Digital Contact Tracing: A Cochrane Review

Are digital solutions more effective than manual methods for measuring outbreak response, proximity tracing, and symptom tracking? A Cochrane rapid review evaluates real-time and modeled digital contact tracing studies to address this question.

**EVIDENCE ASSESSED**

- 12 total studies included
- 3 assessed digital contact tracing during an outbreak
  - Ebola (Sierra Leone), Tuberculosis (Botswana), and Pertussis (USA)
- 3 assessed digital contact tracing in the setting of simulated outbreaks within schools
- 6 observational cohort studies
- 4 assessed digital solutions via COVID-19 simulations
  - 2 simulated close contacts in non-specific outbreak settings
- 6 mathematical models

**RESULTS**

- **Is digital contact tracing effective?**
  - Digital tracing effectively...
  - Reduced secondary cases when paired with other public health measures. (Low certainty evidence, 2 modeling studies)
  - Increased number and accuracy of close contacts identified compared to self-reported diaries or surveys. (Very low certainty evidence, 2 cohort studies)
  - Reduced time required to complete a set of close contacts. (Very low certainty evidence, 1 cohort study)
  - ...but manual tracing was more effective in reducing Reff
  - Reff* reduction compared to self-isolation alone
    - Digital Kucharski (2020): 18%
    - Manual Kucharski (2020): 35%
    - Digital Ferretti (2020): 26%
    - Manual Ferretti (2020): 53%
  - *Reff (effective reproductive number): average number of secondary cases per index case (low certainty evidence from 2 modeling studies)

**How does digital tracing measure up to manual tracing?**

**ADVANTAGES**
- Digital system simpler to use
- Saves personnel time
- Improves accuracy with larger data sets
- Improves security measures

**DISADVANTAGES**
- Higher initial costs and staff training needs
- Technical problems with hardware & software
- Possibility of stolen hardware
- Variability in internet access

**OTHER CONSIDERATIONS**

- Important considerations include equity issues when employing digital contact tracing in at-risk populations or populations with poor access to internet. No study in the review addressed equity.
- No studies evaluated the potential of using digital solutions in conjunction with manual contact tracing.

The efficacy of digital contact tracing is largely unproven, but may help curb epidemic growth if combined with robust public health efforts. Digital solutions may have equity implications for at-risk populations.


Content: Emilie Morris (MS3, @morris_emilie) and Carlyn Harris (MS2, @carlynharris)

Editing: Angel Xiao (MS3, @an_xiao_) and Caroline Coleman MD (@cg_coleman)

Review: Sarah Hodgkinson PhD