Health Information Technology: Enabling Care Anytime, Anywhere

Paul Kleeberg, MD, FAAFP, FHIMSS
CMIO Stratis Health

North Dakota eHealth/HIMSS Summit
November 19, 2014
Outline

• The need for a better way
• HIT use in the community
• Patient Portals to support engagement
• Status of Meaningful Use
• Where is ONC headed
• What is HIMSS doing?
• What can you do?
But first, a Commercial...
Stratis Health

• Independent, nonprofit, Minnesota-based organization founded in 1971
  – Mission: Lead collaboration and innovation in health care quality and safety, and serve as a trusted expert in facilitating improvement for people and communities

• Working at the intersection of research, policy, and practice
Stratis Health

• Medicare Quality Improvement Organization for Minnesota, Wisconsin and Michigan

• Program areas
  – Health disparities
  – Health information technology
  – Rural health
Regional Extension Assistance Center for HIT (REACH)

• A Health Information Technology Extension Center serving North Dakota and Minnesota since 2010
• Project of Stratis Health, National Rural Health Resource Center, and The College of St. Scholastica
• In cooperation with:
  – Quality Health Associates of North Dakota
  – University of ND, Center for Rural Health
• Supported by the Recovery Act to assist primary care providers and small hospitals in adopting Health Information Technology
The Need for a Better Way
Spending and Life Expectancy
1976

Per Capita Spending vs. Male Life Expectancy at 40

Adapted from a slide by Sherry Glied, Wagner School, NYU
Spending and Life Expectancy
1986

Adapted from a slide by Sherry Glied, Wagner School, NYU
Spending and Life Expectancy 1996

Adapted from a slide by Sherry Glied, Wagner School, NYU
Spending and Life Expectancy 2006

Adapted from a slide by Sherry Glied, Wagner School, NYU
Spending and Life Expectancy 2011

Modeled after slides by Sherry Glied, Wagner School, NYU
What is the problem for the provider?

- My doctor sent me to see you. Didn’t he send you any information?
- Let’s see, when was your last colonoscopy?
- I was told to come see you after my hospitalization…
- This blood pressure medicine does not appear to be working, what have we had you on before?
- I see you have diabetes. Let’s see, are you up to date on your lipids, eye exam, foot…?
- Vioxx is being recalled. Now which of my patients do I need to contact?
- I wonder if some of my diabetes patients have fallen through the cracks?
What is the problem for the patient?

- Now what did they tell me to do after I got home?
- Which pills am I supposed to stop and which am I supposed to start?
- What did the doctor say?
- I want to ask my doctor something but calling during office hours is inconvenient
- My doctor wants me to see a specialist in the city, I sure wish I could be seen in her office
The problem is…

• A person’s medical record is
  – Stored in paper charts
  – That are locked in different chart rooms
  – That cannot be searched
  – That can be illegible
  – That can only be in one place at a time
  – That are not accessible by the patient
  – That are not accessible by others providing care
  – And cannot be checked for errors
And the solution is…

• Interoperable, shared electronic health records across the continuum of care…
• We have come a long way…
• …but still have a long way to go

• So how far have we come?
Health Information Technology Use in the Community
EHR Adoption in North Dakota

- Rate of EHR adoption in North Dakota 2008 – 2013, 2015 predicted.

* Ambulances were surveyed on the use of electronic patient care reports (PCRs)
** Rate of implementation of ONC certified EHRs
Source: UND Center for Rural Health Survey
North Dakota Ambulatory EHR Adoption 2013

% of all Physician Practices that have Adopted Any EHR | National Average = 78%
- Less than 71%
- 71 - 76%
- 77 - 80%
- 81 - 84%
- 85 - 89%
- More than 89%

Source: 2013 National Ambulatory Medical Care Survey

http://dashboard.healthit.gov/dashboards/dashboards.php
North Dakota Hospital EHR Adoption 2013

% of all Hospitals that have Adopted a Basic EHR with Notes | National Average = 59%

Source: 2013 American Hospital Association Survey

http://dashboard.healthit.gov/dashboards/dashboards.php
Hospitals capable of exchange outside their health system 2013

% of Hospitals with Exchanging Clinical Care Summaries with Any Providers Outside their Health System | National Average = 42%

http://dashboard.healthit.gov/dashboards/dashboards.php

Source: 2013 American Hospital Association Survey

http://dashboard.healthit.gov/dashboards/dashboards.php
Ambulatory providers able to view labs electronically, 2013

Source: 2013 National Ambulatory Medical Care Survey

http://dashboard.healthit.gov/dashboards/dashboards.php
So what does having an EHR mean?

- Ease in finding the chart
- Prevention reminders
- Disease specific flow sheets
- Can be viewed by different people in different locations
- Can be searched
- Performance can be measured
Patient Portals
Secure message Exchange with Patients 2013

% of Physicians with Capability to Exchange Secure Messages with Patients | National Average = 49%

Source: 2013 National Ambulatory Medical Care Survey

http://dashboard.healthit.gov/dashboards/dashboards.php
Hospitals that can send an ecopy of a patient record 2013

% of Hospitals with Capability to Provide Patients an Electronic Copy of their EHR within Three Business Days of the Request | National Average = 87%

- Less than 64%
- 64 - 70%
- 71 - 76%
- 77 - 81%
- 82 - 87%
- More than 87%

Source: 2013 American Hospital Association Survey

http://dashboard.healthit.gov/dashboards/dashboards.php
Patient Portals

• Secure messaging
• Appointment requests
• Medication renewal
• Lab results
• Mediation list, problem list, allergies
• After visit summaries
• Discharge summaries
Patient Portals enable patient engagement

- Patients at higher levels of activation had more positive experiences than patients at lower levels seeing the same clinician
  - short

- Activated patients have better health outcomes
Patient portals can allow the patient to participate

- Describing a reason for visit
- A review of symptoms before coming in
- Reviewing their medication list
- Providing information from monitoring devices: glucometers
- Updating information in their record
- Correcting errors
October 24, 2014

Blood Tests
Friday, October 24, 2014 at 9:00am
1 day until check in

Penicillin Allergy Testing
Friday, October 24, 2014 at 10:30am
2 days until check in

Ms. Kari L. Rossow, Penicillin Allergy Consult
Friday, October 24, 2014 at 11:30am
2 days until check in

Medical Information Review
Friday, October 24, 2014 at 12:30pm
2 days until check in

Dr. M. C. Hogan, Office Visit
Friday, October 24, 2014 at 1:00pm
2 days until check in
About your medical information review: During this review, a member of your health care team gathers your medical information. This is an important appointment to attend as the information you provide helps your health care provider coordinate your future care.
Friday, October 24 at 12:30pm
2 days until check in
Medical Information Review
Division of Nephrology and Hypertension
Mayo Building, Nineteenth Floor, Desk 19 East

Maps and directions

Add this to your calendar

Cancel or reschedule

About your medical information review: During this review, a member of your health care team gathers your medical information. This is an important appointment to attend as the information you provide helps your health care provider coordinate your future care.
Arant, Caroline R
A Message From Your Health Care Team
Dr. Kleeberg,

Mayo Clinic
Message
Dr. Kleeberg,

Mayo Clinic
10/14/14
Gastroenterology and Hepatology Mess…
Dr. Kleeberg,

Mayo Clinic
9/17/14
Gastroenterology and Hepatology Mess…
Dr. Kleeberg,

Mayo Clinic
9/17/14
Nephrology Appointment Request
Dr. Kleeberg,

Mayo Clinic
8/27/14
Sleep Medicine Message
Dr. Kleeberg, thanks for your note. The…

Mayo Clinic
7/28/14

Nephrology & Hypertension
10.21.2014
Arant, Caroline Ruth, RN
NephHt Floor Practice
MAYO CLINIC ROCHESTER • FINAL

Colon & Rectal Surgery Co...
10.20.2014
Cima, Robert Roland, MD
CRS Floor Practice
MAYO CLINIC ROCHESTER • TRANSCRIBED

Nephrology & Hypertension
10.15.2014
Mueller, Theodore Leo, RN
NephHt Floor Practice
MAYO CLINIC ROCHESTER • FINAL

Colon & Rectal Surgery Mi...
Holycross, Rachelle Lee, R…
CRS Floor Practice
MAYO CLINIC ROCHESTER • TRANSCRIBED
Nephrology & Hypertension PAME  
Oct 24, 2014 12:50 PM  
Hogan, Marie C, MD, PhD  
MAYO CLINIC ROCHESTER • FINAL

DEMCGRAPHIC INFORMATION  
Clinic Number: 8-387-078  
Patient Name: Paul Kleeberg, M.D.  
Age: 61  
Birthdate: 23-May-1953 Sex: M  
Address: 7811 128th Street West City: Apple Valley, MN 55124-6280  
Service Date/Time: 24-Oct-2014 12:50  
Provider: Marie C. Hogan, MD, PhD Pager: 8-9377  
Service: NEPH Type/Desc: PME Status: Fnl Revision #: 6  

REVISION HISTORY  
Nov-05-2014 12:32:47 - Modification to VITAL SIGNS

REFERRAL  
Self-referred

CHIEF COMPLAINT/PURPOSE OF VISIT  
1. Chronic kidney disease, stage 4, secondary to polycystic kidney disease.  
2. Solitary kidney disease with history of Wilms’ tumor and nephrectomy in childhood.  
3. Hypertension and gout.

HISTORY OF PRESENT ILLNESS  
Dr. Kleeberg returns for followup.

CURRENT MEDICATIONS  
- allopurinol 100 mg tablet 1 TABLET by mouth one time daily.  
- atorvastatin 10 mg tablet 1 TABLET by mouth one time daily.  
- calcium carb-vit D tablet 1 TABLET by mouth one time daily.  
- Colcrys 0.6 mg tablet 3 tablets by mouth one time daily as needed.  
  Indication, Site, and Additional Prescription Instructions: as needed  
- lisinopril 20 mg tablet 1 TABLET by mouth one time daily.  
  Indication, Site, and Additional Prescription Instructions: reduced 4/10/14  
- torsemide 10 mg tablet 1 TABLET by mouth one time daily.  
- Vitaline CoQ10 tablet 1 TABLET by mouth one time daily.

CT RSC2  
Jun 6, 2014 9:17 AM  
FROEMMING, ADAM T.  
MAYO CLINIC ROCHESTER • FINAL

06-Jun-2014 09:17:00 Exam: CT RSC2  
Indications: Chronic Kidney Disease (CKD) Stage IV GFR 15-29, Hypertension HTN Chronic; Polycystic Kidney Autosomal Dominant  
ORIGINAL REPORT - 06-Jun-2014 09:53:00: ROMAYO  
EXAM: CT of the abdomen and pelvis without contrast according to the renal stone quantification/composition characterization protocol, including reformatted images of the kidneys using dual-energy technique with 3D post-processing on an independent workstation.  
COMPARISON: None.  
IMPRESSION:  
1. Solitary left kidney with numerous cysts, many complicated by chronic hemorrhage/debris. The appearance is consistent with polycystic disease.  
2. Two tiny nonobstructing calyceal tip stones.  
FINDINGS: Right nephrectomy. Numerous left renal cysts, several which measure up to 4 cm. Many of the cysts contain hyperdense and dependent layering contents consistent with chronic hemorrhage and debris. There are two areas of tiny calcification near the calyces in the left upper and left mid kidney consistent with nonobstructing stones (series 8 images 80, 70). No hydronephrosis.  
Renal stone quantification evaluation pending validation. Initial estimate includes  
Right kidney (A/V) N/A  
Left kidney (A/V) 17.17/18.09  
Dual energy CT characterization blue color-coding indicates that the stone material is most likely non-uric acid in composition.  
Correlation with clinical data is recommended for confirmation.  
OTHER: There are a few small probable hepatic cysts or hemangiomias. Pancreatic duct is mildly prominent (series 3 image 33), but this is difficult to confidently evaluate on a non-contrast exam. The liver, spleen, pancreas, and adrenals are otherwise negative. No lymphadenopathy. Degenerative changes of the lumbar spine lumbar curvature. Aortoiliac calcifications.  

Electronically signed by:  
E. Sviggum MD 127-08352 (R203) 06-Jun-2014 09:53 A. Froemming MD 3-4326 06-Jun-2014 09:53

StratisHealth
NY Times: “Medical Records – Top Secret”

• “…many hospitals and doctors have created a series of hurdles that must be cleared before patients can get their information.”
• “Some providers contend that releasing information might somehow compromise patient privacy and confidentiality concerns laid out in Hipaa [sic]”
• “…sharing data goes against hospitals’ and doctors’ financial interests when they are jockeying to hold on to patients in a competitive market.”

Status of Meaningful Use
Meaningful Use

• Born of the Recovery act
• Ignited a transformation from quill and parchment to 20th century information technology
• Infused funds into the system
• Not without flaws
## Canada EMR Adoption Model℠

<table>
<thead>
<tr>
<th>Stage</th>
<th>Cumulative Capabilities</th>
<th>2011 Q2</th>
<th>2013</th>
<th>Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 7</td>
<td>Complete EMR; CCD transactions to share data; Data warehousing; Data continuity with ED, ambulatory, OP</td>
<td>0.0%</td>
<td>0.0%</td>
<td>+123%</td>
</tr>
<tr>
<td>Stage 6</td>
<td>Physician documentation (structured templates), full CDSS (variance &amp; compliance), full R-PACS</td>
<td>0.5%</td>
<td>0.6%</td>
<td>-3%</td>
</tr>
<tr>
<td>Stage 5</td>
<td>Closed loop medication administration</td>
<td>0.2%</td>
<td>0.2%</td>
<td>+21%</td>
</tr>
<tr>
<td>Stage 4</td>
<td>CPOE, Clinical Decision Support (clinical protocols)</td>
<td>1.7%</td>
<td>3.8%</td>
<td>+19%</td>
</tr>
<tr>
<td>Stage 3</td>
<td>Nursing/clinical documentation (flow sheets), CDSS (error checking), PACS available outside radiology</td>
<td>33.2%</td>
<td>32.2%</td>
<td>-30%</td>
</tr>
<tr>
<td>Stage 2</td>
<td>CDR, Controlled Medical Vocabulary, CDS, may have Document Imaging, HIE capable</td>
<td>23.9%</td>
<td>29.1%</td>
<td>+19%</td>
</tr>
<tr>
<td>Stage 1</td>
<td>Ancillaries – Lab, Rad, Pharmacy – All Installed</td>
<td>12.2%</td>
<td>14.5%</td>
<td></td>
</tr>
<tr>
<td>Stage 0</td>
<td>All Three Ancillaries Not Installed</td>
<td>28.3%</td>
<td>19.8%</td>
<td></td>
</tr>
<tr>
<td>Stage</td>
<td>Cumulative Capabilities</td>
<td>2011 Q2</td>
<td>2013</td>
<td>Change</td>
</tr>
<tr>
<td>---------</td>
<td>----------------------------------------------------------------------------------------</td>
<td>---------</td>
<td>-------</td>
<td>--------</td>
</tr>
<tr>
<td>Stage 7</td>
<td>Complete EMR, CCD transactions to share data; Data warehousing; Data continuity with ED, ambulatory, OP</td>
<td>1.1%</td>
<td>2.9%</td>
<td>+160%</td>
</tr>
<tr>
<td>Stage 6</td>
<td>Physician documentation (structured templates), full CDSS (variance &amp; compliance), full R-PACS</td>
<td>4.0%</td>
<td>12.5%</td>
<td>+212%</td>
</tr>
<tr>
<td>Stage 5</td>
<td>Closed loop medication administration</td>
<td>6.1%</td>
<td>22.0%</td>
<td>+260%</td>
</tr>
<tr>
<td>Stage 4</td>
<td>CPOE, Clinical Decision Support (clinical protocols)</td>
<td>12.3%</td>
<td>15.5%</td>
<td></td>
</tr>
<tr>
<td>Stage 3</td>
<td>Nursing/clinical documentation (flow sheets), CDSS (error checking), PACS available outside radiology</td>
<td>46.3%</td>
<td>30.3%</td>
<td>-45%</td>
</tr>
<tr>
<td>Stage 2</td>
<td>CDR, Controlled Medical Vocabulary, CDS, may have Document Imaging, HIE capable</td>
<td>13.7%</td>
<td>7.6%</td>
<td>-50%</td>
</tr>
<tr>
<td>Stage 1</td>
<td>Ancillaries – Lab, Rad, Pharmacy – All Installed</td>
<td>6.6%</td>
<td>3.3%</td>
<td>-42%</td>
</tr>
<tr>
<td>Stage 0</td>
<td>All Three Ancillaries Not Installed</td>
<td>10.0%</td>
<td>5.8%</td>
<td></td>
</tr>
</tbody>
</table>

Data from HIMSS Analytics® Database © 2012 HIMSS Analytics
Stage 2 hardest objectives (survey)

http://content.healthaffairs.org/content/early/2014/08/05/hlthaff.2014.0453.full
Measures of Stage 2 Success: Payments

• Stage 2 adoption has been slow
  – Vendor issues dealing with requirements
  – Client challenges in implementing new workflows and buggy software

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2014 Stage 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPs</td>
<td>108,362</td>
<td>257,060</td>
<td>303,774</td>
<td>8,059</td>
<td>2,282</td>
</tr>
<tr>
<td>EHs</td>
<td>2,320</td>
<td>3,308</td>
<td>4,192</td>
<td>369</td>
<td>93</td>
</tr>
</tbody>
</table>

Where is ONC Headed?
Nationwide Interoperability Roadmap

• 5 Critical Building Blocks:
  – Core technical standards and functions
  – Certification to support adoption and optimization of health IT products and services
  – Privacy and security protections for health information
  – Supportive business, clinical, cultural, and regulatory environment
  – Rules of engagement and governance of health information exchange

• Requesting comments
  – email Admin@siframework.org to set-up a confluence (Wiki) account to participate
  – Comments may be viewed without an account

http://confluence.siframework.org/display/NIRCH/Nationwide+Interoperability+Roadmap+Community+Home
Jason Report

- Be agnostic as to the type, scale, platform, and storage location of the data
- Use public APIs and open standards, interfaces, and protocols
- Encrypt data at rest and in transit
- Separate key management from data management
- Include with the data the corresponding metadata, context, and provenance information
- Represent the data as atomic data with associated metadata
- Follow the “robustness principle”: be liberal in what you accept and conservative in what you send
- Provide a migration pathway from legacy EHR systems.
Stage 3 Recommendations

• Inclusion of patient entered data
• Increased technical specifications for some current EHR functions
• eNotification of significant patient events
• Referral and lab result notification
• Unique Device Identifiers (UDI) recorded for implanted devices
NPRM for Stage 3 this winter?

• Congress supports HIT but is mixed about MU
• Professional societies calling for a change
• ONC leadership is listening
• CMS?
What is HIMSS doing?
About HIMSS

• Founded in 1961
• HIMSS Vision
  – Better health through information technology.
• HIMSS Mission
  – Globally, lead endeavors optimizing health engagements and care outcomes through information technology
• Encompass
  – More than 52,000 individuals
    • two-thirds work in healthcare provider, governmental and not-for-profit organizations across the globe
  – Over 600 corporations
  – 250 not-for-profit partner organizations
HIMSS Activities

- Meaningful Use one Source
- Educational sessions for members of Congress
- Providing feedback and offers to help with ONC’s 10 year plan
- EHR Value Suite
- Assembling members to provide input and create resources.
Meaningful Use One Source

- Provides
- News and updates
- Definitions
- Access to the Rules with interpretations
  - For Professionals
  - For Hospitals
- Information on Standards, certification, privacy and security, quality measures, RECs
Educating Members of Congress:
The Congressional Luncheon Seminar Series

- Operational for 20 years
- Geared to members of congress
- Open to the public
- Develop legislative priorities and awareness related to:
  - Telehealth,
  - eHealth
  - Healthcare informatics
# Providing feedback and help to ONC and CMS

## Some Recent Examples:

<table>
<thead>
<tr>
<th>Date</th>
<th>Event Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>11/4</td>
<td>Submitted a letter to Secty Burwell regarding ONC leadership and Stage 2</td>
</tr>
<tr>
<td>10/31</td>
<td>Provided comments on CMS RFI on Health Plan Innovation Initiatives focused on Telehealth and mHealth Initiatives</td>
</tr>
<tr>
<td>10/10</td>
<td>Submitted a response to NIST’s RFI on the field’s experience with NIST’s Framework for Improving Critical Infrastructure Cybersecurity.</td>
</tr>
<tr>
<td>10/1</td>
<td>Submitted a letter to Secty Burwell and Karen DeSalvo regarding MU recommending 3 month reporting in 2015, interoperability and CQMs</td>
</tr>
<tr>
<td>10/1</td>
<td>Submitted a response to Karen DeSalvo on ONC’s draft interoperability vision</td>
</tr>
<tr>
<td>9/30</td>
<td>Letter to House Energy and Commerce leaders for congress to take action on telehealth and remote patient monitoring</td>
</tr>
<tr>
<td>8/30</td>
<td>Response to the CMS Physician Fee Schedule NPRM</td>
</tr>
</tbody>
</table>
EHR Value Suite

• Designed to answer several questions:
  – How do we know Health IT works?
  – How does Health IT improve patient care?
  – Can others duplicate the type of value others have achieved?
Network of Volunteers: Professional Communities

- Clinical & Business Intelligence
- Connected Patient
- Emerging Professionals
- Federal Health
- HIT User Experience (formerly “Usability”)
- Health Information Exchange
- Innovation
- Latino

- Management Engineering & Process Improvement
- Medical Practice and Health Center (CHC)
- mHealth
- Nursing Informatics
- Physician
- Provider-Payer
- Rural Health
- Senior Executive
Network of Volunteers: Committees

• Ambulatory Information Systems
• Annual Conference Education
• Career Services
• Clinical & Business Intelligence
• Connected Patient
• CPHIMS
• Distance Education
• Enterprise Information Systems
• Health Business Solutions
• Healthcare Information Exchange

• HIT Usability
• Innovation
• Interoperability & Standards
• Management Engineering & Process Improvement
• mHealth
• Nursing Informatics
• Physician
• Privacy & Security
• Public Policy
• Quality, Cost Safety
What can you do?
What can you do as a provider?

- Comment on ONCs 10 year plan
- Comment on eHealth advisory plan
- Get involved in HIMSS activities
- Ask your vendor to adopt and support data standards
- Advocate for true interoperability of health records and individual data elements
What can you do as a consumer?

The same things as a provider, plus:

• Demand complete access to your medical record
  – Request electronic copies of things not in the patient portal
• Request corrections for inaccuracies in your medical record
• Become a demanding consumer
• Assemble a complete copy of your health record
Health IT as the enabler of Quality Care, Anytime, Anywhere

• Improved data standards with allow for more fluid exchange and consumption of health information
• Connected different types of providers will expand the continuum of care
• Mobile technologies and telehealth will
  – Extend the reach of providers
  – Allow people to receive care where and when needed
• Distance will become less of an issue
• Care will become more efficient
• \( \downarrow \) costs + \( \uparrow \) quality + \( \uparrow \) convenience + \( \uparrow \) population health = Increased value and achieving the Triple Aim
Thank you!

Paul Kleeberg, MD, FAAFP, FHIMSS
Email: pkleeberg@stratishealth.org
Ph: 952-853-8552

Stratis Health is a nonprofit organization that leads collaboration and innovation in health care quality and safety, and serves as a trusted expert in facilitating improvement for people and communities.

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