

$$P(\text{Data}|w) = P(\text{Cough}|\text{LD}, \text{Cold}, w) \cdot P(\text{CP}|\text{LD}, w) \cdot P(\text{SOB}|\text{LD}, w) \cdot P(\text{F}|\text{Cold}, w) \cdot \\ P(\text{LD}|S, w) \cdot P(\text{Cold}|w) \cdot P(S|w) \cdot P(w)$$