# Section 2

# Examples of Bayesian Networks

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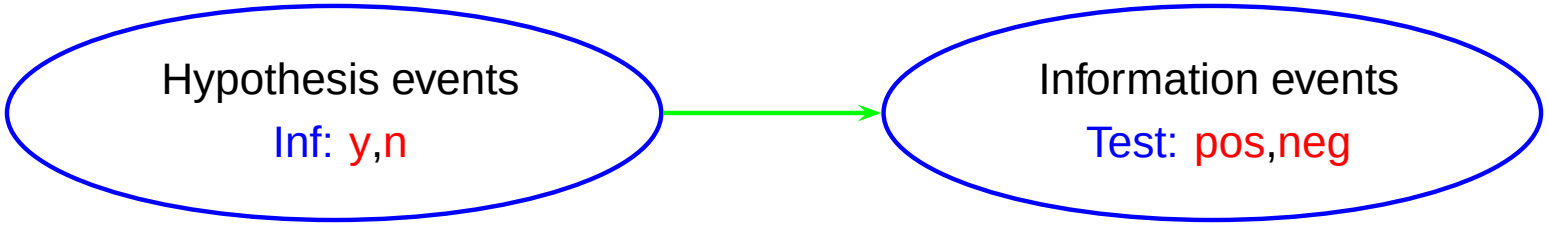

# 7-day model I

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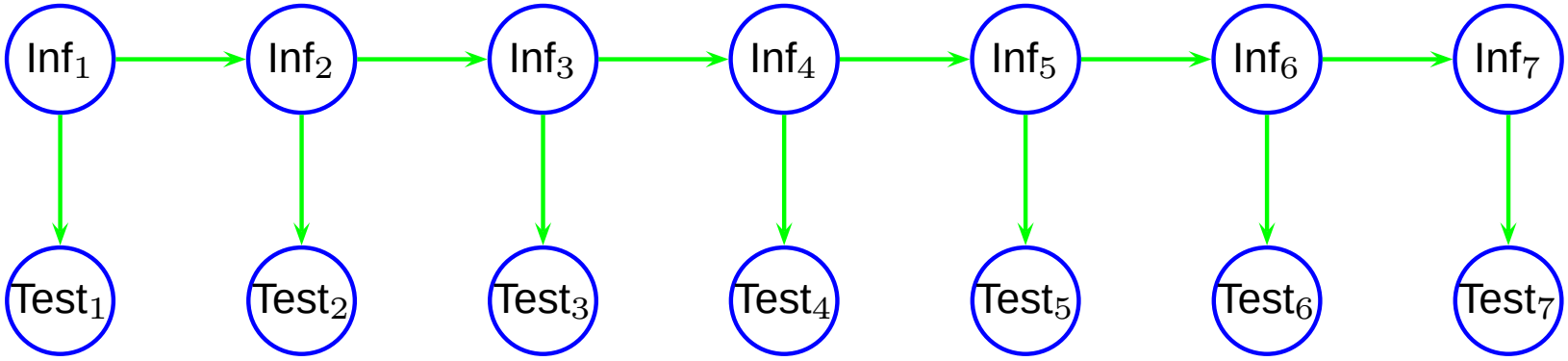

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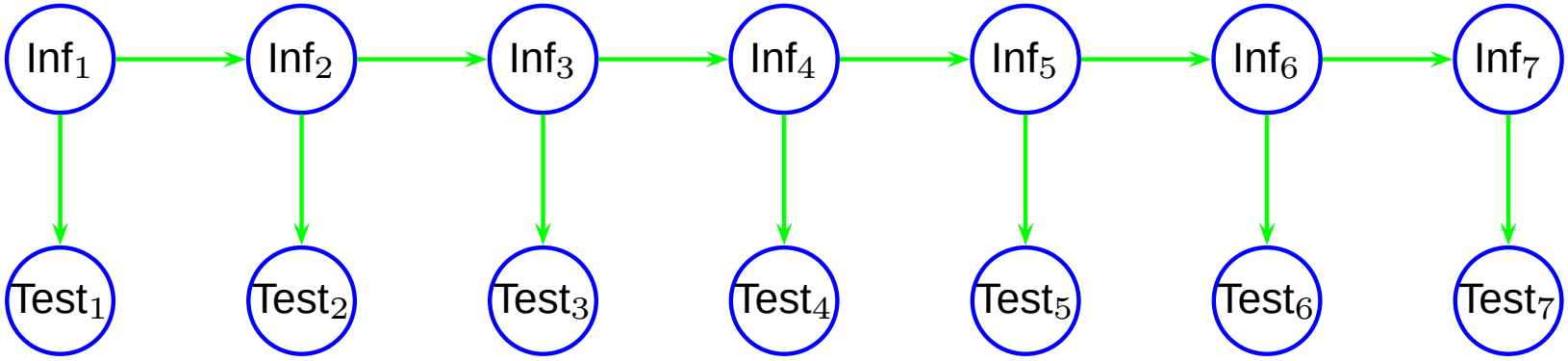



Assumption:

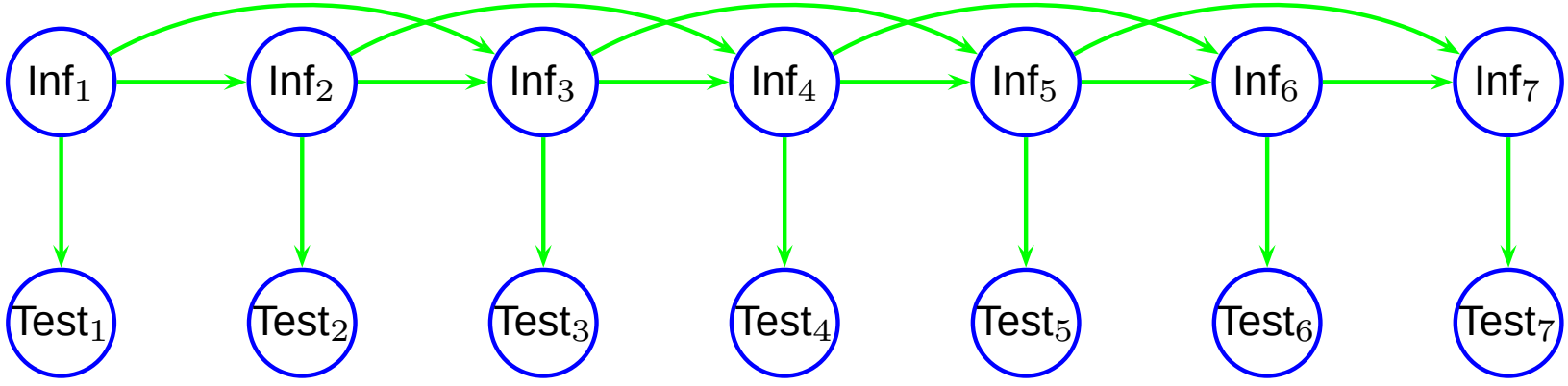
- The Markov property: If I know the present, then the past has no influence on the future, i.e.

  Inf$_{i-1}$ is d-separated from Inf$_{i+1}$ given Inf$_i$.

But what if yesterday's Inf-state has an impact on tomorrow's Inf-state?

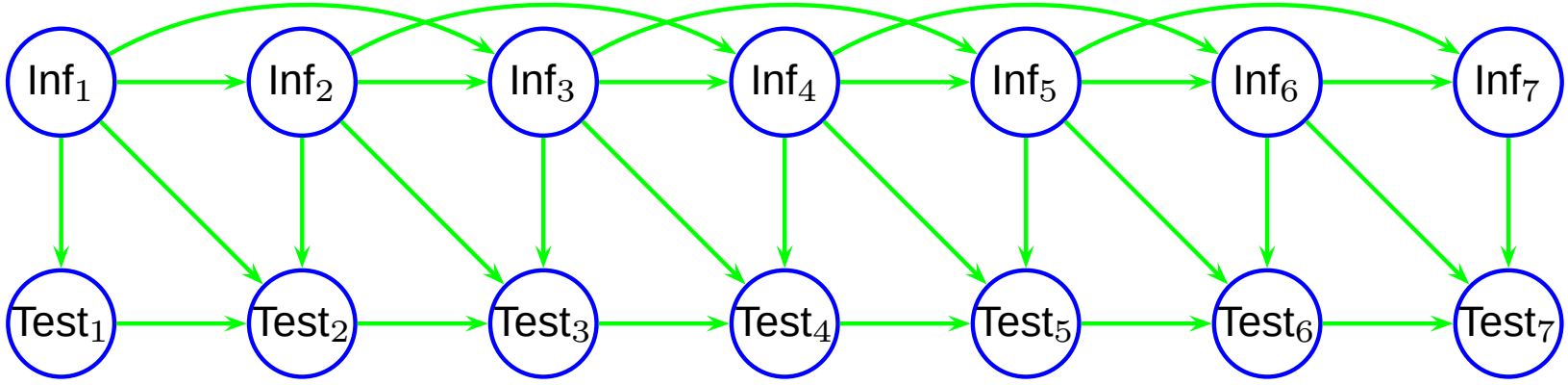
# 7-day model II

Yesterday's Inf-state has an impact on tomorrow's Inf-state:



# 7-day model III

The test-failure is dependent on whether or not the test failed yesterday:



# A simplified poker game

The game consists of:

- Two players.
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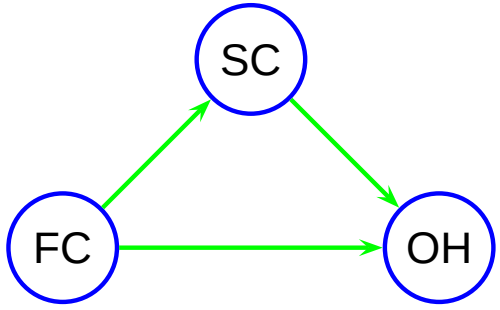


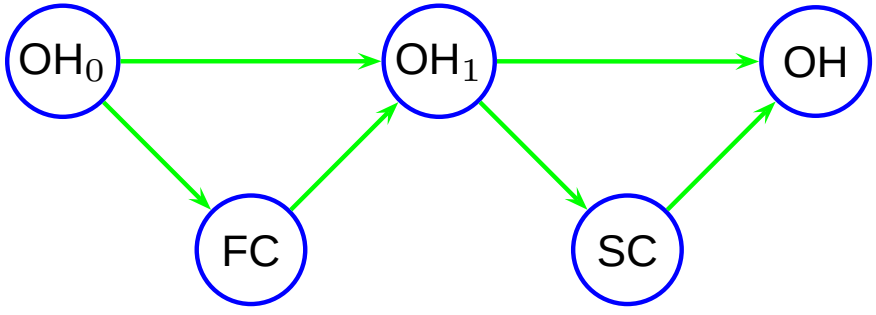

But how do we find:

$P(\text{FC})$, $P(\text{SC}|\text{FC})$ and $P(\text{OH}|\text{SC},\text{FC})$??

# A simplified poker game: Mediating variables

Introduce mediating variables:

- The opponent's initial hand, $\mathrm{OH}_0$.
- The opponent's hand after the first change of cards, $\mathrm{OH}_1$.




I am afraid that I do not have time to talk about how to estimate parameters.