Meaningful Use Stage 2
(and connectivity/interoperability)

William A. Hyman
Professor Emeritus
Department of Biomedical Engineering
Texas A&M University
w-hyman@tamu.edu
Some Background

• The HITECH Act of 2009 created government funding for adoption of EHR (Electronic Health Records) aka EMR (Electronic Medical Records)

• Defines Eligible professionals (EPs) and Eligible hospitals (EH)

• Tied to Medicare/Medicaid participation

• Carrot now, stick later
The carrot

- Reimbursement for adoption of EHR

*But... The EHR and its use must comply with “Meaningful Use”*

- EHR must be certified as compliant (e.g. capable)
- actual use of the certified EHR must be compliant
The carrot

Logic: If the government is going to provide money to do something...

it makes sense for the government to specifically define:

what that something is...

and to then confirm that it actually being done
The stick

There will be financial penalties for not having adopted compliant EHRs and MU – starting in 2015

e.g. Hospitals subject to a % decrease in the percentage increase that the hospital would otherwise receive for that year
Meaningful Use (MU)

Meaningful use (in general)

is using *certified* electronic health record (EHR) technology to:

- Improve quality, safety, efficiency, and reduce health disparities
- Engage patients and family
- Improve care coordination, and population and public health
- Maintain privacy and security of patient health information

http://www.healthit.gov/providers-professionals/meaningful-use-definition-objectives
Meaningful Use (MU)

Ultimately, *it is hoped* that meaningful use will result in:

- Better clinical outcomes
- Improved population health outcomes
- Increased transparency and efficiency
- Empowered individuals
- More robust research data on health systems

http://www.healthit.gov/providers-professionals/meaningful-use-definition-objectives
Meaningful Use (MU)

But more to today’s point:

ONC/CMS Meaningful Use sets specific objectives that eligible professionals (EPs) and eligible hospitals (EH) must achieve to qualify
Meaningful Use (MU)

MU is *as prescribed* for the EHR funding scheme

MU is not the necessarily the same as *to use meaningfully* (um)
The Grand Scheme

Stages

Obtain

Use

Certified

MU

Outputs

Attest

Improve care?

Improve public health?

Save money?
Meaningful Use (MU)

Meaningful Use is being rolled out in stages

<table>
<thead>
<tr>
<th>2011-2013</th>
<th>2014</th>
<th>20??</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stage 1</td>
<td>Stage 2</td>
<td>Stage 3</td>
</tr>
<tr>
<td>Data capture and sharing</td>
<td>Advance clinical processes</td>
<td>Improved outcomes</td>
</tr>
</tbody>
</table>

Some revisions to Stage 1

Over 1000 pages
## Not to be confused with HIMMS

### Analytics 7 Stages

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</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>
</tr>
<tr>
<td>Stage 6</td>
<td>Physician documentation (structured templates), full CDSS (variance &amp; compliance), full R-PACS</td>
</tr>
<tr>
<td>Stage 5</td>
<td>Closed loop medication administration</td>
</tr>
<tr>
<td>Stage 4</td>
<td>CPOE, Clinical Decision Support (clinical protocols)</td>
</tr>
<tr>
<td>Stage 3</td>
<td>Nursing/clinical documentation (flow sheets), CDSS (error checking), PACS available outside Radiology</td>
</tr>
<tr>
<td>Stage 2</td>
<td>CDR, Controlled Medical Vocabulary, CDS, may have Document Imaging, HIE capable</td>
</tr>
<tr>
<td>Stage 1</td>
<td>Ancillaries – Lab, Rad, Pharmacy – All Installed</td>
</tr>
<tr>
<td>Stage 0</td>
<td>All Three Ancillaries Not Installed</td>
</tr>
</tbody>
</table>
Each **objective** has an extent of use requirement  

- e.g. Record vital signs for more than 80%  
- Some increased from Stage 1 to Stage 2  
- Also, Clinical Quality Measures (CQM) become reportable
1. CPOE
2. e-Rx
3. Demographics
4. Vital Signs
5. Smoking Status
6. 5 CDS Interventions + drug/drug and drug/allergy
7. Lab results - structured
8. Patient List by specific condition
9. Preventive Reminders

- BP, height & weight
- Up from 1
10. **Patient online access** <<< New (replacement) – moved from St 1 menu

11. Visit Summaries *revised, part from St 1 menu*

12. Education Resources

13. **Secure messages from patients** <<< New

14. Rx Reconciliation

15. Summary of Care <<< *exchangeable*

16. **Immunizations data output** moved from St 1 menu

17. **Security analysis** and **actions**
EP Menu Stage 2 – Pick 3

1. Imaging results accessible through EHR <<< New
2. Family history <<< New
3. Syndromic surveillance ongoing output
4. Cancer information output <<< New
5. Specialized registry output <<< New
6. Progress notes entry <<< New
EH Stage 2

1. CPOE
2. Demographics
3. Vital signs
4. Smoking status
5. Implement 5 clinical decision support interventions + drug/drug and drug/allergy
6. Labs
7. Patient list by specific condition
8. eMAR – >>> New --- Caution! The term closed loop is used here but not in the sense of automatic control of actual drug delivery
9. Patient access <<< New (replacement)
10. Education resources for patients
11. Rx reconciliation
12. Summary of care outputs
13. Immunizations outputs
14. Labs results
15. Syndromic surveillance outputs
16. Security Analysis
EH Stage 2 Menu – Pick 3

1. Progress notes
2. e-Rx <<< New
3. Imaging are accessible through EHR
4. Family history
5. Advanced directives
6. Lab results output to EPs <<< New
EP CQMs

9 from a list of 64 CQMs covering no less than 3 of 6 National Quality Strategy Domains

“Recommended” adult CQMs – typically % of patients

1. Controlling High Blood Pressure
2. Use of High-Risk Medications in the Elderly (NEW)
3. Tobacco Screening and Cessation Intervention.
4. Use of Imaging Studies for Low Back Pain
5. Screening for Clinical Depression and Follow-Up Plan (NEW)
6. Documentation of Current Medications in the Medical Record (NEW)
7. Body Mass Index (BMI) Screening and Follow-Up
8. Receipt of Specialist Report (NEW)
9. Functional Status Assessment for Complex Chronic Condition (NEW)
CQMs

“In Stage 2, CQMs are no longer a core objective; however, providers are still required to submit CQMs in order to successfully participate in the program”
Interoperability/connectivity of what?

EHRs?
Medical devices?
Inputs?
Outputs?
Communications?
Some new medical device distinctions

> Traditional (TMD) – ‘bedside’ data gathering (diagnostic) and therapeutic

  monitors (continuous or discrete)
  imaging & lab
  infusion pumps, ventilators, surgical

> Data movers – collect, transmit, store, display data acquired from TMDs

  Medical Device Data Systems (MDDS)
  similar things that don’t qualify under MDDS
Some new medical device distinctions

> Data manipulators – process data to achieve some new function

   Clinical Decision Support (CDS)

And

> EHRs themselves

   Subject to whether or not EHRs are medical devices
A TMD example – Vital Signs

MU requires that vital signs be included in an EHR

How does the data get there?

> Someone can type it in *manually*

> Device can transmit the vital signs *automatically*, i.e. they appear in the EHR without the need for a human transposer

Is automatic *required*?  NO

*Might* it be a good idea?  YES....  *but*
The proposed certification test method says:

Record - evaluates the capability to enter vital signs data into the EHR

- The Tester enters the numerical ONC-supplied height/length, weight, and blood pressure data and verifies that the data was recorded

So apparently manual entry has to at least co-exist with auto-entry...or passing the test is going to be a challenge
Pros and Cons of Automated Vital Signs EHR Entry

Pros
- Efficiency
- Eliminate lag time
- Reduce transcription errors
- Auto-updating/continuous

Cons
- Complexity
- Removes/reduces eye-ball error detection
Other TMDs

e.g. other vital signs (e.g. $O_2$), pumps, ventilators, surgical devices, UDIs, etc.

> No *requirement* re MU

> *Might* want to do it for other reasons

For continuous devices – how much data is that to move and store?

and, speaking of *um*, how will it be: displayed?

*and used?*
Connectivity/Interoperability

C/I required for or MU

TMDs

Imaging

Other EHRs

HIEs/Registries

Other

CDS

Patients
Stage 3 *Proposals/Discussions* (new only)

- More menu to core
- Use CPOE and provide structured info for referrals/transitions
- EHR must be able to consume new drug-drug interaction and patient immunization info
- Generate real-time specific conditions dashboard
- Provide for patient info entry –
  - Option 2:  *Provide 10% of patients with ability to submit information using:*
    1) A generic semi-structured questionnaire platform and
    2) *capability to receive uploads from home devices (e.g., glucometer, BP device, scale)*
- Ability to find clinical trials
Summary

> There are no Stage 2 requirements for TMD connectivity to the EHR

   If someone tells you there is, ask them to point to the specific rule and test (CFR cite) that says so

> TMD connectivity may be a means to satisfy some elements of MU

> TMD connectivity may have value that is unrelated to MU

> Images, CDS and EHRs themselves do require connectivity