Implementing HIT, EHRs & Telehealth to Enhance Quality and Improve Health

Health Resources and Services Administration (HRSA)
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Transformation is a Journey
Anita C. Murcko, MD, FACP
Partner, Cambiare, LLC
Former AHCCCS Medical Director, Clinical Informatics and Provider Adoption (AMIE & PACeHR)
and past Executive Director, Arizona Medical Information Exchange (AMIE)

Overview

1. Using chronological highlights, appreciate the fusion of technology and quality that underpin healthcare transformative efforts of meaningful use (MU)

2. Recognize Arizona role and resources to aid transformation (e.g. AMIE, HINAZ and PACeHR)

3. Consider broader implications of MU in context of standards and interoperability (e.g. NHIN, Beacon, SHARP, GOHIE)
### Journey Begins

<table>
<thead>
<tr>
<th>Date</th>
<th>Highlights</th>
<th>Notes</th>
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<tbody>
<tr>
<td>1940s</td>
<td>First digital computers</td>
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<td>1950s</td>
<td>Computers in industry</td>
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<td>1960s</td>
<td>First hospital EMR (Massachusetts General Hospital)</td>
<td>MUMPS (MGH Utility Multi-Programming System)</td>
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<td>1970s</td>
<td>First ambulatory EMR (Indiana University)</td>
<td>First personal computers</td>
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<td>1980s</td>
<td>First Clinical Decision Support (University of Pittsburgh)</td>
<td>Medical Expert Systems</td>
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<td>Artificial Intelligence (AI)</td>
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<td>1990s</td>
<td>Worldwide Web</td>
<td>Fax and cell phones</td>
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<td>New tools</td>
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"I understand the concept, sir, but I think I'd do better if it were a donut"

Courtesy of Yael Harris, PhD, MHS, Director, Office of Health IT & Quality, HRSA

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"I BELIEVE IN THE CAREST-AND-STICK APPROACH, DON'T I?"

Courtesy of Yael Harris, PhD, MHS, Director, Office of Health IT & Quality, HRSA
### 21st Century

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<td>2000</td>
<td>HHS commits health care data public reporting agenda - CMS-QIOs</td>
<td>Sequence planned health plans, acute facilities, nursing homes, home health, hospitals, ambulatory care providers.</td>
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<td>2001</td>
<td>Chronic Care Model; Pay for Performance (P4P)</td>
<td>Arizona was the only state without mandatory reporting and 57 hospitals participating.</td>
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<td>2002</td>
<td>Hospital Public Reporting Demonstration Pilot (5 states selected by CMS)</td>
<td>Arizona State Diabetes Collaborative displayed self-reported ambulatory clinical data on line.</td>
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<td>2003</td>
<td>IHI Breakthrough Collaborative via CMS focused on registries, rapid cycle reporting and PDSA</td>
<td>Arizona State Diabetes Collaborative displayed self-reported ambulatory clinical data on line.</td>
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<td>2004</td>
<td>CMS - Doctors Office Quality (DOQ); AHCCCS Director Rodgers</td>
<td>President Bush Executive Order for interoperable HIT.</td>
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### Journey Continues

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<tr>
<td>2005</td>
<td>Governor Napolitano Executive Order for Arizona e-health roadmap</td>
<td>Chronic Care Model and Medical Home as foundation.</td>
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<td>2006</td>
<td>Arizona Health-e Roadmap delivered and non-profit started</td>
<td>Health Information Security &amp; Privacy (HISPC) Grant to Arizona.</td>
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<td>2007</td>
<td>Medicaid Transformation Grant awarded to Arizona</td>
<td>$11.7 million for people, processes, tools and technology.</td>
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<td>2008</td>
<td>Arizona Medical Information Exchange (AMIE) launched</td>
<td>Arizona’s first operational Health Information Exchange (HIE).</td>
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<td>2009</td>
<td>Purchasing and Assistance Collaborative for Electronic Health Records (PACeHR)</td>
<td>REC precursor created.</td>
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<td></td>
<td>ARRA-HITECH</td>
<td>Patient Centered Medical Home (PCMH).</td>
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### HHS Medicaid Transformation Grants

- Competitive grants program established by Deficit Reduction Act (DRA) of 2005 through HHS.
- Administered by CMS (Centers for Medicare and Medicaid Services).
- Designed to slow Medicaid spending growth while increasing access to healthcare.
- Foster innovative methods to improve effectiveness and efficiency.
- $150 M distributed over fiscal years 2007 and 2008.
- Arizona received $11.7 M.

[http://www.cms.hhs.gov/MedicaidTransGrants/02_012507awards.asp](http://www.cms.hhs.gov/MedicaidTransGrants/02_012507awards.asp)
Secure, web-based health information exchange to give providers quick access to key health information (medical home) through a secure Internet connection at the point of care.

Guiding Principles (2007)

- Meet and/or establish standards
  - Security and Privacy (HIPAA, NIST)
  - Data Exchange/Messaging (HL7, DICOM, NCPDP, ASCX12, CLINICs)
  - Document (CDA, CCD)
  - Terminology (ICD-9/10, SNOMED-CT, LOINC, CPT, HCPCS Category II, NDC)
  - Web technologies and internet connectivity standards
  - Certification Commission for HIT (CCHIT)
  - Medicaid Information Technology Architecture (MITA)
  - Best practices for application architecture
  - Nationwide Health Information Network (NHIN)

- Adhere to highest levels of privacy and security
- Maximize use of open source software
- Start federated (no central data stored)
- Provide low cost to providers to facilitate use

AMIE Snapshot

- Federated exchange with statewide reach
- Operated October 2008 to January 2010
- Incorporated as non-profit August 9, 2009
- 3 major record types
  - Discharge Summaries (and other reports)
  - Medication History (PBM claims)
  - Laboratory Test Results (SonoraQuest)
- 10 hospitals, 6 PBMS, 1 lab
- 100+ users in diverse clinical settings
  - Emergency Departments
  - Ambulatory and Behavioral Health Clinics
  - Private Offices

AMIE Snapshot (continued)

- Arizona Medical Information Exchange (AMIE)
- Guiding Principles (2007)
- AMIE Snapshot
AMIE at Technical Suspension
(Grant concluded in January 2010)

• Operating statewide, multi-payor
• Over 7.6 Million Records
  – Labs (Sonora Quest)
  – Medication Histories (Medicaid PBMs)
  – Discharge Summaries and other documents (3 largest hospital systems)
• Over 3.1 Million Patients (~50% of State)
• Over 100 users
• Expansions in process
  – Clinician Users
  – Data Partners
  – Behavioral Health Pilot

AMIE Lessons Learned

1. Think statewide. Start strategic.
2. Big picture. Build trust.
3. Begin with simple datasets.
4. Model agreements and policies are only a start.
5. Harmonizing statutes is huge.
6. Realize early that HIE takes a village (executive, technical, financial, clinical, legal, compliance, medical records, outreach and marketing, government, and consumers)
7. Inaugural users are key.
8. Set realistic expectations, communicate often.
9. Make it intuitive and easy to access.

"Foundation of any HIE is building social capital, a radius of trust and goodwill, among competing and disparate stakeholders who want to initiate an exchange."

http://www.ehealthinitiative.org/sitemap.aspx
1/25/2011

Health Information Network of Arizona
established July 12, 2010

Main Reasons for HIE Creation (n=61)

Health Information Network of Arizona

Website: www.ehealthnetworkaz.org
Challenges are broad for HIE

- Politics
- Funding and Sustainability
- Policy
- Technology
- Outreach
- Adoption

Courtesy of Yael Harris, PhD, MHS, Director, Office of Health IT & Quality, HRSA

Purchasing & Assistance Collaborative for Electronic Health Records

Created Fall 2008

Courtesy of Hyatt House, Pflugerville, Texas; Office of Health IT & Quality (2010)
PACeHR Mission and Vision

**Mission**
Foster EHR adoption and information sharing by leveraging web-based technologies, economies of scale, aligned metrics and strategic partnering

**Vision**
Every Arizona clinician will have access to an affordable, interoperable, certified, web-based electronic health record solution, including support, services and products

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PACeHR Value Proposition

1. Assist providers with selection, acquisition, installation and contract negotiation of affordable EHR systems
2. Provide user support services that enable clinicians to achieve meaningful use of EHRs in their practices and with health facilities and managed care organizations
3. Improve quality, safety and operational efficiency while managing overall costs.

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Key Features of PACeHR Program

- Standard pre-negotiated master contract, end user license agreement and provider contracts
- Certified, web-based EHRs chosen by AZ clinicians
- Affordable, comprehensive monthly subscription
- Interfaces with core services providers
- “Meaningful use” guarantee
- Discounted hardware, software, services, loans
- Pre and Post-implementation assistance
  - Needs assessment and workflow re-engineering
  - Training and implementation assistance
- User Group and Peer Network
- Collaborative measures reports design and maintenance, with streamlined delivery
PACeHR Milestones

- **2008**
  - Project chartered late fall
  - Over 1000 clinicians interested
- **2009**
  - Solicitation for web-based EHR solutions
  - Incorporated non-profit 501(c)(3)
  - Inaugural EHR vendors selected by community processes
    - e-MDs
    - Noteworthy Medical Systems
  - Pilot Kick-off with 8 practices
- **2010**
  - Incorporate Lessons Learned from Pilots
  - Integrated into AZ Regional Extension Center

PACeHR Business Relationships

- **Master Agreement**
  - Pricing
  - Service Levels
  - Warranties
  - Third Party Agreements
  - Agreed Upon EULA for Subscriber Members

- **Provider Agreement**
  - Standard Bill of Materials
  - "One-Stop Shop" Services, Invoicing & Payment

- **End User License Agreement (EULA)**
  - Standard Bill of Materials and "Super EULA" for software and services

PACeHR Pilot Teams

- **Roles**
  - Clinical Champion
  - Liaison/Manager
  - Software Support Project Plan
  - Coordination and Payment
  - Implementation Clinical/Clinical Experience
  - System Learner

- **Responsibilities**
  - EHR Vendor
  - PACeHR Liaison
  - Coach
  - Apprentice
PACeHR Pilot Lessons

- Started with 8 practices, 5 adopted
- Prioritize services that can be controlled, measured, and streamlined
- Leverage vendors to do what they do best
- Value does not always equate to a willingness to pay
  - Support and integrate consulting services with automation and peer interactions
  - Acting as financial intermediary should be proceeded with caution
- “Preferred” EHR vendor relationships
  - Costly and complex vetting process
  - Licensing and hosting models aligned with sales staff earnings/targets
  - Meaningful collaboration with vendors is a priority

AMIE, PACeHR and Useful Links

- AHCCCS Transformation Grant and links
- PACeHR site (REC)
  - http://www.ahcccs.org/PACeHRHome.jsp
- AHRQ Innovations Gallery and Series
- Commonwealth Fund

So what does it mean to be a Meaningful User?

Courtesy of Yael Harris, PhD, MHS, Director, Office of Health IT & Quality, HRSA
MU: are we there yet?

EHR Challenge and Opportunity: Existing Situation

- All incompatible, non-standard, proprietary
Then it gets more complicated

- Patient-oriented views
  - PHRs
    - Tethered
    - Untethered
  - Mobile health
    - Sensors
    - Communication devices
  - Social networks, support systems
- Population health
  - Registries
  - Data bases (epidemiology/biosurveillance)

More views

- Payors
  - Eligibility determination
  - Reimbursement
  - Innovation, finance reform, incentive models
- Quality reporting
  - Compliance
  - Health services, comparative effectiveness research, etc.
- Research
  - Clinical trials
  - Genomic, proteomic research
  - Data mining, predictive modeling

More functionality

- Access anywhere from the cloud (services, data, apps)
- Multiple devices
  - Phone, tablet, workstation (including iPhone, iPad, Android)
- Traditional medical imaging
  - Dermatology, endoscopy, retinal, pathology
- Personal image/ID
- Signals and devices
  - ICU monitoring
  - Home sensors, embedded sensors
- Video or interactive imaging
  - gait, endoscopy, interventional/surgical guidance
- Data liquidity—data exchange and reuse
  - Subject to access/role controls
  - Data Element Access Services (DEAS)
Collect once, Repurpose often

Clinical Data
Research; Comparative Effectiveness
Clinical Decision Support
Public & Population Health
Reimbursement Management
Clinical Data

Interoperability

Data
Clinical Databases
Registries et al.
Shared Semantics

Standards
Medical Knowledge

Patient Encounters
Decision Support
Expert Systems

Clinical Guidelines
Knowledge Management

Nationwide Health Information Network Exchange

Confederation of trusted entities, bound by mission and governance to securely exchange health information

- Group of networked entities that facilitate information exchange with a broad set of users, systems, geography or community
  - Internet-based, using common implementation of standards and specifications with secure transport
  - Enables valid, trusted entities to participate
  - Signed trust agreement that allocates responsibilities and accountability to protect information exchanged
  - Committee structures to oversee and support activities
- Current Exchange participants (SSA, MedVA, DoD, Kaiser Permanente, VA, CDC, CMS)
- Other participants (Beacon Communities, SSA grantees, state HIEs)
The Nationwide Health Information Network
“Ecosystem”

Program with 3 Components

- Nationwide Health Information Network Exchange
- CONNECT software
- Direct Project

National Health Information Network-CONNECT

- **NHIN Connect** was an open source project by the ONC to enable federal agencies to exchange health information using NHIN standards. It has been operational since 2008, users include:
  - Social Security
  - MedVirginia
  - CDC
  - DOD and VA

National Health Information Network-Direct Project

- **NHIN Direct** is currently underway to develop an open source software capability to serve as an on-ramp to the NHIN and enable any participant to exchange information while conforming to NHIN standards with other participants.
Direct Project

A project to create the set of standards and services that, within a policy framework, enable simple, directed, routed, scalable transport of health information over the Internet to be used for secure and meaningful exchange between known participants in support of meaningful use.

Direct Project Implementation Now
60 organizations-200 participants

17 Beacon Communities
http://www.grants.gov/search/search.do?mode=VIEW&oppId=63458

Demonstrate vision of the future:
- Hospitals, clinicians, & patients are meaningful users of health IT
- Communities achieve measurable & sustainable improvements in health care quality, safety, efficiency, and population health

Leverage data to inform specific delivery system & payment strategies including SHARP Grants
http://healthit.hhs.gov/portal/server.pt?open=512&objID=1806&mode=2
Journey to Meaningful Use?

Bending the Curve Towards Transformed Health
Achieving Meaningful Use of Health Data

2009  2011  2013  2015

- Improved outcomes
- Advanced clinical processes
- Data capture and sharing

Courtesy of Robert Greenes, MD, PhD, Arizona State University, Department of Biomedical Informatics
Where is this Going?

- Standards and interoperability are emerging as first-rank US health priority
- Boundaries among clinical and research standards are eroding—true data liquidity
- Unprecedented consolidation has emerged across the health standards community
- Engage in local efforts to understand, use, and support standards and interoperability—e.g., Beacon, SHARP, NHIN, IHE & ASU, GOHIE, AzHEC, HINAz

Next Stop: Interoperability
QUESTIONS

Thank you!

Anita C. Murcko, MD, FACP
acmurcko@cambiare.us
www.cambiare.us