

Decision Tree Modeling in R: Example

DARTH workgroup

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Decision Tree Example

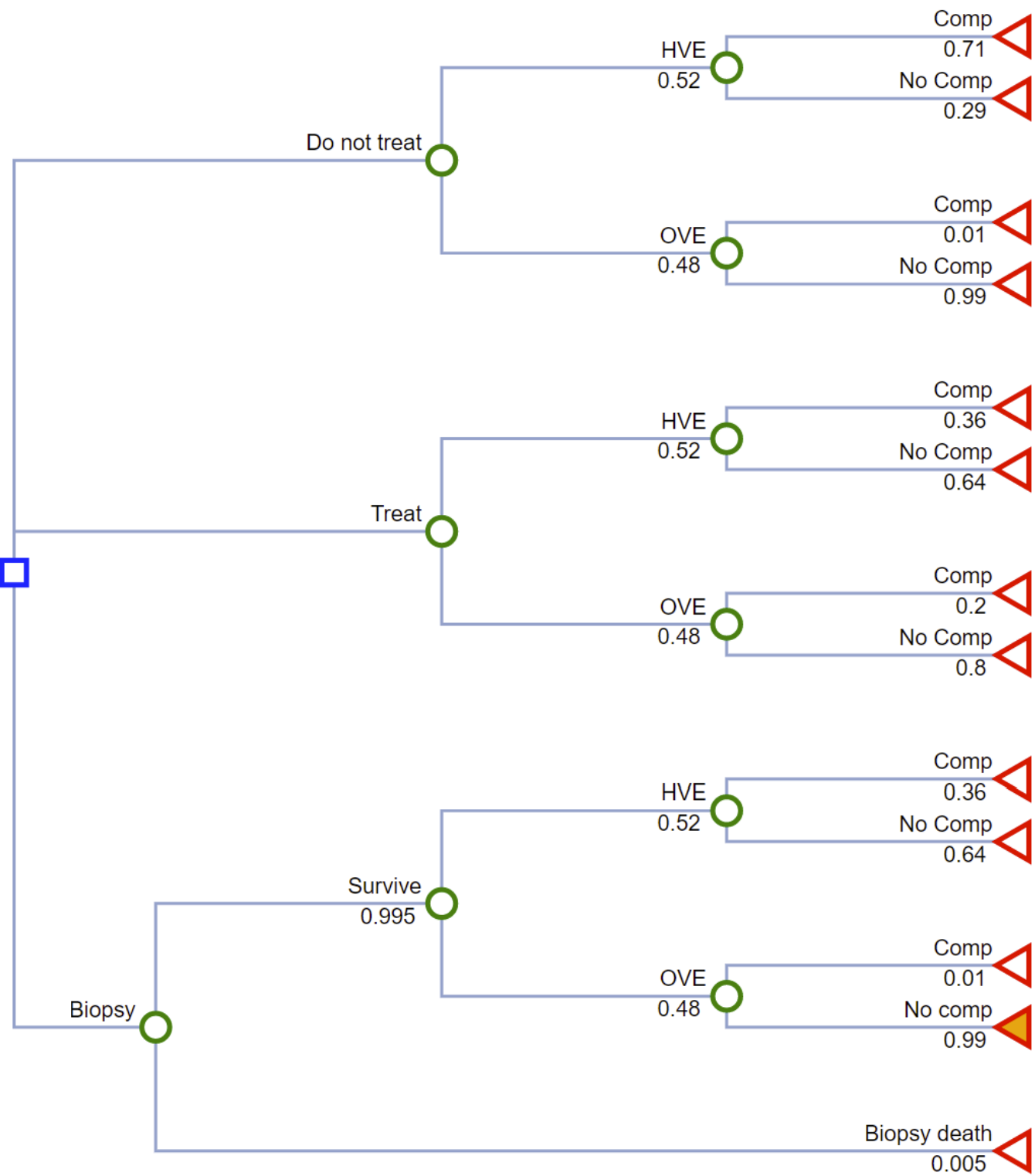
- Viral encephalitis can be caused by herpes virus (HVE) or other viruses (OVE)
 - $\text{Pr}(\text{HVE}) = 52\%$
- Untreated HVE has 71% risk of complications; for OVE the figure is 1%
- For HVE, the drug vidarabine decreases risk of complications from 71% to 36%
- For OVE, vidarabine side effects increase risk of complications from 1% to 20%

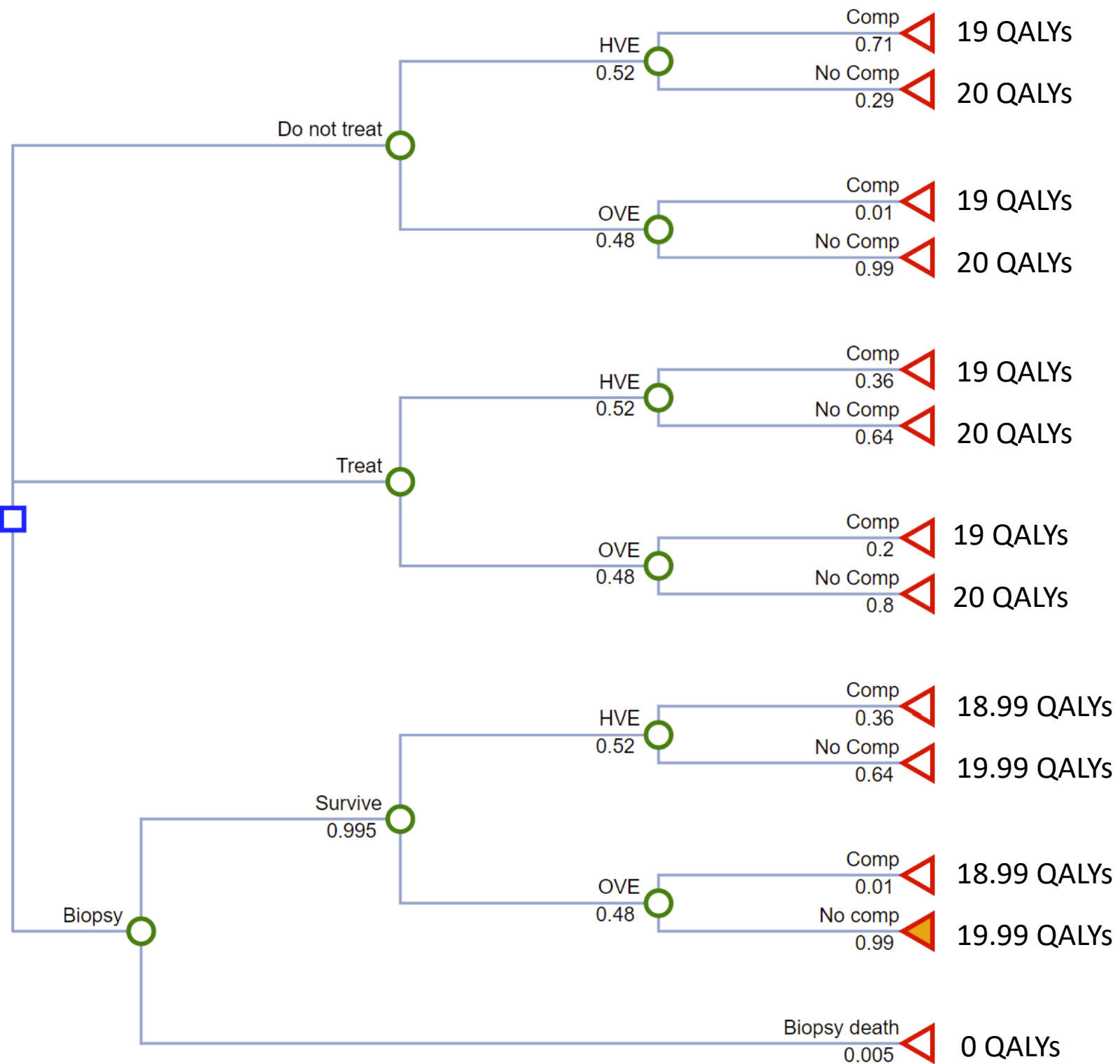
Decision Tree Example

- Health outcomes measured as remaining quality-adjusted life-years (QALYs)
 - Without complications: 20 QALYs
 - With complications: 19 QALYs
 - Death (due to biopsy): 0 QALYs
 - One-time loss of 0.01 QALYs from biopsy

Decision Tree Example

- Cost of VE medical care, treatment, and diagnostics
 - Medical care without complications: \$1,200
 - Medical care with complications: \$9,000
 - Vidarabine: \$9,500
 - Biopsy: \$25,000
- Remaining lifetime costs
 - Without complications: \$50,000
 - With complications: \$60,000





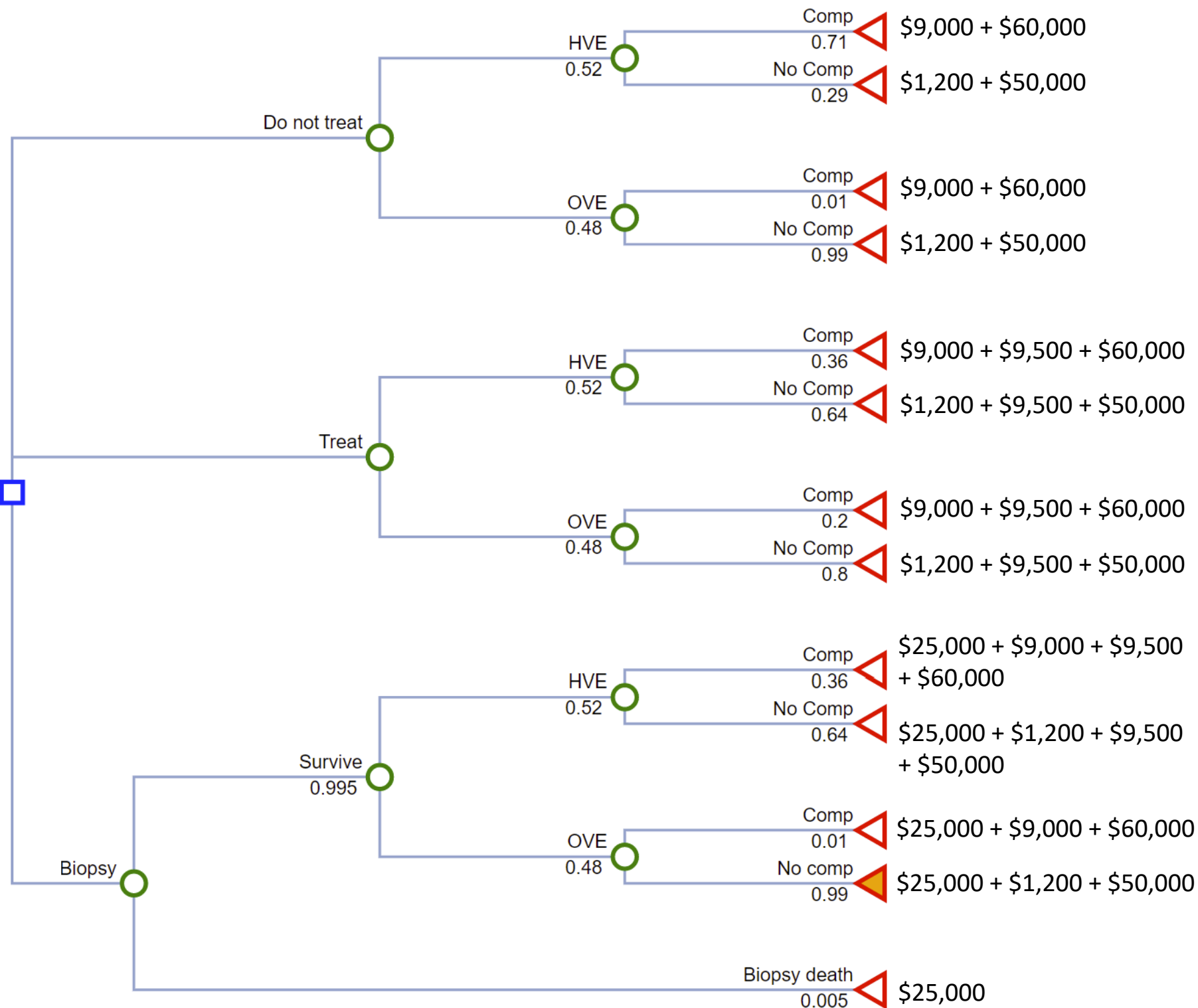


Table of Input Parameters

Parameter	Variable Name	Value
Prevalence of HVE	p_HVE	0.52
Probability of complications without treatment		
HVE	p_HVE_comp	0.71
OVE	p_OVE_comp	0.01
Probability of complications with vidarabine treatment		
HVE	p_HVE_comp_tx	0.36
OVE	p_OVE_comp_tx	0.20
Probability of complications due to brain biopsy	p_biopsy_comp	0.05

Table of Input Parameters

Parameter	Variable Name	Value
QALYs		
Remaining QALYs without complications	q_VE	20
Remaining QALYs with complications	q_VE_comp	19
Remaining QALYs if died during biopsy	q_death_biopsy	0
One-time QALY loss due to biopsy	q_loss_biopsy	0.01
Costs		
Medical care without complications	c_VE	1,200
Medical care with complications	c_VE_comp	9,000
Vidarabine	c_tx	9,500
Biopsy	c_biopsy	25,000
Lifetime without complications	c_lifetime	50,000
Lifetime with complications	c_lifetime_comp	60,000



R Session

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