A Parallel Literature: Causation in Medicine

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Modelling causation in epidemiology - I

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  - Bayesian networks

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  - Sufficient-component cause model

Rothman and sufficient-component causes

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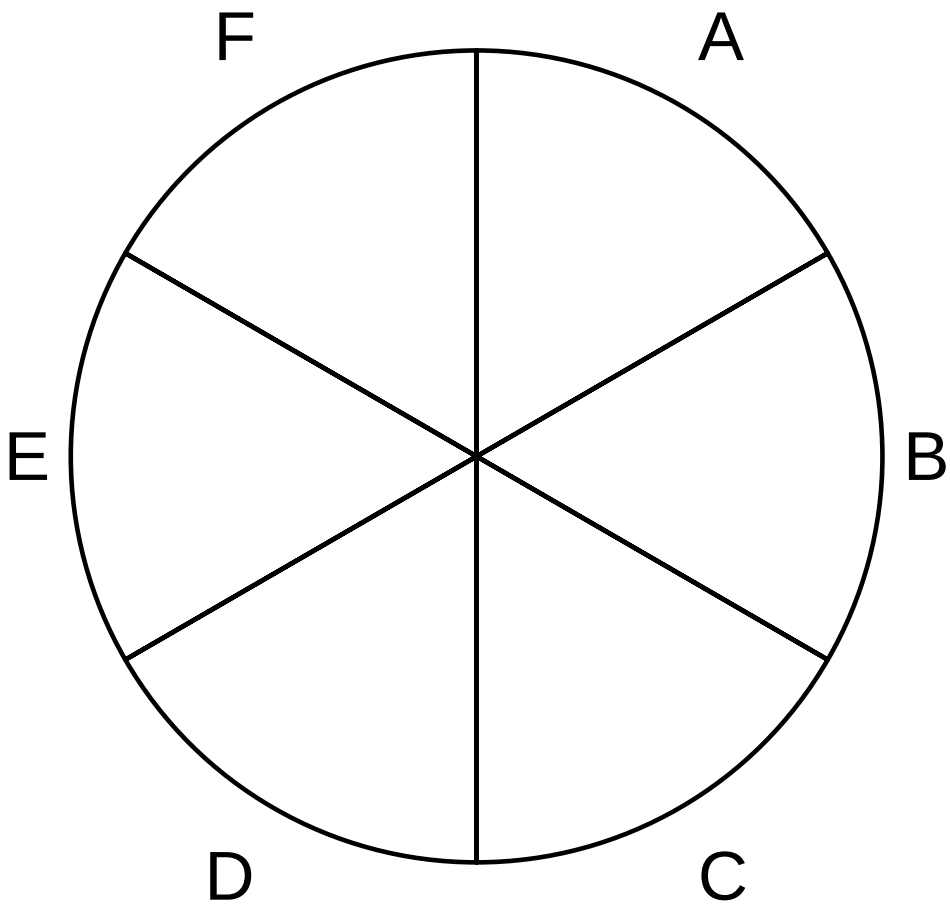
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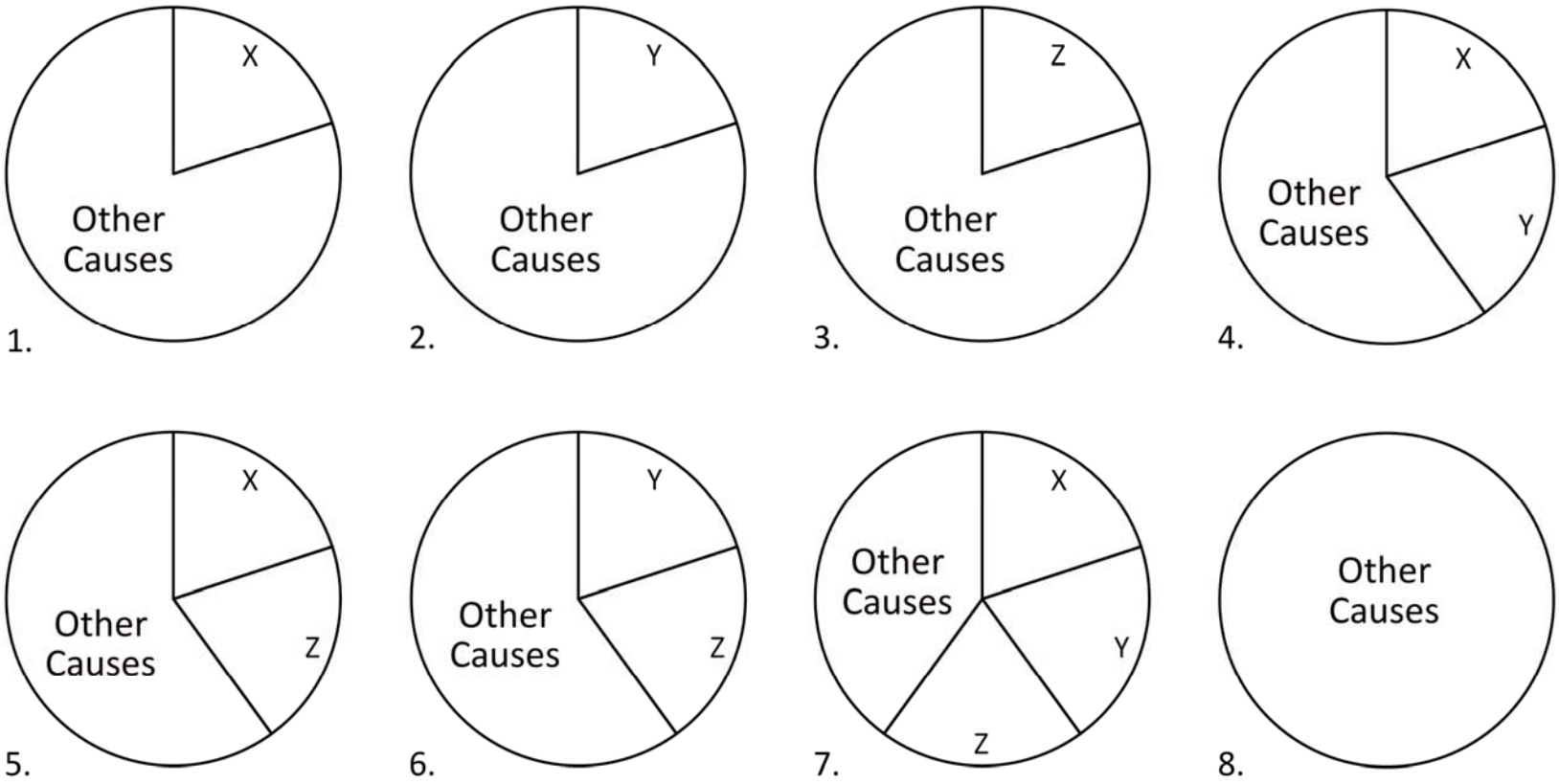
Sufficient-component cause diagrams for coronary heart disease



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inus conditions

"(*ABC* or *DGH* or *JKL*)' represents a condition which is both necessary and sufficient for *P*: each conjunction, such as '*ABC*', represents a condition which is sufficient but not necessary for *P*. Besides, *ABC* is a *minimal* sufficient condition: none of its conjuncts is redundant: no part of it, such as *AB*, is itself sufficient for *P*. But each single factor, such as *A*, is neither a necessary nor a sufficient condition for *P*. Yet it is clearly related to *P* in an important way: it is an *insufficient* but *non-redundant* part of an *unnecessary* but *sufficient* condition: it will be convenient to call this...an *inus* condition."

Mackie, 1974: 62

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  - (Causal factor selection and relevance)

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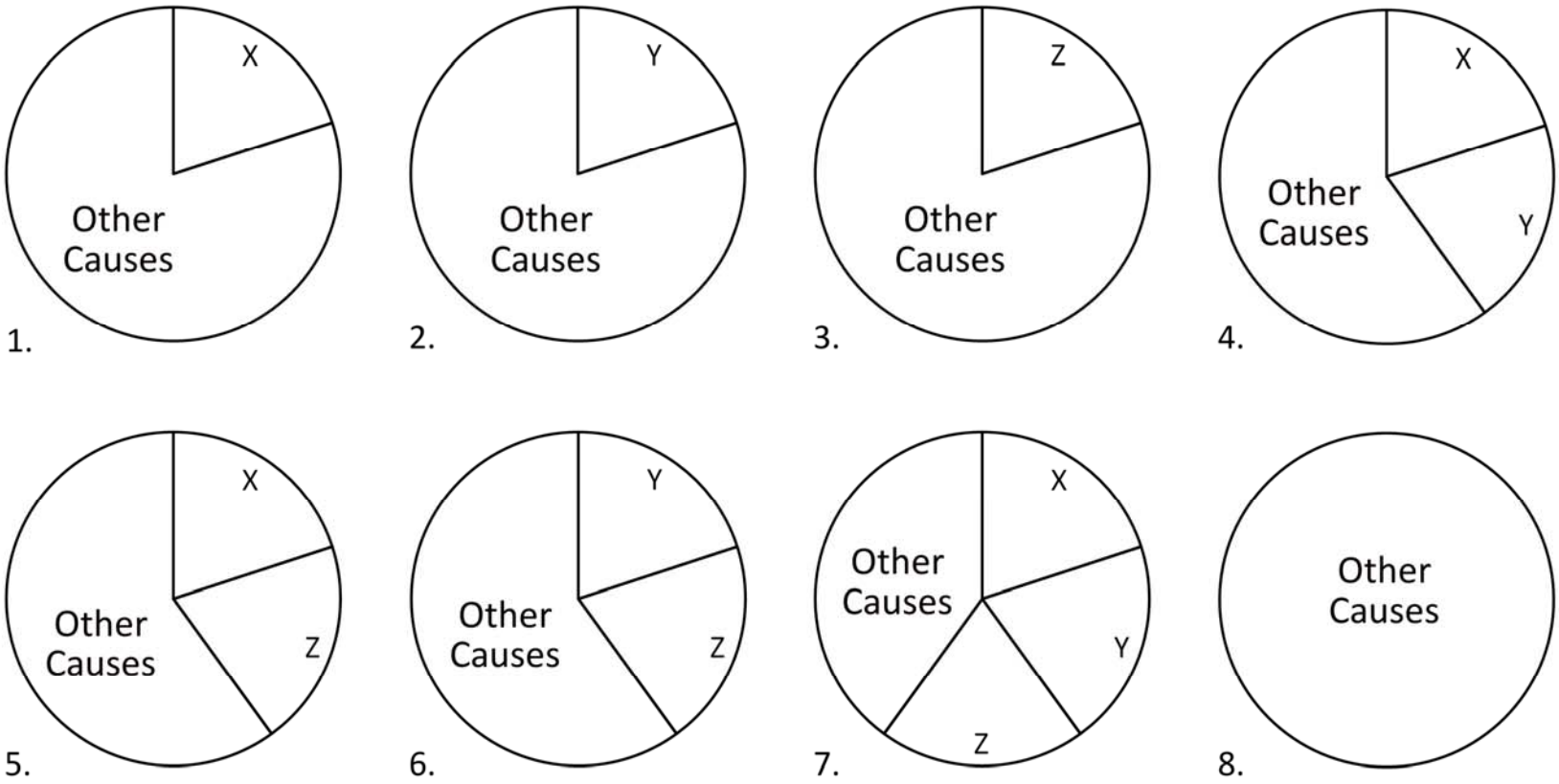

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- We can give estimates of effect size from observational studies
- But we may not be able to tell which cause is responsible in a particular case

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Causes with persistantly distinguishable aetiologies

- Community-acquired pneumonia
  - Streptococcus pneumoniae
  - Influenza virus
  - Mycobacterium pneumoniae
  - Legionella spp
  - Haemophilus influenzae

Ledingham and Warrell, 2000: 371.

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- This is helpful in cases where our effect of interest results from causes with persistently distinguishable aetiologies
- But this is not the case with CHD, where the pathology gives no clue to the aetiology

- "*...if no more detailed correct account would provide the desired discrimination, this question has no answer.*" (Mackie, 1974: 47)

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