Electronic Health Records and "Big Data" for Health Care

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Overview

NCHS' National Health Care Surveys

EHRs: What are they? Why collect it?

Development of Interoperability Data Standards

Leveraging the Meaningful Use Incentive Program

Impact of EHR Data and Meaningful Use

"Big Data" for Health Care

NCHS' National Health Care Surveys

Produce accurate objective, nationally-representative statistics on health care to inform health care policy and serve a variety of research needs

National Health Care Surveys

National Ambulatory Medical Care Survey
- Physician Offices
- Community Health Centers

National Hospital Ambulatory Medical Care Survey
- Emergency Departments
- Outpatient Departments
- Ambulatory Surgery Locations

National Hospital Care Survey
- Inpatient Departments
- Emergency Departments
- Outpatient Departments including Ambulatory Surgery

National Study of Long Term Care Providers

Examples of the Data

Patients

- Demographics
- Insurance status
- Residential zip
- Medical conditions
- Smoking history
- Personal identifiers for linkage (e.g., to the National Death Index)

Encounters

- Reason for visit
- Diagnosis
- Procedures and services
- Medications or immunizations
- Laboratory and other diagnostic tests
- Types of providers seen

What are EHRs?

Electronic health records (EHR)

- System that pulls information from multiple sources
- Developed by commercial software vendors
- Interoperability issues
- Types of data that can be extracted:

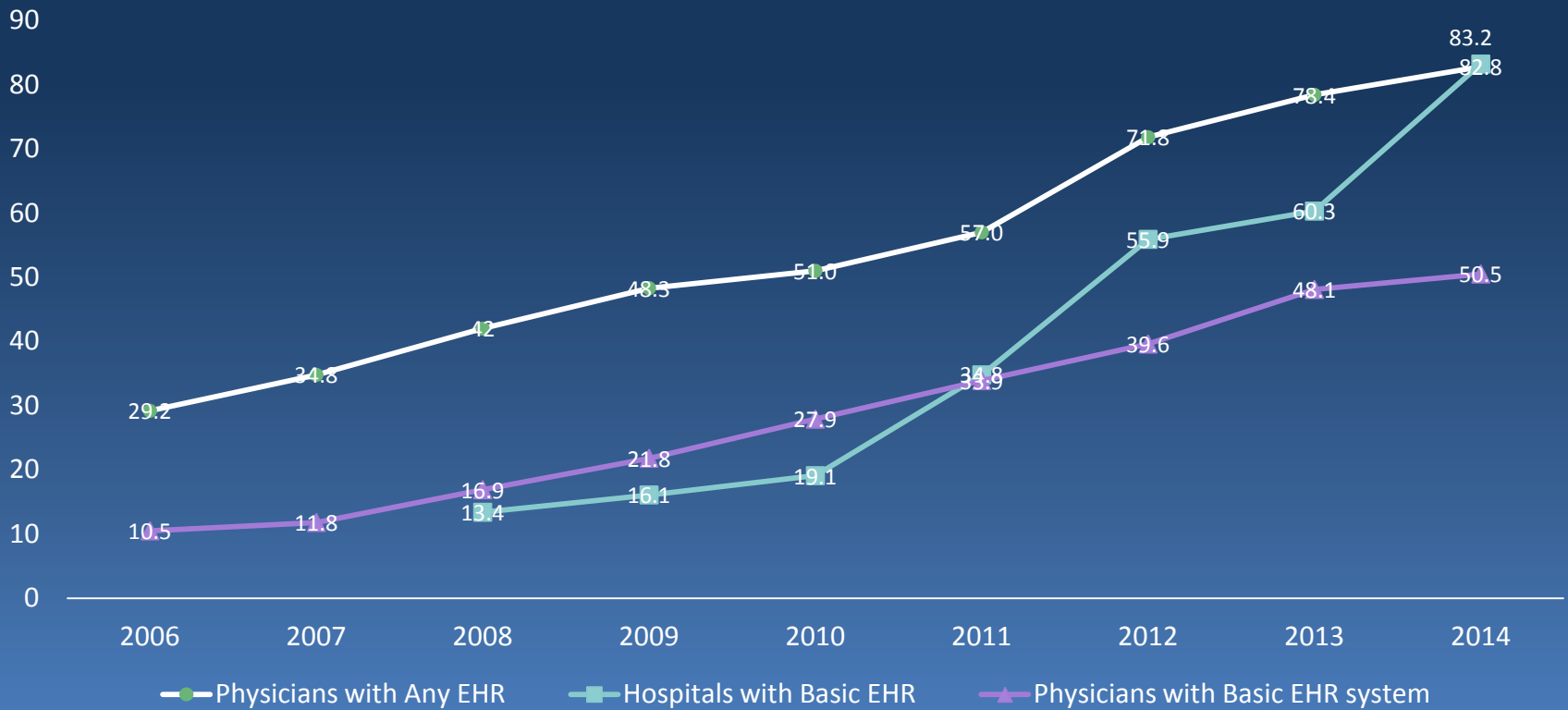|	
Patient demographics	Active problems
Vital signs	Visit dates and times
Medications	Procedures
Diagnoses	Test results
Labs	Clinical notes

Why move to EHR data?

Potentially

- Less burden of the provider

- More secure

- More timely

- More clinical detail and depth

- Greater volume of data

Why now?

Adoption of Electronic Health Record Systems by office-based physicians and acute care hospitals: United States

Physicians with Any EHR: 2006: 29.2, 2007: 34.8, 2008: 42, 2009: 48.3, 2010: 51.0, 2011: 57.0, 2012: 71.8, 2013: 78.4, 2014: 83.2

Hospitals with Basic EHR: 2008: 13.4, 2009: 16.1, 2010: 19.1, 2011: 34.8, 2012: 55.9, 2013: 60.3, 2014: 82.8

Physicians with Basic EHR system: 2006: 10.5, 2007: 11.8, 2008: 16.9, 2009: 21.8, 2010: 27.9, 2011: 33.9, 2012: 39.6, 2013: 48.1, 2014: 50.5

Legend: Physicians with Any EHR — Hospitals with Basic EHR — Physicians with Basic EHR system

What will it take to move to EHR data collection?

Research

- Conducted several pilot studies sponsored by ASPE

Data Standards

- HL7 Implementation Guide for the National Health Care Surveys

Incentives to change

- Medicare and Medicaid Electronic Health Record Incentive Programs
- 2015 Edition of Health IT Certification Criteria

HL7 Implementation Guide for CDA Release 2: National Health Care Surveys (NHCS)

Draft Standard for Trial Use

Provides a standardized format to submit data to fulfill the requirements of National Health Care Surveys

Automates the survey process via
- Streamlines the collection of data
- Enables increased sample pool allowing providers who want to participate in the surveys to do so

The HL7 CDA Implementation Guide (IG) is listed in the 2015 Interoperability Standards Advisory.
- IG is named as the best available content/structure and standard for national health care surveys.

Leveraging Meaningful Use Incentive Program

National Health Care Surveys are included in the recently published final rule for Meaningful Use (MU) (October 2015)

- Eligible hospitals and eligible providers (physicians) can use submission of National Health Care Surveys data as one of their options to fulfill the public health objective for Meaningful Use Incentive Program.

Leveraging Meaningful Use EHR Incentive Program

Declaration of Readiness for Public Health Reporting

The Centers for Disease Control and Prevention's National Center for Health Statistics (NCHS) is currently asking for data for the National Health Care Surveys from Eligible Professionals (EP), Eligible Hospitals (EH), and Critical Access Hospitals (CAH) to fulfill the Meaningful Use Electronic Health Records (EHR) Incentive Programs Public Health Objective, Measure 3, submission of data for specialized registry reporting.

To meet this objective, EPs, EHs, and CAHs are requested to electronically submit data from Certified Electronic Health Record Technology (CEHRT) to NCHS.

To register, please call 301–458–4321 or E-mail NCHSMUInfo@cdc.gov.

MU Registration Statistics: May 12, 2016

Number of EPs registered: 119,862
  Number in 2016 NAMCS   521

Number of EHs/CAHs registered: 607
  Number in 2016 NHAMCS   40
  Number in 2016 NHCS   82

Number of spreadsheets sent out: 3,354
Number of spreadsheets returned: 2,139

Impact of MU

Help with recruitment of sampled physicians and hospitals.

Non-sampled physicians and hospitals can also provide data for NAMCS, NHAMCS, and NHCS.

Data files:

- Data files with sampled physician and hospital data used to make national estimates.

- Research data sets with sampled and non-sampled physicians and hospitals.

Impact of EHR Data

Clinical Depth/Richness

- Collect clinical information objectively without need for medical record abstraction.
- Medications, laboratory tests, Imaging, Results

Volume

- Obtain all inpatients and ambulatory visits including self-pay, charity and prisoners.
- Rare conditions and new procedures
- Out of scope OPD visits

Linkage Across Hospital Settings and to Other Data

- National Death Index (30, 60, 90 day mortality)
- Medicare and Medicaid Claims

Clinical Depth/Richness

Diagnoses

- NAMCS=5, NHAMCS=5, NHDS=7, and NHCS=25 Diagnoses are unlimited on EHR.

Active problems

- NAMCS=27, NHAMCS ED=22, and NHCS=0

  Active problems are unlimited on EHR.

Lab tests

- NAMCS=7, NHAMCS=7, and NHCS=0

  All labs and results are possible with EHR.

Medications

- NAMCS=30, NHAMCS=30, and NHCS=0

  All medications, route, dosage, and frequency are available with EHR.

Volume

Number of records collected, 2014

Setting	Sample based	Electronic (UB-04 data)
Inpatient discharges	151,551* (n=200 hospitals)	1,653,622 (n=94 hospitals)
ED visits	23,909 (n=375 hospitals)	4,530,360 (n=83 hospitals)
OPD visits	26,259 (n=294 hospitals)	19,005,777 (n=86 hospitals)

*=2010 NHDS

Linkage across hospital settings and to other data

NHCS can collect administrative claims or EHR data, identify single discharges or visits, and then identify individuals.

- 86 hospitals in the 2013 NHCS reported 15.1 million OPD visits which were made by 4.4 million individuals.

Two pilot studies were conducted to test NHCS data linkage to the NDI.

- Match rates for known dead are 94% for inpatients and 73% for ED for 2012 data.

- Conducting further analysis on the ED linkage.

Impact of MU and EHR Data

"Big data" for health care

Effects of "Big Data": Analysis

Large numbers of records allow analyses of rare conditions.

Universe of data within provider location allows previously undoable analyses.

Additional data elements allow more sophisticated analyses (e.g., more diagnoses, medications and/or lab results).

Additional response categories allow more in-depth analyses of specific data elements.

Effects of "Big Data": File Size and Processing

File size

- Where and how to store

Processing

- Prioritization of 'data cleaning' efforts
- No manual review

Public use files

- To protect confidentiality create a sample? Synthetic data?

Moving Forward…

Work with EHR vendors to test and improve the HL7 CDA IG.

Implement onboarding system for EPs, EHs and CAHs using a web portal.

Continue to register EP, EHs, and CAHs for public health reporting.

Moving Forward (continued)...

National Hospital Care Survey:
- Continue to recruit sampled hospitals and obtain EHR data.
- Partnered with UHC to get data from their members as interim step.
- Prepare for integration of claims data with the EHR data from hospitals.
- Outreach to NHCS sampled hospitals who are not registered for MU and encouraging them to register.

National Ambulatory Medical Care Survey:
- Continue to register physicians for MU credit.
- Obtain EHR data from sampled physicians.
- Prepare for integration of abstracted data and EHR data.
- Planning for 2017 NAMCS sample by " oversampling" registered physicians.

Acknowledgement

Thank You!!

More information on the National Health Care Surveys and MU can be found at:
http://www.cdc.gov/ehrmeaningfuluse/national_health_care_surveys.html