COVID-19 and Informatics

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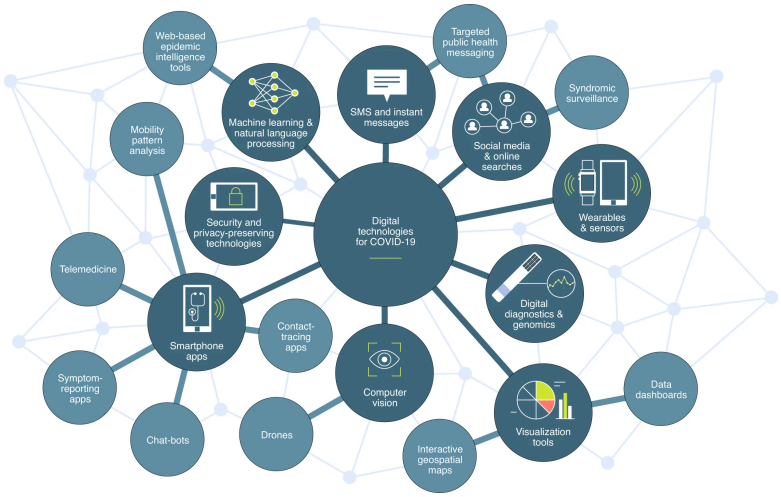
Agenda

- 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)



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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/

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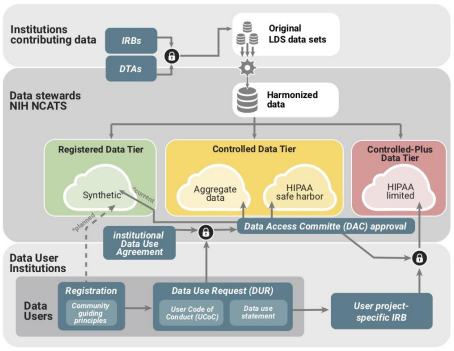
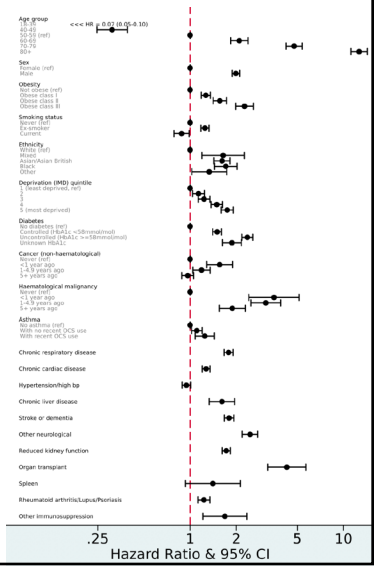
N3C data entry, stewardship, and use

- 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



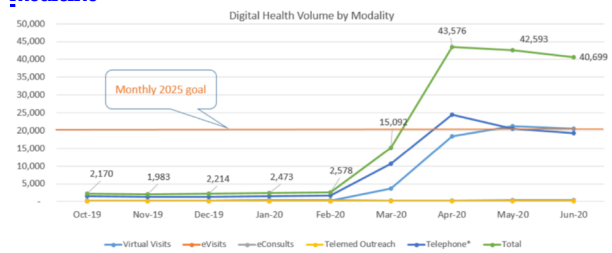
Population-based studies show risk of complications

- UK OpenSAFELY – based on primary care records of 17M adults in NHS England, linked to COVID-19 registry (Williamson, 2020)
- 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/

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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?

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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)

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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.nih.gov/coronavirus/
  - https://www.ncbi.nlm.nih.gov/sars-cov-2/
- American College of Physicians
  - https://www.acponline.org/clinical-information/clinical-resources-products/coronavirus-disease-2019-covid-19-information-for-internists
- American Medical Association
  - https://www.ama-assn.org/delivering-care/public-health/covid-19-2019-novel-coronavirus-resource-center-physicians
- Harvard Medical Student Curriculum
  - https://curriculum.covidstudentresponse.org/

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Sources of evidence

- Keck School of Medicine of USC COVID-19 Evidence-Based Summary
  - https://keck.usc.edu/covid-19-news/
- Prevent Epidemics Weekly Science Review
  - https://preventepidemics.org/covid19/science/weekly-science-review/
- McMaster Key Evidence Sources
  - https://www.mcmasterforum.org/networks/covid-end/resources-to-support-decision-makers/guide-to-key-covid-19-evidence-sources

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Other links to informatics

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