Assignment 3- Decision Tree Assignment

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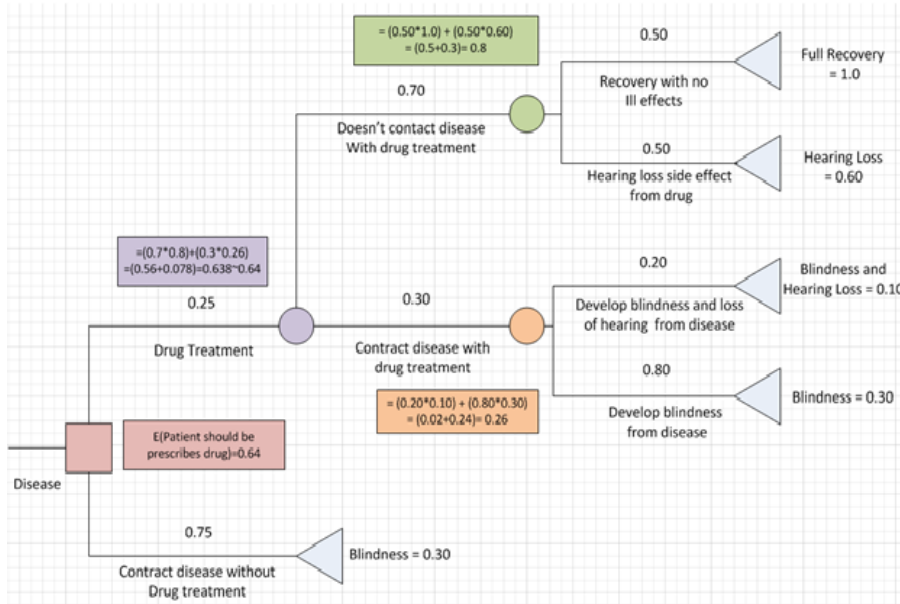MMI 406

The sum of all probabilities for a chance node must add up to 1.0. So the new probability table look as follows:

Outcome	Probability
Hearing loss side effect from drug	.50
Contract disease with drug treatment	.30
Contract disease without drug treatment	.75
Develop blindness from disease	.80
Drug treatment	.25
Doesn't contact disease with drug treatment	.70
Recovery with no ill effect	.50
Develops blindness and Loss of hearing	.20

Possible Outcome	Utility
Blindness	.30
Blindness and hearing loss	.10
Hearing loss	.60
Full recovery with no ill effects	1.00 (assumed)

= (0.50*1.0) + (0.50*0.60)
= (0.5+0.3)= 0.8

0.70

Doesn't contact disease
With drug treatment

0.50
Recovery with no
Ill effects

Full Recovery
= 1.0

0.50
Hearing loss side effect
from drug

Hearing Loss
= 0.60

=(0.7*0.8)+(0.3*0.26)
=(0.56+0.078)=0.638~0.64

0.25

Drug Treatment

0.30

Contract disease with
drug treatment

0.20
Develop blindness and loss
of hearing from disease

Blindness and
Hearing Loss = 0.10

0.80
Develop blindness
from disease

Blindness = 0.30

= (0.20*0.10) + (0.80*0.30)
= (0.02+0.24)= 0.26

E(Patient should be
prescribes drug)=0.64

Disease

0.75

Contract disease without
Drug treatment

Blindness = 0.30

Result: The drug should be prescribed to the patient. .

E (Patient should be prescribed Drug = 0.64) > E (Patient doesn't takes drug = 0.30)