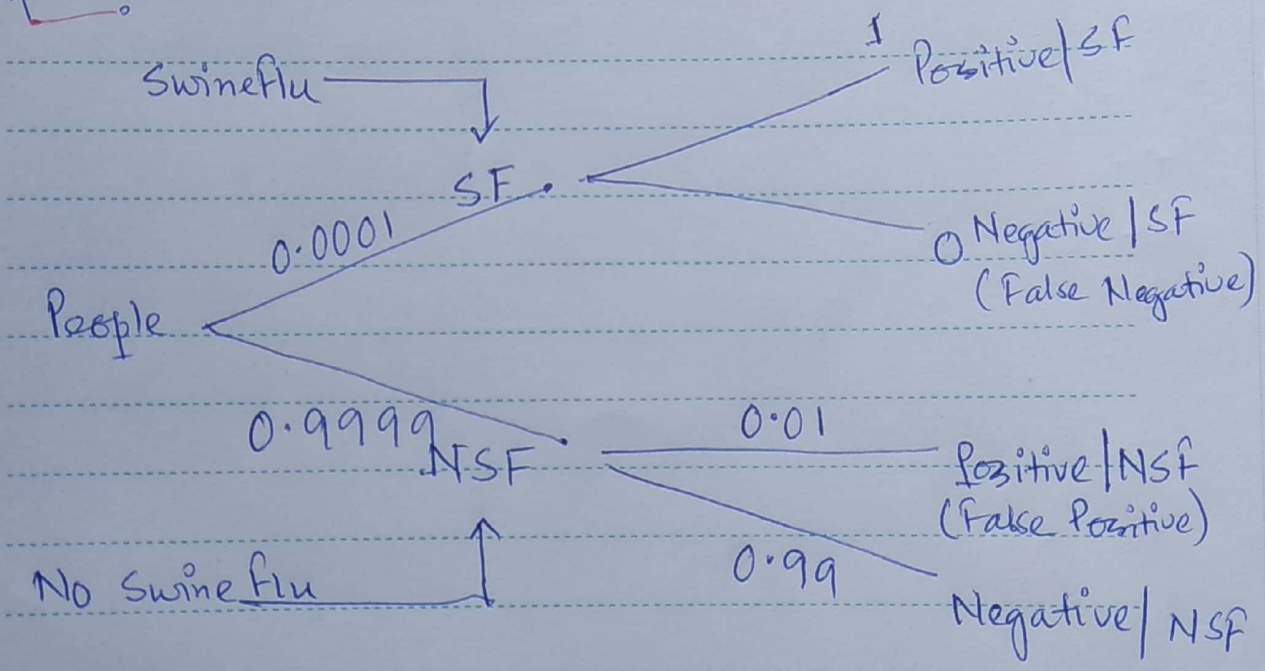
XX 14. You go to see the doctor about an ingrowing toe nail. The doctor selects you at random to have a blood test for swine flu, which for the purpose of the excercise we will say is currently suspected to affect 1 in 10,000 people in Australia. The test is 99% accurate, in the sense that the prob. of a false positive is 1%. The prob. of a false negative is zero. What is the new prob. that you have swine flu?



$$P(SF/Positive) = \frac{P(Positive|sf) \times P(SF)}{P(Positive)}$$

$$= \frac{P(Positive|sf) \times P(SF)}{P(Positive|sf) \times P(SF) + P(Positive|NSF) \times P(NSF)}$$

$$= \frac{1 \times 0.0001}{(1 \times 0.0001) + (0.01 \times 0.9999)}$$

$$= \frac{0.0001}{0.010099} = 0.0099 = 0.01$$