Backward contact tracing: The literature

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Backward contact tracing: the literature

- Literature search (PubMed/preprints) May 2021
- One key article: Endo et al.
  - Modelling study: effectiveness of backward CT + traditional (forward) CT
  - Overdispersion of cases
  - Backward CT more likely to identify primary case
  - Primary cases likely to generate 3-10x more infections
  - Increases CT effectiveness by 2-3x
Findings from other papers

- Kojaku et al. (2020)
  - Hypothetical and empirical COVID-19 datasets
  - Backward CT most effective when infections are not equally distributed
  - Digital contact tracing [proximity tracking apps] can increase impact on backward CT
- Bradshaw et al. (1)
  - Bidirectional CT can ↓ R number by at least 0.3
  - Adding smartphone-based exposure information ↓ R number further (0.25)
  - Most effective when case ascertainment sub-optimal (poor test sensitivity) or when a positive test is required before commencing CT
- Bradshaw et al. (2)
  - Bidirectional CT can be used effectively in situations with new variants to identify cases with new variants when prevalence of the new variant is low
  - Regions with even “moderately functional” CT programmes focusing on new variants could substantially slow spread of infection
Findings from other papers

• Foster et al. (2021)
  • Small pilot study (20 cases identified and backward CT implemented)
  • Local knowledge and local networks underpins its effectiveness
• Fyles et al. (2021)
  • Modelling study using UK CT model, examined effect of recall bias/delay
  • Limiting delay to identification of primary case is crucial or benefit of backward CT lost
• Scarabel et al. (2020)
  • Needs to be performed ≥5 days prior to symptoms/positive test
Countries where backward CT has been implemented

- Little operational detail
- Countries identified included Japan, South Korea, Vietnam, Taiwan, US
  - Focus on identifying clusters and stamping out widespread transmission (rather than identifying each individual case)
  - Relied on experienced contact tracers, some prioritisation
  - Wide variety of potential infection settings identified

Limitations of backward CT

• Logistical burden
• When to implement/prioritise backward CT?
• Relies on engagement
• Requires sharing of information and intelligence
• Effectiveness hinges on reducing delays in testing, tracing and isolation
• Test sensitivity and specificity
  • false results; role of positive predictive value
• Modelling studies – no distinction between mild and severe symptoms or individual aspects


