COVID-19 and Informatics

American College of Osteopathic Family Physicians – August 21, 2020

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References


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Agenda

• Roles for informatics in COVID-19 response
• Collecting data
• Growth of telemedicine
• Challenges for science
• Opportunities for informatics
Many roles for informatics in COVID-19 (Budd, 2020)

Collecting data

• US-based – National COVID Cohort Collaborative (N3C; Haendel, 2020)
  – https://covid.cd2h.org/
  – https://ncats.nih.gov/n3c
• International
  – Consortium for Clinical Characterization of COVID-19 by EHR (4CE; Brat, 2020)
    • https://covidclinical.net/
  – OpenSAFELY – UK-based collection of 24M primary care patient records from National Health Service (Williamson, 2020)
    • https://opensafely.org/
N3C data entry, stewardship, and use

- Sign data transfer agreement (DTA)
- Obtain Institutional Review Board (IRB) approval
- Deposit limited data set (LDS)
- Data harmonized and deposited into three tiers
- Tiers have different requirements for use

Population-based studies show risk of complications

- Kaiser – strong association with age and obesity (Tartof, 2020)
- For hospitalized across US, strong association with age, obesity, and sequential organ failure assessment scores (Gupta, 2020)
- Risk score for critical illness of 10 independent risk factors from Chinese patients (Liang, 2020)
- Underlying factors widely prevalent and varying by county in US (Razzaghi, 2020)
Telemedicine and COVID-19

• Prior to COVID-19, moderate availability and niche use
  – Evidence base prior to COVID-19 (Totten, 2020)
• CMS Section 1135 waiver allowed telemedicine for all Medicare visits; other insurers followed (Verma, 2020)
• Leading to rapid uptake
  – Massive increase, especially for non-urgent care (Mann, 2020; Bosworth, 2020)
  – 48% of physicians now using (Merritt Hawkins, 2020)
  – Including at OHSU
    • https://news.ohsu.edu/2020/04/13/ohsu-telehealth-rockets-into-new-era-of-medicine

Aided with modifications to HIPAA

• HHS Office for Civil Rights will not impose penalties for violations of certain HIPAA rules, including the lack of a Business Associate Agreement between the provider and the technology vendor.
• Covered health care providers may provide telehealth services by utilizing popular video chat applications including Apple FaceTime, Facebook Messenger video chat, Zoom, or Skype to provide telehealth services
• https://www.hhs.gov/hipaa/for-professionals/special-topics/emergency-preparedness/notification-enforcement-discretion-telehealth/
Challenges for science in a pandemic

• Covid-19 pandemic has tested conduct of science
• Science normally proceeds slowly, often with dead-ends (Mogensen, 2020)
• Modern communications have led to
  – “Toxic legacy of poor-quality research, media hype, lax regulatory oversight, and vicious partisanship” (Lenzer, 2020)
  – Leading to proliferation of pseudoscience (Caulfield, 2020) and conspiracy theories (Allen, 2020; Neil, 2020)
  – Must perpetuate trust and avoid harm (Saitz, 2020)
• Exacerbated by some advances in open science, such as preprints (Majumder, 2020; Fraser, 2020)
• Growing list of retracted papers (Retraction Watch, 2020)
• Variable information quality of Web sites (Joshi, 2020) – better for .org and .edu than .com

Challenges (cont.)

• “Panic and disorganization” (Herper, 2020) and “waste and duplication” (Glasziou, 2020) in studies of drugs
• Need to
  – Preserve clinical trial integrity (McDermott, 2020)
  – Rapidly progress from observational studies to RCTs (Califf, 2020)
• Beware of biases in the data – lower revenues of hospitals serving the underserved (Kakani, 2020)
Questions still needing answers in COVID-19 (Callaway, 2020)

• Why do people respond so differently?
• What is the nature of immunity and how long does it last?
• Has the virus developed any worrying mutations?
• How well will a vaccine work?
• What is the origin of the virus?

Opportunities for informatics

• Data to information to knowledge
• Requires competence in clinical informatics
  – Physicians (Hersh, 2014; Fridsma, 2018)
  – Informaticians (Silverman, 2019)
• Clinical informatics subspecialty (Detmer, 2014)
  – Subspecialty of all specialties
  – Until 2022, certification by “grandfathering” (Hersh, 2019)
Thank You!

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Some key sources of data

- Johns Hopkins University Center for Systems Science and Engineering
  - https://coronavirus.jhu.edu/map.html
- University of Washington Institute for Health Metrics and Evaluation
  - https://covid19.healthdata.org/
- COVID Tracking Project
  - https://covidtracking.com/
- Our World in Data
  - https://ourworldindata.org/coronavirus
- Outbreak.info
  - https://outbreak.info/
- 91-DIVOC Visualization
  - https://91-divoc.com/
- COVID Exit Strategy
  - https://www.covidexitstrategy.org/
- Oregon Health Authority
  - https://public.tableau.com/profile/oregon.health.authority.covid.19#!/
Some key information resources

- **US Government**
  - [https://www.coronavirus.gov/](https://www.coronavirus.gov/)

- **American College of Physicians**

- **American Medical Association**

- **Harvard Medical Student Curriculum**
  - [https://curriculum.covidstudentresponse.org/](https://curriculum.covidstudentresponse.org/)

Sources of evidence

- **Keck School of Medicine of USC COVID-19 Evidence-Based Summary**
  - [https://keck.usc.edu/covid-19-news/](https://keck.usc.edu/covid-19-news/)

- **Prevent Epidemics Weekly Science Review**
  - [https://preventepidemics.org/covid19/science/weekly-science-review/](https://preventepidemics.org/covid19/science/weekly-science-review/)

- **McMaster Key Evidence Sources**
Other links to informatics

• COVID-19 Interoperability Alliance
  – https://covid19ia.org/
• COVID-19 Data Index
  – https://www.covid19dataindex.org/