

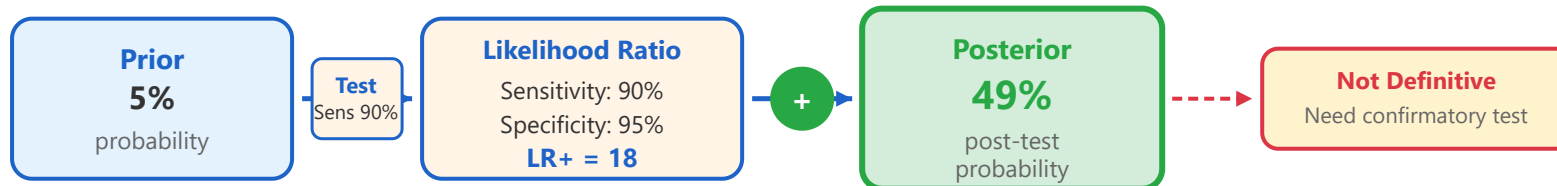
Bayesian Reasoning Integration

Bayesian Framework

- **Prior Probability:**Pre-test likelihood based on prevalence
- **Likelihood Ratio:**How much test changes probability
- **Posterior Probability:**Post-test diagnostic certainty
- **Sequential Testing:**Chain multiple tests together

Bayes' Theorem in Diagnosis

$$P(\text{Disease}|\text{Test}) = [P(\text{Test}|\text{Disease}) \times P(\text{Disease})] / P(\text{Test})$$



Critical: Integrating prevalence and test characteristics improves diagnostic accuracy