription,
  inputevents.patientweight,
  inputevents.totalamount,
  inputevents.totalamountuom,
  inputevents.isopenbag,
  inputevents.continueinnextdept,
  inputevents.cancelreason,
  inputevents.statusdescription,
  inputevents.originalamount,
  inputevents.originalrate
FROM mimic_icu.inputevents
WHERE ((inputevents.hadm_id is NOT NULL) AND (inputevents.itemid in (225152,
225975, 229597, 230044)))
```