



HITAC Testimony *Public Health Ecosystem for the Future*

Kenneth D. Mandl, MD, MPH

Director, Computational Health Informatics Program
Boston Children's Hospital

Donald A.B. Lindberg Professor of Pediatrics
Professor of Biomedical Informatics
Harvard Medical School



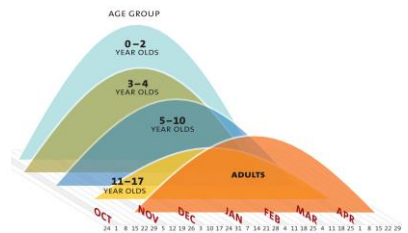
Review Paper ■

Implementing Syndromic Surveillance: A Practical Guide Informed by the Early Experience

KENNETH D. MANDL, MD, MPH, J. MARC OVERHAGE, MD, PhD, MICHAEL M. WAGNER, MD, PhD, WILLIAM B. LOBER, MS, MD, PAOLA SEBASTIANI, PhD, FARZAD MOSTASHARI, MD, MSPH, JULIE A. PAVLIN, MD, MPH, PER H. GESTELAND, MD, TRACEE TREADWELL, DVM, MPH, EILEEN KOSKI, MPHIL, LORI HUTWAGNER, MS, DAVID L. BUCKERIDGE, MD, MSC, RAYMOND D. ALLER, MD, SHAUN GRANNIS, MD

Abstract Syndromic surveillance refers to methods relying on detection of individual and population health indicators that are discernible before confirmed diagnoses are made. In particular, prior to the laboratory confirmation of an infectious disease, ill persons may exhibit behavioral patterns, symptoms, signs, or laboratory findings that can be tracked through a variety of data sources. Syndromic surveillance systems are being developed locally, regionally, and nationally. The efforts have been largely directed at facilitating the early detection of a covert bioterrorist attack, but the technology may also be useful for general public health, clinical medicine, quality improvement, patient safety, and research. This report, authored by developers and methodologists involved in the design and deployment of the first wave of syndromic surveillance systems, is intended to serve as a guide for informaticians, public health managers, and practitioners who are currently planning deployment of such systems in their regions.

■ J Am Med Inform Assoc. 2004;11:141-150. DOI 10.1197/jamia.M1356.



Early systems were **A.D.T** (chief complaint) based, because, prior to “Meaningful Use” program, EHRs were available in 5% of clinical settings

2002 Chief Complaint CC:

TABLE 2. Examples of different strings* used to denote vomiting in free-text emergency department chief-complaint data

1. Andvomiting	100. Vomitedx5today	300. Vommiting
2. Bormiting	101. Vomiteing	301. Vomited
3. Cvomiting	102. Vomites	302. Vommiting
—	103. Vomiteded	303. Vommiting
15. Vömiting	104. Vomitever	304. Vommiting
16. Vamiting	105. Vomitig	305. Vommitit
17. Vbomiting	—	—
18. Vlomiting	200. Vomitint	325. Vomti
19. Vimit	201. Vomitintg	326. Vomtied
20. Vimited	202. Vomitiny	327. Vomtig
—	—	—
50. Vomiging	250. Vomiting3xdays	377. Vvomitting
51. Vomihing	251. Vomittinga	378. Womiting
52. Vomig	252. Vomittingab	379. Womitting

Source: New York City Department of Health and Mental Hygiene chief-complaint database. *N = 379



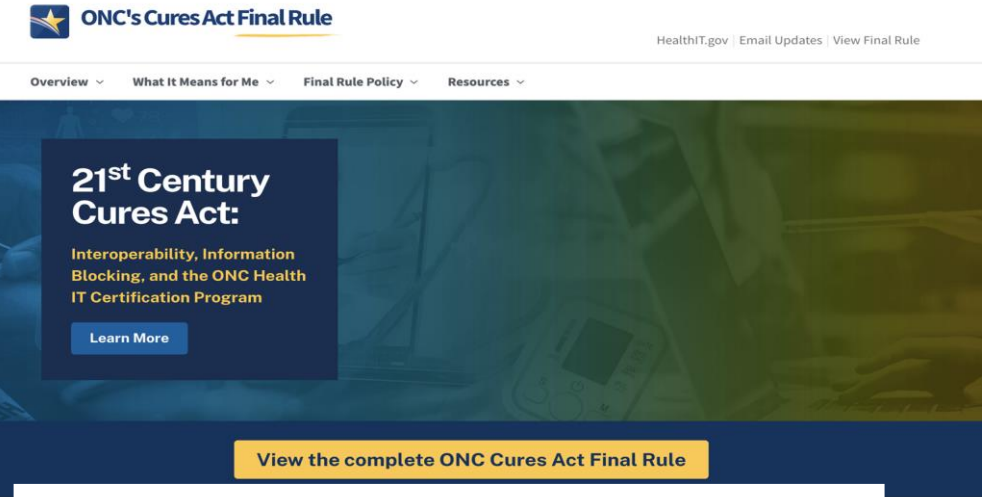
2022 Full EHR



- ~ 2 billion notes per year, accessible via NLP
- ICD codes
- Medications
- Orders
- Laboratory results
- Procedure codes
- Race/ethnicity
- Future:
 - Patient generated data
 - SDOH

21st Century Cures Act Certification

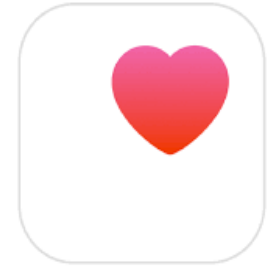
'has published **application programming interfaces** and allows health information from such technology to be accessed, exchanged, and used **without special effort** through the use of application programming interfaces or successor technology or standards, as provided for under applicable law, including **providing access to all data elements of a patient's electronic health record** to the extent permissible under applicable privacy laws;



2 Regulated APIs—Dec 2022 (ONC-funded technologies)

SMART on FHIR

Connect apps to the EHR for providers or patients

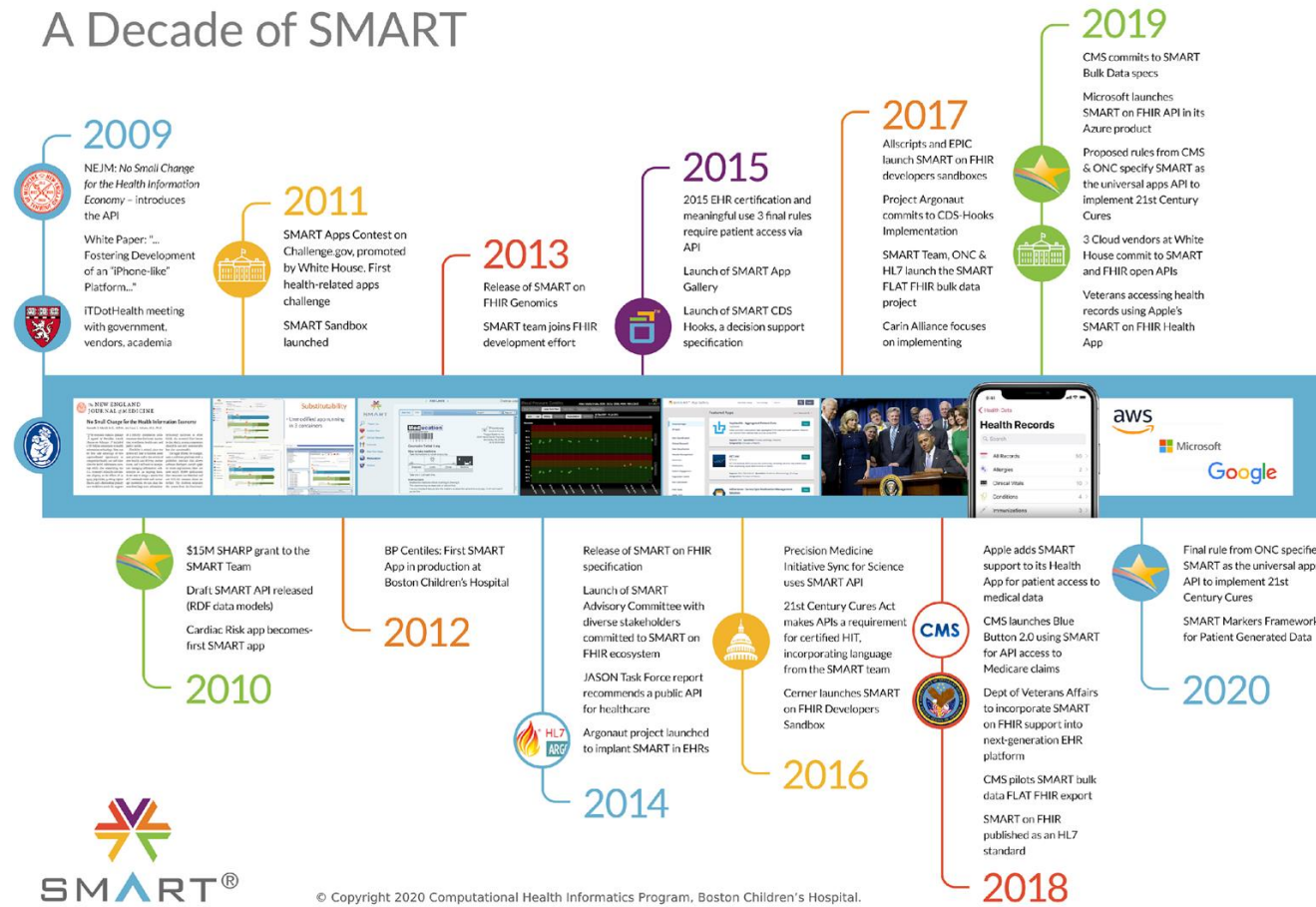


SMART/HL7 Bulk FHIR Access

Extract standardized data on populations



A Decade of SMART

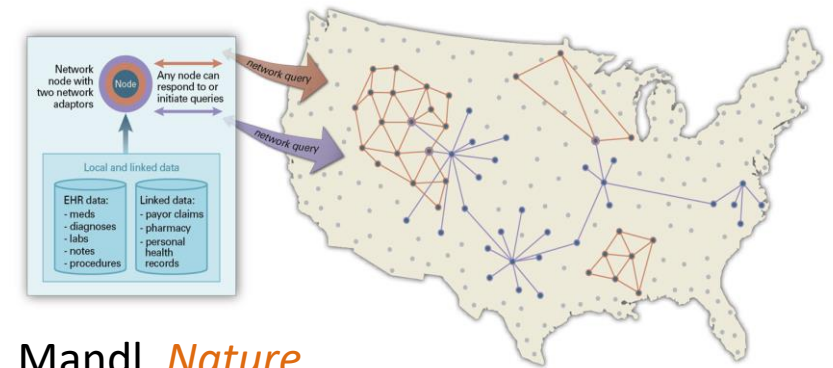


© Copyright 2020 Computational Health Informatics Program, Boston Children's Hospital.

Much **richer, standardized** electronic health data will soon be available nationwide to meet multiple needs

Public health can leverage **federally required health IT standards** and other broadly adopted capabilities

The EHR infrastructure, though siloed by institution, can be leveraged as a **federated network** providing intelligence



Mandl, *Nature Biotechnology*

SMART on FHIR and Bulk APIs together can underpin **bidirectional communication** between public health and clinical care