7.6 Bayes law Recall Pr[A/13] = Pr[A/13] Observe Pr[ANB] = Pr[BIA] Pr[A) B = Pr[AIB]Pr[B] Pr[B] = Pr[B/A] Pr[A] + Pr[B/A]. () bserve POEA']

Bayes Law Pr[A|B] = Pr[B|A]Pr[A] Pr[BIA] · Pr[A] + Pr[B(A'] Pr[A'] Pr[ANB] Ex Test for disease (Outcomes Pos, Neg) Ly Has 0.95 prob ob giving pos result when person has disease (Pr[Pos | Dis] = 0.95) Ly Has Oil Probab giving magnitude pasi result When person does not have disease Pr[Pos [nDis] = 0.1 La ProbIdisease] = 0.005, So Probladis) = 0.995 Least Pr[Dis | Pos] = Pr[Pos | Dis] · Pr[Dis] Pr[Pos | Dis] Pr[Dis] + Pr[Pos [NDis].

Pr[NDis] 0.95(0.005) + 0.1(0.995)

Ex Test for Dis Lo Po[Dis] = -10,000 L7 Pr[Pos/Dis] = 0.99 L7 Pr[Pos [NDis] = 0,0/ Pr[Pos[Dis] · Pr[Dis] Determine Pr[Dis/Pos] = 0.99 · (T0,000) Pr[Pos | Dis] · ACDis] + Pr[Pos | Dis] Pre-Dis · 0,99 · (19,000) + 0,01(9999) 0.99 (10,000) (0.99) (10,000) + O.01(9999) RATAL POEDIS A POS) Pr[Pos]