The Revised EMRAM Standards

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The EMR Adoption Model

- Acute care EMRAM is 11 years old
- Small changes periodically to Stage 7 criteria
- Make changes to lower stages to raise the bar
- Significant changes announced at HIMSS16
- Revised EMRAM becomes real on:

1st January 2018

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The EMRAM Value Proposition…

- Only internationally recognised evidence-based model of its kind
- Provides roadmap on how to progress towards a paperless EMR environment
- Informs current status and possible future directions for hospitals, regions and countries
- Global benchmarking tool
- Reflects the way many hospitals build their EMR capability

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THE EMR ADOPTION MODEL

EMR Adoption Model [SM]	
Stage	**Cumulative Capabilities**
Stage 7	Complete EMR integrates all clinical areas (e.g. ICU, ED, Outpatient) displacing all (medical) paper records in the hospital; Continuity of Care standards to exchange data; Data Warehouse used as basis for clinical and business analytics
Stage 6	Clinical Documentation interacts with advanced Decision Support (based on discrete data elements) AND Closed Loop Medication Administration
Stage 5	Integrated Image Management Solution (e.g. PACS) displaces all film-based images throughout the hospital
Stage 4	Electronic Ordering provides Clinical Decision Support (based on rules engines) in at least one clinical service area and for medication
Stage 3	Clinical Documentation as well as Electronic Ordering of Physician and/or Nursing Care services; includes tracking of Medication Administration (eMAR)
Stage 2	Clinical Data Repository / Electronic Patient Record allows collection and normalization of data from disparate clinical sources throughout the hospital
Stage 1	Information Systems for major ancillary departments (Laboratory, Radiology, Pharmacy) are installed or data output from external service providers are processed electronically
Stage 0	Information Systems for major ancillary departments (Laboratory, Radiology, Pharmacy) are not installed or data output from external service providers cannot be processed electronically

"Paperless" patient record environment
for **highest quality** of care,
data continuity & full HIE

- Full electronic clinical decision support, **and** highest medication safety
- Completely electronic diagnostic image management
- Electronic order entry with decision support and result reporting
- Clinical ordering and documentation – especially nursing care
- A patient-centered electronic data repository
- Electronic diagnostic and pharmacy department information

The EMR Adoption Model…

- Stages used to indicate increasing levels of clinical computing sophistication and greater patient safety
- All the criteria of one stage must be met to "earn" that stage
- One world-wide global standard, no variation by region or continent
- Centrally managed with regional input
- Focuses on quality of clinical care and the benefits of e-health and less on the description of technology itself

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The New Standards….

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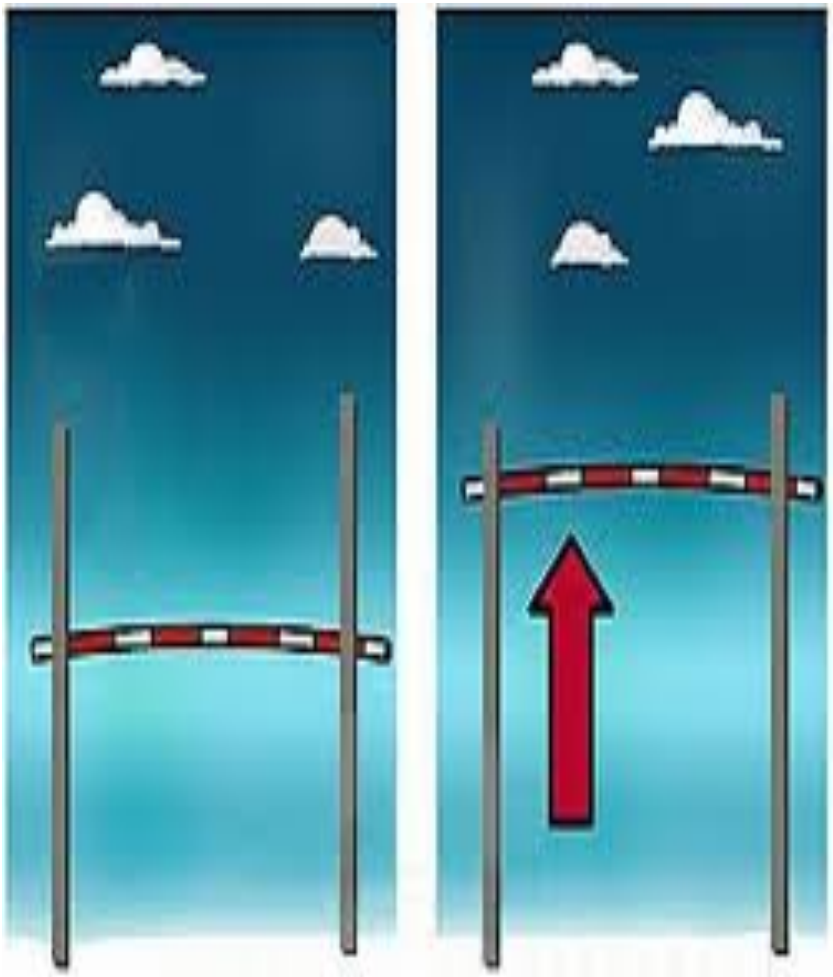
Raising the Bar…

- Chief Information Officers (CIO's)
- Clinicians
- Industry (EMR Suppliers)
- HIMSS Colleagues



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Summary of the changes….

- Requirements in higher stages have been transferred to some of the lower stages…
- Compliance requirements….
- New standards….

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Stage 1 – Main Diagnostic Systems Results

Current Requirements

- Does have all three:
  - Radiology information system, and
  - Laboratory information system, and
  - Pharmacy information system
- **Note:** there has never been a definition of what is in a pharmacy information system … in the US it has included Clinical Decision Support … we do not see that in Europe …
- **Note:** We do not define which portions of a Laboratory Information System are present: Chemistry, anatomic pathology, etc.

Proposed Requirements

- Does have all four:
  - Radiology information system,
  - Laboratory information system,
  - Pharmacy information system, and

✓ **PACS for DICOM**

✓ **Patient centric storage of Non-DICOM images?**

New or changed requirements are noted with a ✓

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Stage 2 – Core Clinical Data Store

Current Requirements

- Clinical Data Repository (CDR) is installed and is fed by major ancillary systems
- CDR contains a controlled medical vocabulary
- Clinical Decision Support for basic conflict checking is present
- Internal interoperability exists

Proposed Requirements

- **Clinical Data Repository installed or other multiple data stores installed in such a way that users DO NOT have to sign into different systems**
- **Such linkages are context aware (i.e. patient does not need to be re-selected in each disparate data store)**

✓ **Security description of data center security & user security training**

✓ **Description of encryption & disposal policy**

✓ **Description of antivirus, antimalware & firewall program**

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Stage 3 – Care Documentation is On-Line

Current Requirements

- Has “classic” order entry
- Nursing documentation: vitals, nursing notes, nursing tasks, e-MAR, etc. available for at least one inpatient service
- eMAR is implemented
- First level Clinical Decision Support implemented (i.e. drug/drug, drug/food, etc.)
- Image access from PACS available to physicians outside Radiology department

Proposed Requirements

- ✓ **Documentation typically performed by nursing is on-line such as: admission processing, care documentation, nursing orders & tasks related to Dx & procedure, e-MAR, discharge planning etc.**
- ✓ **Routine Allied Health documentation completed on-line**
- ✓ **>50% criteria for all wards/ patient days/ inpatient cases – client chose % method**
- ✓ **It must also be live in the ED, if any**
- ✓ **Security: Role based security is in place**
- ✓ **Description of intrusion detection program**

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Stage 4 – Physician Orders

Current Requirements

- CPOE used by any clinician with second level clinical decision support capabilities related to evidenced-based pathways & protocols
- CPOE implemented with physicians entering orders in at least one inpatient service area

Proposed Requirements

- ✓ **CPOE usage criteria increased to >50% criteria for all wards/ patient days/ inpatient cases – client chose % method**
- ✓ **CPOE live in the ED**
- ✓ **Documentation by nursing & allied health usage criteria at 90%**
- ✓ **Where publically available, physicians use access to public data bases for medications, images, immunizations & lab results**
- ✓ **Business continuity**

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Stage 5 – Physician Documentation

Current Requirements

- PACS – Radiology, Cardiology and storage of patient DICOM images

Proposed Requirements

- ✓ **Physician Documentation creating discrete data or derived via NLP for alerts, clinical guidance and to serve analytical capabilities**
  - ✓ **Or background processes that are watching multiple variables that fire alerts to physicians (Sepsis)**
- ✓ **>50% criteria for all wards/ patient days/ inpatient cases – client chose % method**
- ✓ **Physician Documentation must be live in ED, if any**
- ✓ **Description of intruder prevention system**
- ✓ **Description of portable device security**

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Stage 6 – Verification at POC via Technology

Current Requirements

- Bar code enabled Closed Loop Medication Administration
- Physician documentation with structured templates creating some discrete data to feed a rules & alerts engine

Proposed Requirements

- ✓ **Technology is used to order medications**
- ✓ **Technology is used to verify medication orders**
- ✓ **Technology is used to identify patient**
- ✓ **Technology is used to verify medications at the point of administration (medication, strength, route, patient, time)**
- ✓ **Technology is used to verify blood products administration**
- ✓ **Technology is used to verify human milk mother-baby match where there is communal storage of milk**
- ✓ **Bar code technology is used at point of care for specimen collection**
- ✓ **>50% criteria for all wards/ patient days/ inpatient cases – client chose % method**
- ✓ **ED must also meet these criteria but no % required**
- ✓ **Security risk assessments reported to governing authority**

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Stage 7 – On-Site Validation

Current Requirements

- Paper charts no longer used to deliver & manage care
- Mixture of discrete data, medical images, document images available within the EMR
- Data analytics leveraged to analyze patterns of clinical data to improve quality of care, patient safety, and care delivery efficiency
- Clinical data can be readily shared in a standardized, electronic manner as appropriate
- Summary data continuity for all services is demonstrated
- Blood products & human milk included in closed-loop med admin process

Proposed Requirements

- ✓ **Implementation & use of Anesthesia Information System (2021)**
- ✓ **CPOE-enabled infusion pumps (2023)**
- ✓ **Provide an overview of the Privacy and security program**

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Validation process….

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Validation process…

Stage 6 validation

- Hospital must submit requested data to be scored
- Data undergo quality review process for completeness
- When completed, EMRAM score is calculated and basic gap assessment report provided Gap Analysis
- If scored at 6, hospital must undergo an on-site validation before Stage 6 is granted

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Validation process…

Stage 7 validation

- On-site visit to review all criteria through to Stage 7
  - Four reviewers
    - 2 HIMSS Inspectors
    - 2 External Assessors
- Decision given at end of visit with final report sent within two weeks of visit

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Typical Stage 6 visit….

9am Presentation from senior management team
10am Observation on Med & Surgical wards
11am Observations on ICU
12am Observations in Pharmacy
2pm Observations in the Imaging department
3pm Observations in Medical records and coding
4pm Observations in A&E
5pm Discussion with senior management team
6pm Decision

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Stage 7 Validation process….

- System Overview & Pervasiveness of Use
- Governance
- Clinical & Business Intelligence
- Health Information Exchange
- Disaster Recovery & Business Continuity
- Privacy & Security

Validation is for three 3years; revalidation required to maintain Stage 6 or 7 status

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