

# DAG Example

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# The chest clinic narrative

Lauritzen and Spiegelhalter (1988) presents the following narrative:

- ▶ Shortness-of-breath (**dyspnoea**) may be due to **tuberculosis**, **lung cancer** or **bronchitis**, or none of them, or more than one of them.
- ▶ A recent visit to **Asia** increases the chances of tuberculosis, while **smoking** is known to be a risk factor for both lung cancer and bronchitis.
- ▶ The results of a single chest **X-ray** do not discriminate between lung cancer and tuberculosis, as **neither** does the presence or absence of dyspnoea.

## A formalization of this narrative

$$\begin{aligned} p(V) = & p(A)p(T | A) \cdot \\ & p(S)p(L | S)p(B | S) \cdot \\ & p(E | T, L)p(D | E, B)p(X | E) \end{aligned}$$

