Situational awareness to drive rapid action during the COVID-19 pandemic

Peter Margolis, MD PhD; Andrew Beck, MD MPH; David Hartley PhD MPH

Engaging Communities to Achieve Effective Data Sharing

April 13, 2022
Challenges to pursuing a regional response

- Large number of disconnected stakeholders
- Deluge of information (not always the right information)
- Delays, manual entry, misaligned data
Our approach

Regional, collaborative learning health system

- Engage stakeholders to co-design goals, measures, and theory of action
- Create single source for measures, make entire system visible
- Use data to build shared purpose, inform action, overcome competition
- Unleash community members’ motivation, insight, and expertise
Multi-Agency Coalition (MAC)

- Responses tailored to pandemic phases, driven by situational awareness and surveillance
  - Surge planning
  - Supply chain
  - Testing and tracing
  - NPI communication and enforcement
  - School re-opening
  - Vaccination
- Additional stakeholders engaged over time
- Started with shared aim, theory
Daily dashboards

- Vaccination
- Incidence
- Transmission ($R_{eff}$)
- Testing, % positivity
- COVID-19 patients in hospital beds, ICU beds, on ventilators
- Total hospital capacity
- Deaths

When appropriate (and possible), small multiples by age, race/ethnicity, geography

https://www.cctst.org/covid19#The-Health-Collaborative-Situational-Dashboard
Principles we’ve learned

• Integrate data, create a single source for measures, tailor to situation
• Data builds will, catalyzes networked approaches
• Pair top-down leadership with bottom-up expertise and action
• Rapid system change methods needed to work in a system that rapidly changes
• Amplify lived experienced and expertise
Global aim
Suppress regional SARS-CoV-2 transmission to reduce disease burden while maintaining economic productivity

Smart aims
By July 2020:
• Reduce mortality to seasonal levels
• Achieve and maintain $R_{eff} < 1.0$
• Maintain workforce >95%

Population
Greater Cincinnati region

Primary drivers

Surge planning
COVID-19 related healthcare delivery

Testing & Tracing
Public health-driven prevention of SARS-CoV-2 spread

Daily dashboards
Coordinated planning and service delivery

Secondary drivers

Hospital-based care
Ambulatory care
Congregate care (SNF, shelters, prisons)
Community-based care

Prepared, protected community and workforce
Detection, tracing, containment
Population awareness & behavior change

Leadership, coordination, communication
Supply chain for goods and services
Policy, regulation, rights, ethics
Real time measurement and learning system

Challenges and opportunities

• Lack of alignment in data, reporting based on jurisdiction (local, state, nation) – especially problematic for metropolitan areas that cross borders

• No existing processes for determining and tracking what data could be shared with whom and for identifying who had the authority to make that determination

• Fine grained data were not always available to make important strategic decisions (e.g., locating vaccine clinics and monitoring uptake in small geographic areas to understand if changes were needed about clinic placement or accessibility)

• Without a centralized delivery system for pandemic-related data, file movement and management was often done via email, complicating a central source of truth for the region

• Dashboards tended to be distributed via email or public University of Cincinnati website, requiring extra time between finishing the product and disseminating to stakeholders
Future directions – “Virtual Situation Room”

- Capability that enables data sharing, rapid coordination, and situational awareness
- Receiving and sharing data, analysis, and communications with and between stakeholders at varying levels of security and access
- At the ready for future phases of COVID-19, new pandemics, and disasters
- “Practiced” on other complex, persistent population health challenges