Big Data for Government Symposium

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HHS Perspectives on Health IT and Big Data

November 20, 2013
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Federal Health IT Strategic Plan

**2011 – 2012: Data Capture and Sharing**
- Accelerated adoption
- Data capture and exchange

**2013 – 2014: Demonstrate Health System Improvement**
- Widespread adoption and data exchange
- Process improvement

**2015+: Transform Health Care and Population Health through Health IT**
- Demonstrated improvements in care, efficiency, and population health
- Breakthrough examples of delivery and payment reform

**Beyond 2015: Transformed Health Care**
- Enhanced ability to study care delivery and payment systems
- Empowered individuals and increased transparency
- Improved care, efficiency, and population health outcomes

**Strategic Goals**
- Achieve Adoption and Information Exchange through Meaningful Use of Health IT
- Improve Care, Improve Population Health, and Reduce Health Care Costs through the Use of Health IT
- Inspire Confidence and Trust in Health IT
- Empower Individuals with Health IT to Improve their Health and the Health Care System
- Achieve Rapid Learning and Technological Advancement
Goal I: Achieve Adoption and Information Exchange through Meaningful Use of Health IT
• EHR Incentive Program contains three stages of increasing technological complexity and function required by HHS in EHRs

• Program started with ARRA funding in an initiative known as HITECH (Health Information Technology for Economic and Clinical Health)

• In 2010, only 25 percent of physician offices and 15 percent of acute care hospitals used EHRs
• In May 2013, program announced it had surpassed its 2013 goals by achieving more than 80% of hospitals and more than 50% of providers with meaningful EHR use
• Program has 2 major components: objectives and electronic clinical quality measures (eCQMs)
• Stage 2 included 29 hospital (EH) and 64 outpatient measures (EP)
Stage one meaningful use objectives included:

- Using a software application to inform clinical decisions
- Entering medical prescriptions electronically
- Providing patients with a timely electronic copy of their health information
- Securing EHRs to protect the privacy of patient data

02/01/2013
<table>
<thead>
<tr>
<th><strong>eMeasure Title</strong></th>
<th>Breast Cancer Screening</th>
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<tr>
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<tr>
<td><strong>eMeasure Version number</strong></td>
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</tbody>
</table>

**Measurement Period**: January 1, 20xx through December 31, 20xx

**Measure Steward**: National Committee for Quality Assurance

**Measure Developer**: National Committee for Quality Assurance

**Endorsed By**: National Quality Forum

**Description**: Percentage of women 40–69 years of age who had a mammogram to screen for breast cancer.

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THE MEASURES AND SPECIFICATIONS ARE PROVIDED "AS IS" WITHOUT WARRANTY OF ANY KIND.
Initial Performance of eCQMs

- 100% defect rate
- Not standardized or harmonized
- Much paper or claims-based measure content could not be specified
- Standards underpinning program still in DSTU
- Standards for eCQMs differ from clinical decision support
- Little workflow testing or wild-type data testing

02/01/2013
HHS Improvements to eCQM Development

- LEAN process improvement for federal coordination of technology and policy
- Agile software development
- Coordination between agencies
- Value Set Authority Center
- Testing throughout the process
- Vendor feedback before release
- Ongoing standards improvements
Potential Gains From EHR Meaningful Use

- Data exchange and interoperability → improved follow up with less waste
- Standardization of data capture
- Improved safety through decision support
- Real-time evidence-based medical care
- Improved patient engagement
- Better team-based care
- More remote and home-based care
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Office of the National Coordinator for Health Information Technology

Beyond 2015: Transformed Health Care

Enhanced ability to study care delivery and payment systems

Empowered individuals and increased transparency

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STRATEGIC GOALS

Achieve Adoption and Information Exchange through Meaningful Use of Health IT

Improve Care, Improve Population Health, and Reduce Health Care Costs through the Use of Health IT

Inspire Confidence and Trust in Health IT

Empower Individuals with Health IT to Improve their Health and the Health Care System

Achieve Rapid Learning and Technological Advancement
Goal V: Achieve Rapid Learning and Technological Advancement
• Real time machine learning and algorithm calculation
• Ability to detect small but clinically relevant trends prospectively
• Generate instantaneous population health information and provide early warnings
• Provide personalized medicine for each patient based on big data
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What Data Does the EHR Contain Now?

- **Clinical elements:**
  - Structured fields (vital signs, medications, ROS)
  - Free text notes
  - Laboratory results
  - Images
  - Diagnostic test results

- **Administrative information**
  - Process performance metrics
  - Billing (i.e. ICD codes)
Healthcare + Your Body = Really Big Data

What Could We Capture and Integrate with EHR Data?

- Personal health records
- External sources from the health system (i.e. School records, Prison records, Alternative Medicine)
- Longitudinal reports of fitness, vital signs, symptoms, and family history
- Environmental data like air quality
Examples of health data resources that are available

Listed below are just some of the key health data sets available that could be utilized in applications/services that help care providers, consumers and communities. See pages following for brief summaries of each data set. And check out Health.Data.gov for a much more comprehensive listing of available data resources.

<table>
<thead>
<tr>
<th>Type of Data Set</th>
<th>If you are building an app/service for...</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Providers</td>
</tr>
<tr>
<td>Provider Quality COMPARE APIs at data.medicare.gov</td>
<td>✓</td>
</tr>
<tr>
<td>Hospital / Nursing Home / Home Health / Dialysis Compare</td>
<td>✓</td>
</tr>
<tr>
<td>FQHC (Federally Qualified Health Center) Directory</td>
<td>✓</td>
</tr>
<tr>
<td>National Plan and Provider Enumeration System (NPPES) Downloadable File</td>
<td>✓</td>
</tr>
<tr>
<td>National Library of Medicine API Portal</td>
<td>✓</td>
</tr>
<tr>
<td>MedlinePlus Connect</td>
<td>✓</td>
</tr>
<tr>
<td>Clinicaltrials.gov API</td>
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</tr>
<tr>
<td>NIH's Visible Human Project</td>
<td>✓</td>
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<tr>
<td>NLM’s TOXMAP: Online Toxicology Maps</td>
<td>✓</td>
</tr>
<tr>
<td>VitalStats</td>
<td>✓</td>
</tr>
<tr>
<td>Cancer Incidence – Surveillance, Epidemiology, and End Results (SEER) Registries</td>
<td>✓</td>
</tr>
<tr>
<td>FDA Recalls (drug, food and product)</td>
<td>✓</td>
</tr>
<tr>
<td>HealthCare.gov Insurance Plan Directory</td>
<td>✓</td>
</tr>
<tr>
<td>Mental Health Services Directory/Substance Abuse Treatment Center Directory</td>
<td>✓</td>
</tr>
</tbody>
</table>
Examples of health data resources that are available

* Note: text in light blue hyperlinks to the data set as it’s available via Health.Data.gov

**MyFood-a-Pedia**

- MyFood-a-Pedia provides information on the total calories; calories from solid fats, added sugars, and alcohol (extras); MyPyramid food group and subgroup amounts; and saturated fat content of over 1,000 commonly eaten foods with corresponding commonly used portion amounts.

**“Blue Button” Data**

- The Blue Button download capability enables veterans, Medicare beneficiaries, and members of the military to download electronic copies of their personal health information (via secure web portals)
- Learn more about Blue Button and examine sample file formats at [www.bluebuttondata.org](http://www.bluebuttondata.org)

**Dietary Supplements Labels Database:**

**brands, ingredients, and references**

- Designed to help both the general public and health care providers find information about ingredients in brand-name products, including name, form, active and inactive ingredients, amount of active ingredient/unit, manufacturer/distributor information, suggested dose, label claims, warnings, percentage of daily value, and further label information.

**Hospital, Skilled Nursing Facility, Home Health Agency, Renal Dialysis Facility, Hospice Cost Report Data**

- Collections of cost report data from annual reports filed with CMS by hospitals, skilled nursing facilities, home health agencies, renal dialysis facilities, and hospices
Examples of health data resources that are available

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Medicare Expenditure Panel Survey (MEPS)
- The Medical Expenditure Panel Survey (MEPS) is a set of large-scale surveys of families and individuals, their medical providers, and employers across the United States. MEPS is the most complete source of data on the cost and use of health care and health insurance coverage.

Wide-ranging Online Data for Epidemiologic Research (WONDER)
- Massive array of public health databases re: births, deaths, disease incidence, health event case reports, demographics, community health

Your Food Environment Atlas
- Contains detailed community-level statistics on food environment indicators (e.g., access and proximity to grocery stores, food prices, etc.) – providing a spatial overview of a community’s ability to access healthy food and its success in doing so

Web-based Injury Statistics Query and Reporting System (WISQARS)
- WISQARS is an interactive query system that provides data on injury deaths, violent deaths, and nonfatal injuries treated in U.S. emergency departments

Behavioral Risk Factor Surveillance System (BRFSS)
- The Behavioral Risk Factor Surveillance System (BRFSS) is the world’s largest, on-going telephone health survey system, tracking health conditions and risk behaviors in the United States yearly since 1984. Currently, data are collected monthly in all 50 states, the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and Guam.
Examples of health data resources that are available

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**Provider Quality Compare APIs**
- New user interface/analytical tool/APIs for health care provider quality Compare data at data.medicare.gov
- Quality and patient satisfaction data available via APIs for thousands of nursing homes, hospitals, home health agencies, and dialysis centers

**FQHC Directory**
- Downloadable directory of all federally qualified health centers (FQHCs) across the U.S., which provide comprehensive primary and preventive care to people of all ages, regardless of ability to pay

**Hospital Compare / Nursing Home Compare / Home Health Compare / Dialysis Facility Compare**
- Downloadable databases of quality and patient satisfaction measures for thousands of hospitals and nursing homes

**National Library of Medicine API Portal**
- One-stop access to a growing array of NLM Application Programming Interfaces (APIs) that enable you to access an array of remarkably powerful medical and scientific information resources

**National Plan and Provider Enumeration System (NPPES) Downloadable File**
- Contains FOIA-disclosable health care provider data for providers who have been assigned National Provider Identifiers (NPIs) – e.g., name, business address, phone number, NPI number, provider license number

**Medline Plus Connect**
- This new service provides patient portals and electronic health record (EHR) systems with customized patient education information in electronic form that maps to the diagnoses, medications, and lab tests about which you are asking. Info is drawn from the National Library of Medicine’s MedlinePlus, an authoritative, up-to-date health information resource for patients, families, and health care providers
Examples of health data resources that are available

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**Medicare Claims “Basic Standalone Files”**
- Claim-level public use files (“slimmed” for privacy protection) made available for free public download for all major types of care: inpatient, prescription drug, home health, skilled nursing, outpatient procedures, physician, hospice, durable medical equipment
- Helps users understand patterns of utilization of services and cost in the Medicare population

**National Health Expenditures - State (Provider), State (Residence), Age/Gender, Sponsors (Businesses, Households, and Governments), Historical**
- The National Health Expenditure Accounts (NHEA) are the official estimates of total health care spending in the United States

**Health Indicators Warehouse**
- Provides data on over 1,100 metrics of community health, health care system, and determinants-of-health performance (at whatever level of granularity this data is available – national, state, hospital referral region, county)
- Available both via downloadable files and via web service APIs

**QuitNowTXT**
- A new health text message library developed by the National Cancer Institute (NCI) that contains interactive and evidence-based smoking cessation text messages targeted to adult smokers
- Text messages offer tips, motivation, encouragement and information tailored to the user’s responses
- Also available at [http://smokefree.gov/hp.aspx](http://smokefree.gov/hp.aspx)

**Assisted Reproductive Technology (ART) Surveillance**
- The data collected include patient’s diagnosis, type of ART, clinical information pertaining to the ART procedure, and information on pregnancy outcomes.
Examples of health data resources that are available

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**FDA Recalls**
- This feed describes all new items being recalled by FDA
- Complementary resource: a downloadable XML file which contains all company-issued recalls for drugs, food, products from 2009 to the present ([http://www.data.gov.communities/node/81/data_tools/345](http://www.data.gov/communities/node/81/data_tools/345))

**HealthCare.gov Insurance Plan Inventory**
- These downloadable files contain the inventory of private insurance carriers, products, and plans currently listed in HealthCare.gov – information collected from 1000 issuers of individual and small group insurance across all 50 states and the District of Columbia.

**Household Products Database**
- This database links over 4,000 consumer brands to health effects from Material Safety Data Sheets (MSDS) provided by the manufacturers and allows scientists and consumers to research products based on chemical ingredients.

**Mental Health Services Directory / Substance Abuse Treatment Directory**
- Downloadable directories of mental health and substance abuse treatment centers across the U.S.
• $13 million annual investment in for researchers to virtually access CMS data from their own workstation
• Reduces cost and improves speed of access to CMS data
• Enhances privacy and security of protected beneficiary information by ensuring identifiable data does not leave the VRDC environment
• On-demand data refreshing ➔ faster research completion times
• Multiyear, multimillion dollar investment to develop new approaches, standards, methods, tools, software, and competencies necessary for biomedical scientists to capitalize on big data
• Technology and policy approach to widespread data sharing, management, and meaningful re-use
• Additional focus on training new biomedical data researchers
• NIH has budgeted $27 million in funding to BD2K in FY2014
• Originally stood up in October 2012 for Meaningful Use value sets
• Content now expanding to research, HL7, CDC, standards content, intensional content
• Now allows authoring and QA
• Soon to include crowdsourcing, automatic updates
• https://vsac.nlm.nih.gov/
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Where Is Health IT Moving?

- Integration of disparate records and data sources
- Harmonization of data elements
- New, more agile and modular standards
- New research methodologies like Large Simple Trials
- Aggregate data for population health
- Better patient safety and improved workflow
Where Is Health IT Moving?

- Learning EHR
- Natural Language Processing
- Personalized medicine
- Telehealth and point of care anywhere
- Educational opportunities for providers and patients integrated into care
Questions and Feedback

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Office of the National Coordinator for Health IT

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(202)475-2470
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