HIMSS Analytics Maturity Model Overview

Nova Southeastern University
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AGENDA

Who is HIMSS Analytics

What are the maturity models

Process and benefits of using the maturity models

himssanalytics.org

KEY POINTS

Governance

Data – The difference between Stage 6 & 7

Process Improvement

himssanalytics.org

Who Is HIMSS Analytics

Healthcare Information and Management Systems Society (HIMSS)

HIMSS is a global, cause-based, **<u>not-for-profit</u>** organization focused on ***better health through information & technology (IT)***. HIMSS leads efforts to optimize health engagements and care outcomes using information technology.

HIMSS North America — HIMSS Annual Conference, Corp Membership, Thought Leadership, etc.

HIMSS Analytics — LOGIC™, CapSite, Maturity Models, Insight & Research, Essentials Briefs, etc.

HIMSS Media — Marketing Arm, Healthcare IT News, Local Forums, Content Creation & Syndication, etc.

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MATURITY MODELS

EMRAM
Electronic Medical Record Adoption Model

Measuring EMR capabilities and impact on systems, providers and patients.

AMAM
Adoption Model for Analytics Maturity

Determining how to leverage data for better care and process optimization.

CCMM
Continuity of Care Maturity Model

Assessing levels of care coordination, systems integration, and patient engagement.

DIAM
Digital Imaging Adoption Model

Evaluating maturity of IT supported processes in medical imaging in hospitals and diagnostic centers.

OTHER MODELS?

Infrastructure   Materials Management   Security

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Why Use a Maturity Model?

Learn from others experiences

Provides a **roadmap**

Helps convey a **vision**

Encourages everyone to work collectively

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What is driving the Models?

In the US, a 1999 IOM report indicated more than 98,000 Americans die in hospitals each year as a result of medical errors
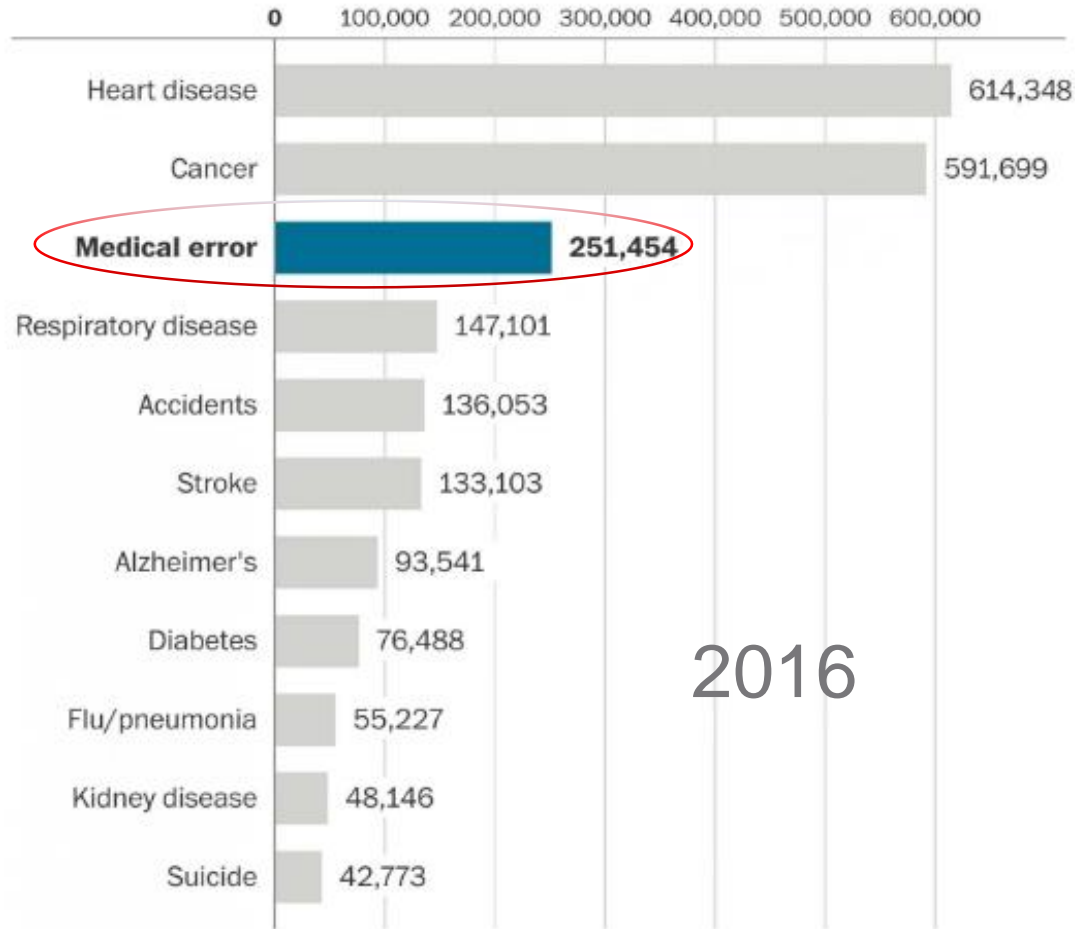
In the UK, the NHS experiences 40,000 deaths each year

These challenges are shared Worldwide

What is really driving the Models?

Death in the United States

Johns Hopkins University researchers estimate that medical error is now the third leading cause of death. Here's a ranking by yearly deaths.

Cause	Deaths
Heart disease	614,348
Cancer	591,699
Medical error	251,454
Respiratory disease	147,101
Accidents	136,053
Stroke	133,103
Alzheimer's	93,541
Diabetes	76,488
Flu/pneumonia	55,227
Kidney disease	48,146
Suicide	42,773

2016

Source: National Center for Health Statistics, BMJ

THE WASHINGTON POST

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Problem has worsened
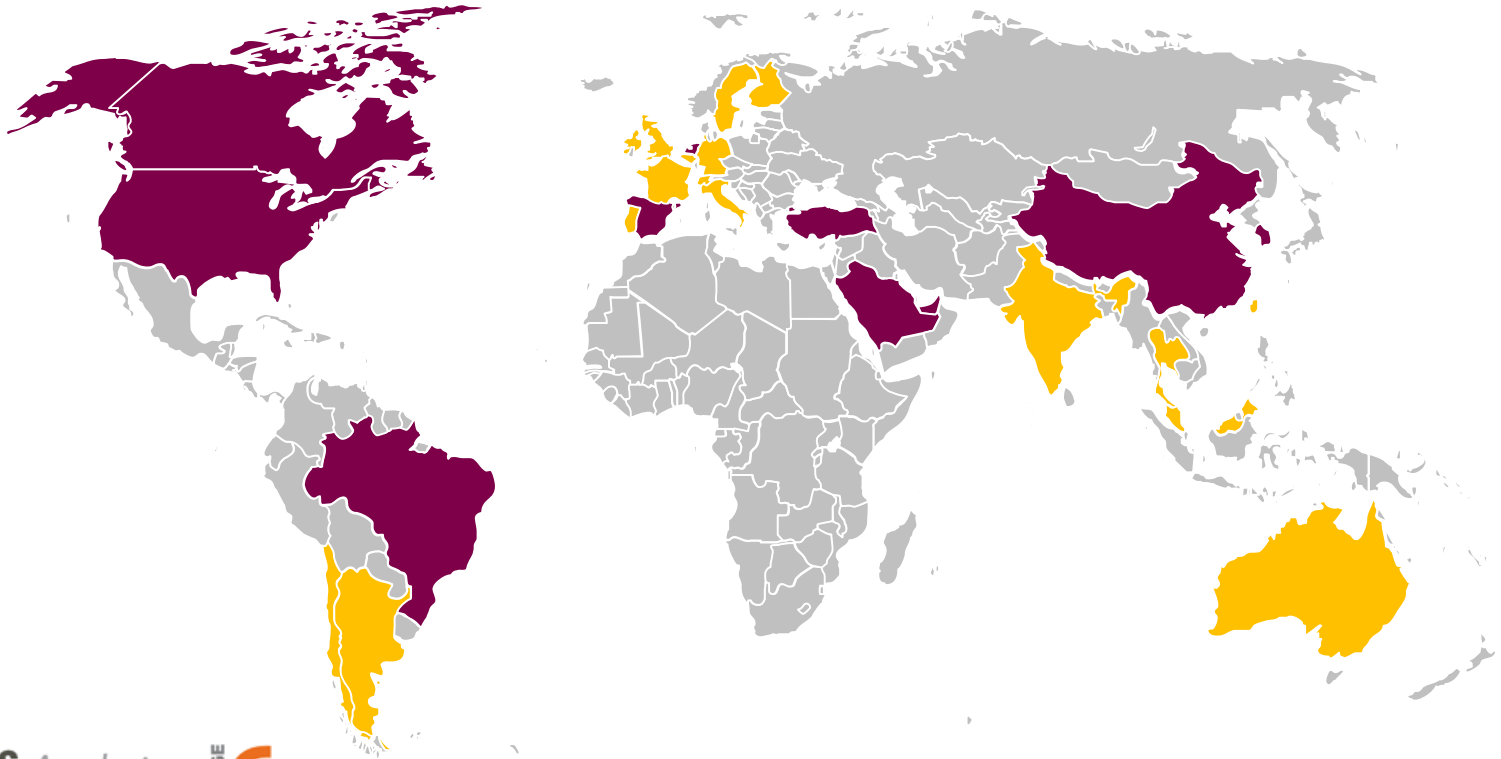
OR

has better data made it easier to identify errors

A Global Standard

HIMSS Analytics STAGE 7

Brazil, Canada, China, Saudi Arabia, Singapore, South Korea, Spain, The Netherlands, Turkey, UAE, USA

HIMSS Analytics STAGE 6

Argentina, Australia, Belgium, Brazil, Canada, Chile, China, Denmark, Finland, France, Germany, India, Ireland, Italy, Malaysia, Netherlands, Portugal, Saudi Arabia, Singapore, Switzerland, Taiwan, Thailand, Turkey, UAE, UK, USA

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A Global Standard

Cross Regional EMRAM Score Distribution (2016 Q4)

Stage	Asia Pacific	Middle East	United States	Canada	Europe
Stage 7	0.8%	1.3%	4.8%	0.2%	0.3%
Stage 6	5.5%	12.8%	30.5%	1.1%	2.5%
Stage 5	8.4%	22.8%	34.9%	3.7%	29.5%
Stage 4	1.6%	3.4%	10.2%	1.3%	6.7%
Stage 3	0.8%	16.8%	13.9%	31.4%	5.3%
Stage 2	31.9%	21.5%	2.3%	30.3%	34.5%
Stage 1	4.5%	6.0%	1.4%	15.0%	7.9%
Stage 0	46.5%	15.4%	1.9%	17.2%	13.3%
	N = 794	N = 149	N = 5,478	N = 641	N = 1,462

Data from HIMSS Analytics® Database ©

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EMRAM

United States **EMR Adoption Model**^{SM}

STAGE	2017 Q3	2017 Q4
7	6.1%	6.4%
6	32.7%	33.8%
5	33.5%	32.9%
4	10.1%	10.2%
3	12.6%	12.0%
2	1.9%	1.8%
1	1.5%	1.5%
0	1.6%	1.4%
	N:5,480	N: 5,487

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Some History of the EMRAM

Acute Care EMRAM

- Created in 2005

- To reflect a typical manner in which a hospital progresses towards a paperless EMR environment

    – Academic vs. Community

- To "push the market" with a roadmap

- To inform government policy

Progressively sophisticated model ...

STAGE	HiMSS *Analytics* **EMRAM** **EMR Adoption Model Cumulative Capabilities**
7	Complete EMR: external HIE, data analytics, governance, disaster recovery, privacy and security
6	Technology enabled medication, blood products, and human milk administration; risk reporting
5	Physician documentation using structured templates; full CDS; intrusion/device protection
4	CPOE; CDS (clinical protocols); Nursing and allied health documentation; basic business continuity
3	Nursing and allied health documentation; eMAR; role-based security
2	CDR; Internal interoperability; basic security
1	Ancillaries - Lab, Rad, Pharmacy, PACS for DICOM & Non-DICOM - All Installed
0	All Three Ancillaries Not Installed

A progressively sophisticated roadmap that enables …

Quality, safety, and Operations efficiencies

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Process

- **Stage 1-5** is self assessment using our online tool
  - himssanalytics.org/emram

- **Stage 6** is validated via a conference call in North America with a HIMSS Analytics inspector

- **Stage 7** is an onsite validation with three inspectors
  - HIMSS Analytics expert
  - A CMIO from another Stage 7 hospital
  - A CIO or CNIO from another Stage 7 hospital

Stage 7 Validation Process

- Must have been validated at Stage 6

- Preliminary Call (60 minutes)

  – With HIMSS Analytics to review the agenda and to ensure the organization is indeed ready for the onsite visit

  – Review a "*A Day In The Life Of A Stage 7 Visit*"

- Technical Call (120 minute)

  – Site reviews the technology used in security, disaster recovery and business intelligence

- On-site Stage 7 Visit

Stage 7 Validation Process

On-site visit (about 8 hours)

• Opening Session w/ presentations by staff (90 min)

- – System Overview & Pervasiveness of Use

- – Governance

- – *Clinical & Business Analytics*

- – Health Information Exchange

- – Disaster Recovery & Business Continuity

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Stage 7 Validation Process

On-site visit   (continued)

- Hospital Tour (Order determined by the hospital)
    - Med/Surg floor
    - NICU (if applicable)
    - Medical Imaging
    - Pharmacy
    - Lab
    - Blood Bank
    - ICU
    - ED
- HIM / Medical Records Office
- Team Deliberation
- Closing Session and results presentation

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Hospital Presentation – System Overview & Pervasiveness of Use

- Pervasiveness of Use
  - Show at least four months of data, and show it is "in control"
    - Inpatient only, but *in use* in the ED
      - >90% CPOE
      - >95% CLMA
      - >95% Blood products
      - >95% Human Milk
      - >95% Specimen Collection
      - >90% Doctors documentation using structured templates and capturing discrete information
      - >90% of Nurse Order completed within 2 hours of schedule 90% of the time (not scored)

Hospital Presentation – Governance

- Best shown with an organization chart of committees
  - Name and purpose of committee; reporting relationship
- Where / how are nursing needs accommodated?
- Where / how are medical staff needs accommodated?
- Show governance at work through examples
- Expect to see a role for:
  - Medical Staff
  - Quality Improvement leadership
  - Pharmacy & Therapeutics
  - Medical Informatics
  - Nursing Informatics
  - Infection Control
  - Information Technology

Hospital Presentation – Governance

- Weak (may not be validated) if:
  - Lack of organization chart
  - Lack of clarity of reporting relationship
  - Lack of examples of governance at work
  - No strong sense of organization and mission
  - There is a "sense" that it is an "IT project" and not an enterprise effort at cultural transformation

- Need examples of "governance at work"
- Need examples of shared decision making

Common Stage 7 non-validation causes

- Not filmless in medical imaging

- CLMA only for a subset of patients or medications (e.g., not all medications are auto-identifiable)

- Paper
  - Clinically relevant paper not scanned within 24 hours – consistently
  - Handwritten order forms, flowsheets, warning sheets

- Lack of pervasiveness of use (e.g., fall below target goals, device integration not in all ICUs)

- Lack of Clinical Decision Support with orders & physician documentation

O-EMRAM

United States **Outpatient EMR Adoption Model**[SM]

STAGE	2017 Q2
7	10.4%
6	20.4%
5	7.5%
4	0.8%
3	10.0%
2	18.2%
1	30.8%
0	1.9%

N:42,694

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Progressively sophisticated model ...

STAGE	HiMSS Analytics O-EMRAM — Outpatient EMR Adoption Model Cumulative Capabilities
7	Complete EMR: external HIE, data analytics, governance, disaster recovery
6	Advanced clinical decision support; proactive care management, structured messaging
5	Personal health record, online tethered patient portal
4	CPOE, Use of structured data for accessibility in EMR and internal and external sharing of data
3	Electronic messaging, computers have replaced paper chart, clinical documentation and clinical decision support
2	Beginning of a CDR with orders and results, computers may be at point-of-care, access to results from outside facilities
1	Desktop access to clinical information, unstructured data, multiple data sources, intra-office/informal messaging
0	Paper chart based

A progressively sophisticated roadmap that enables …

Quality, safety, and Operations efficiencies

A Few Differences between Acute Care and Outpatient EMRAMs

- Measure EMR Adoption where the encounter is patient and prescriber based (physician & / or licensed care giver who can asses, treat, generate orders & prescribe within the scope of practice laws)

- Stage 4 includes both CPOE and Physician Documentation, both with appropriate CDS
  - Because documenting & ordering in the non acute setting is one simultaneous dialogue

- Stage 5 is Patient Engagement
  - We expect to see the tools to enable patients to become actively involved with their health maintenance and chronic disease management

- Stage 7 Validation Visit
  - We expect to see proof that patient engagement has delivered results

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Process

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Stage 7 Validation Process

- On-site visit (about 8 hours)

- Opening Session w/ presentations by staff

- Clinic Visits

  - Multiple diverse clinics (5 clinics minimum)

    - If multi-specialty clinic, sample different specialties

    - Order determined by the organization

- Medical Imaging, if in-house

- HIM

- Inspector Deliberation

- Closing Session and results presentation

Stage 7
Opening Presentation by Clinic

- Hospital presents the following topics (90 minutes):

  – System Overview & Pervasiveness of Use

  – Governance

  – *Clinical & Business Analytics (focus on patient engagement and population health)*

  – Health Information Exchange

  – Disaster Recovery & Business Continuity

Clinic Presentation – System Overview & Pervasiveness of Use

- Present a diagram of overall clinical computing environment

  – We want to know what is **_not_** from your EMR vendor; where are there interfaces?

  – Can an order be generated outside of the EMR?

    • If yes, who owns allergy information? – Must demonstrate allergy reconciliation

- Pervasiveness of Use

  – 95% CPOE – show at least four months of data, and show it is "in control" – Aggregate of all clinics being considered for the Stage 7 validation

Clinic Presentation – Governance

- Best shown with an organization chart of committees
  - Name and purpose of committee; reporting relationship
- Where / how are nursing needs accommodated?
- Where / how are medical staff needs accommodated?
- Show governance at work through examples
- Expect to see a role for various clinic staff:
  - Medical Staff
  - Quality Improvement leadership
  - Pharmacy & Therapeutics
  - Medical Informatics
  - Nursing Informatics
  - Population Health Case Managers
  - Information Technology

Clinic Presentation – Governance

- Weak (may not be validated) if:

  - Lack of organization chart

  - Lack of clarity of reporting relationship

  - Lack of examples of governance at work

  - No strong sense of organization and mission

  - There is a "sense" that it is an "IT project" and not an enterprise effort at cultural transformation

- Need examples of "governance at work"

- Need examples of shared decision making

Clinic Presentation –
Health Information Exchange (HIE)

- This is a growing & dynamic area

- If there is no other entity able to transmit or receive electronic exchange, we will not hold the client back

- We expect to see some effort
  - We expect to see exchange outside of core vendor

- Explain what is being exchanged & with whom
  - CCD, discrete data, bi-directional?

- Explain Public, Private, Current, Future exchange efforts

- Is there local leadership from this client?

Case Studies

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What about the other models?

Infrastructure – currently in development, used to measure an organizations IT stability and reliability

Material Management – currently in development, use to measure an organizations materials management solutions, including integration of consumables into the EMR

Security – not currently in development, intent would be to assess an organizations security profile

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Ambulatory Examples

- Clinic A

  – From 7% to 78% compliance on following asthma protocols

  – 44% reduction in unnecessary admissions for diabetes patients through use of Patient Portal

  – CHF patients supplied Blue-tooth enabled weight scales

    - 42% reduction in annual admission rate

- Clinic B

  – Patient submitted data in selected Dx, has cut 60 to 70 seconds per visit = $

  – Patient self scheduling shows a 20% reduction in no-show rate

Patient Engagement & Reminders

- Childhood Immunizations: 70% to 89.7%

- Colorectal screening: 72% to 78%

- Tobacco cessation reminders: 54% to 97.4%

- A1C testing: 50% to 83%

- Diabetes Nephropathy testing: 78% to 92.6%

- Population Health Strategy

  - Reduction of IP admissions per patient from 1.95 to 1.16

  - Reduced ED visits per patient from 3.4 to 1.7

  - Increased primary care provider visits per patient from 1.7 to 3.5
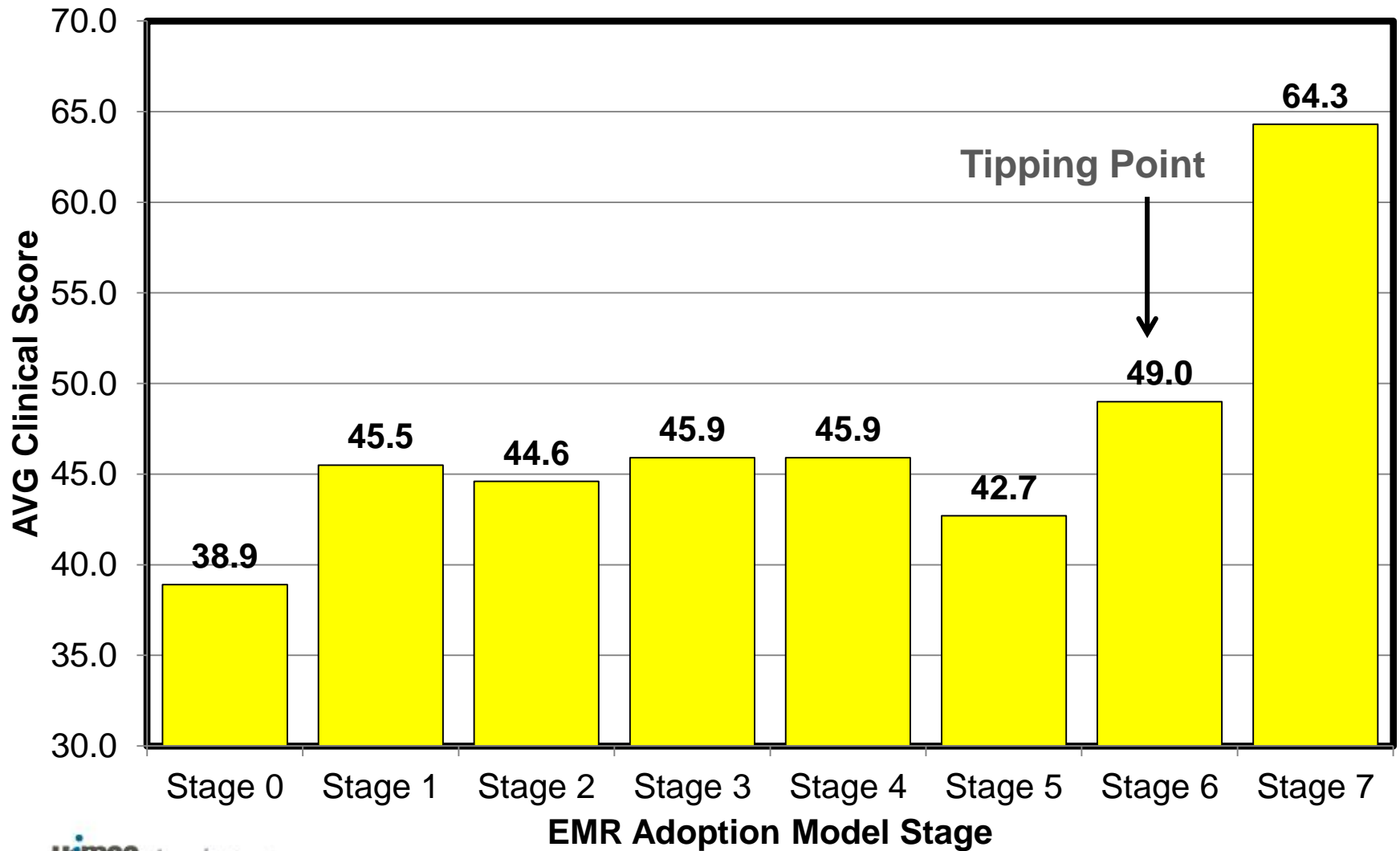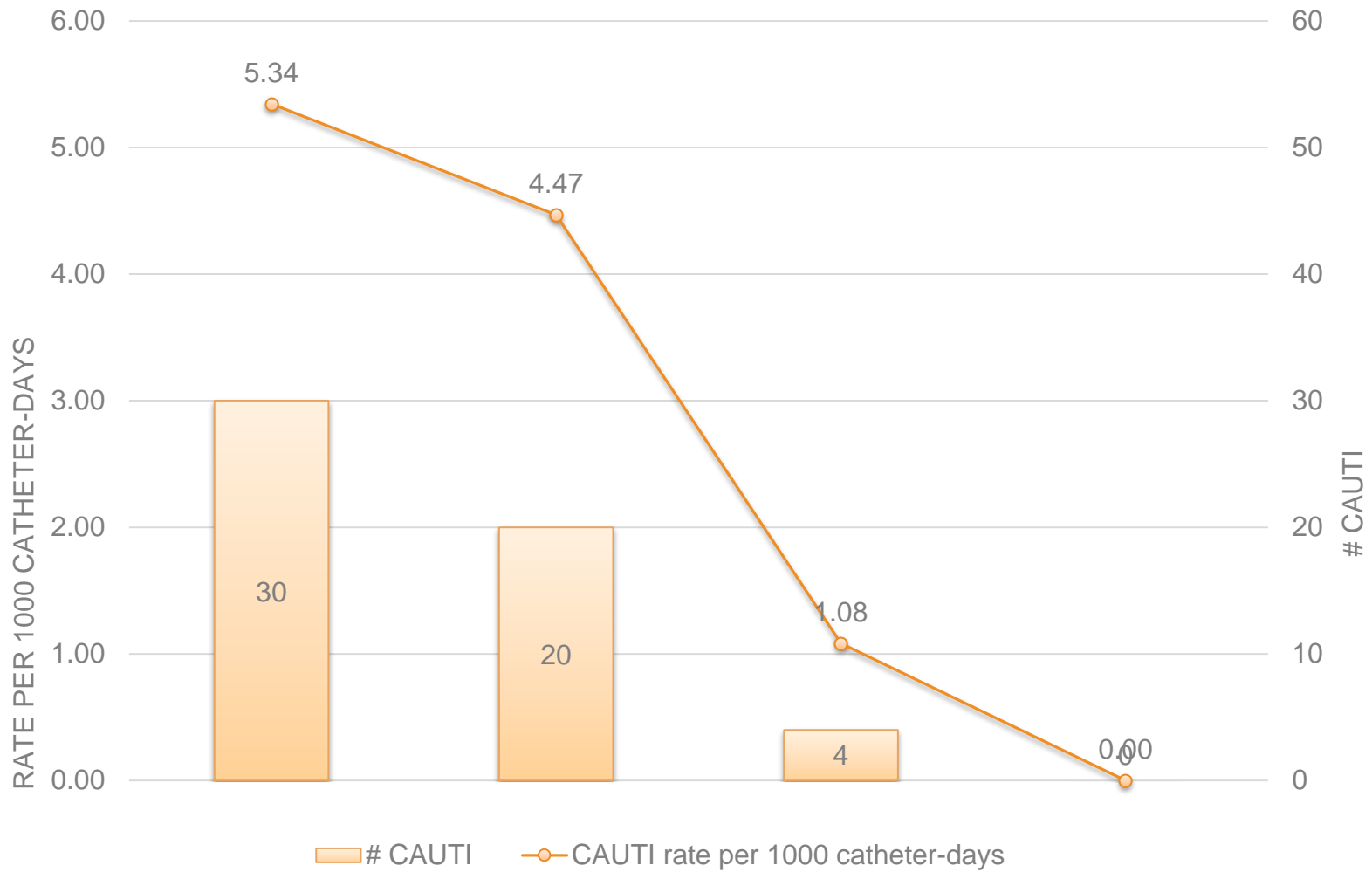
Value-Based Purchasing (VBP) Program*

Clinical Performance Score

+

Patient Experience Performance Score

=

Total Performance Score

70%   **30%**

TPS "100" = **High Value Performance**

TPS "0" = **Low Value Performance**

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*Program from U.S. Medicare to earn additional reimbursement

Value-based purchasing (vbp)

CAUTI Infections

Chart showing # CAUTI (bars): 30, 20, 4, and CAUTI rate per 1000 catheter-days (line): 5.34, 4.47, 1.08, 0.00

Left axis: RATE PER 1000 CATHETER-DAYS (0.00–6.00)
Right axis: # CAUTI (0–60)

Legend: # CAUTI — CAUTI rate per 1000 catheter-days

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Medication Administration Errors
per 1000 Adjusted Pt Days

Financial Performance

UNIVERSITY OF IOWA HOSPITALS & CLINICS
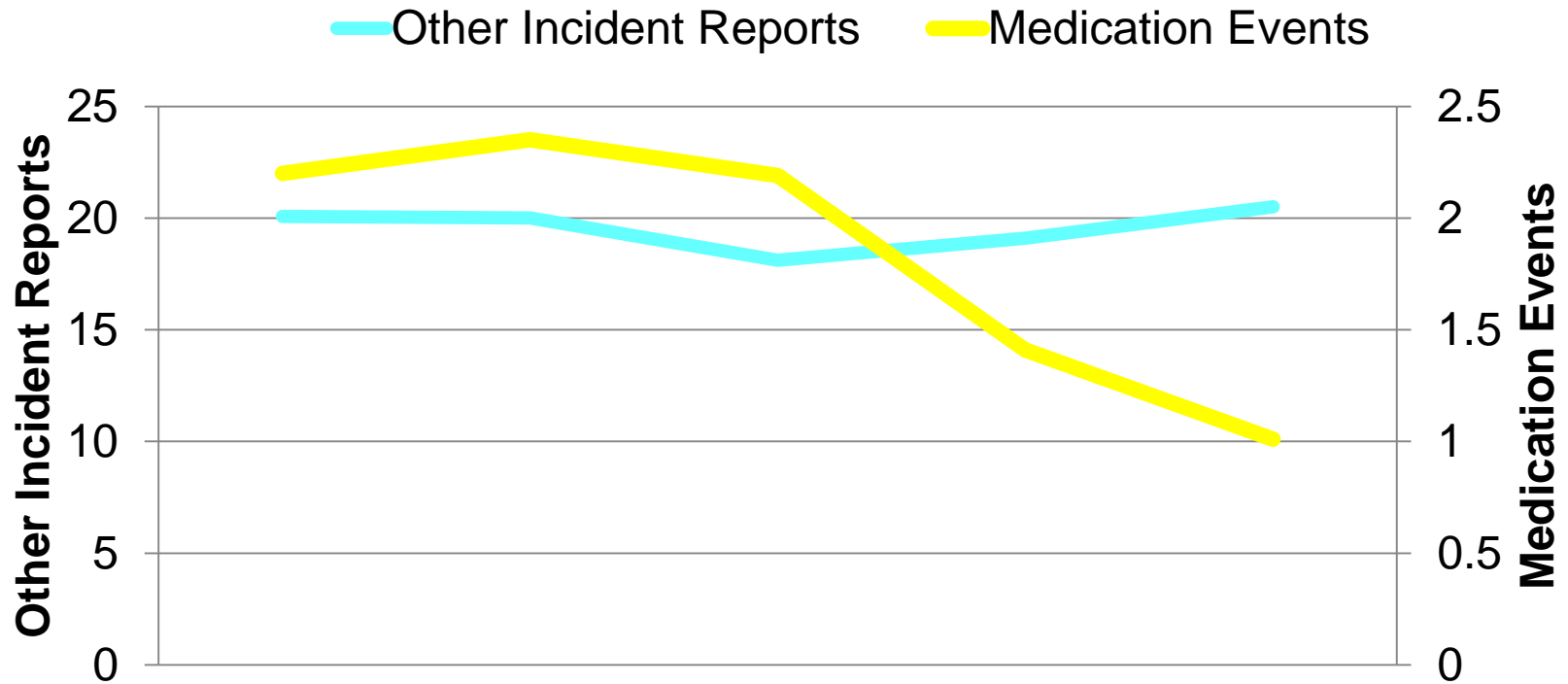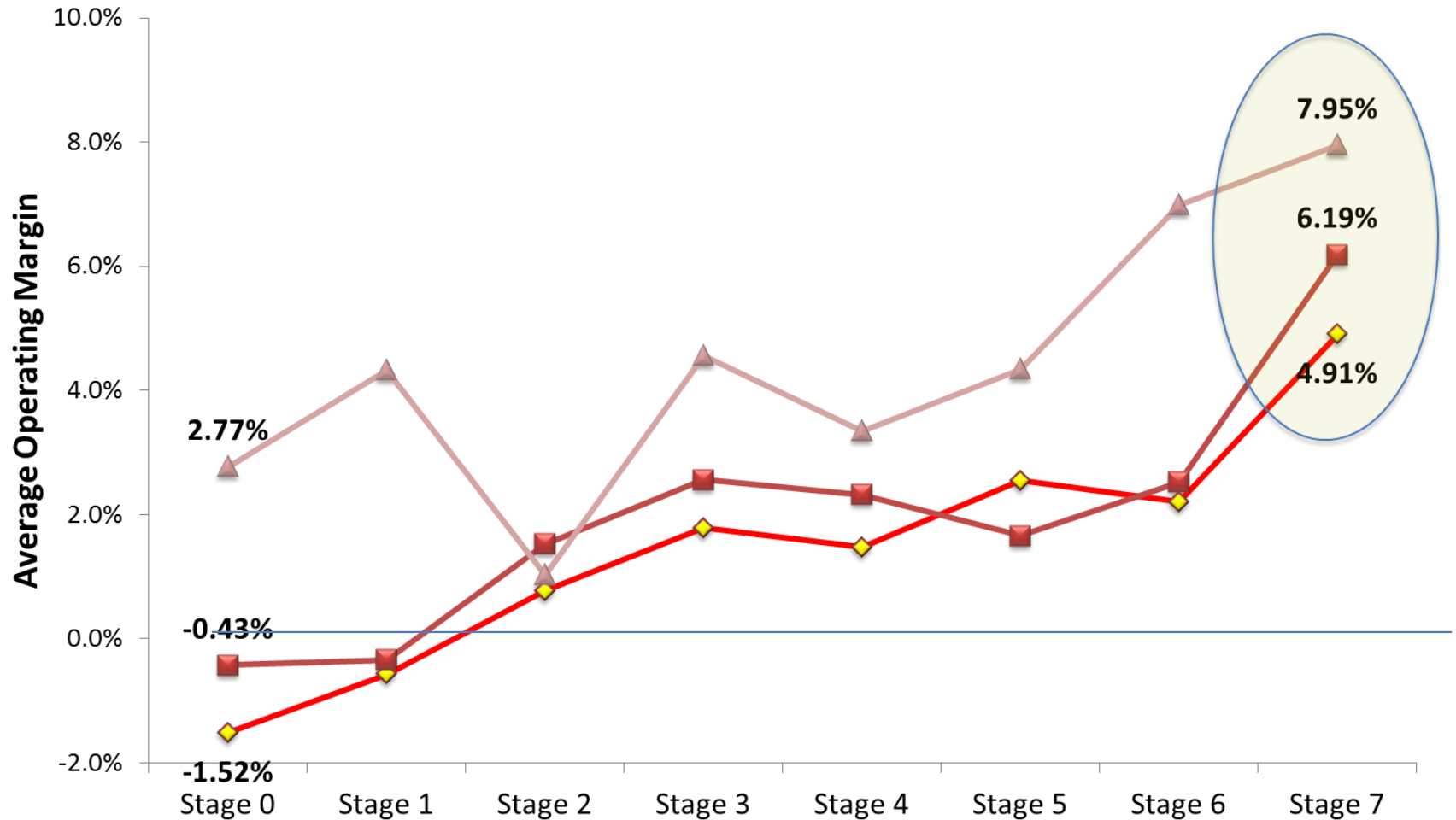
The Challenge

Malnutrition is a significant problem in hospitalized patients. This is not a new problem as a 1999 Institute of Medicine report focused on this topic and nutritional screening within 24 hours of admission has been a JCAHO requirement even prior to that time. However, malnutrition continues to be the "skeleton in the hospital closet" (Butterworth, 1979) due to lack of identification and intervention.

Resulting Value / ROI

This, this pilot cohort of 353 patients resulted in a total opportunity of $1,285,536 in malnutrition-impacted revenue (which translated to an additional allowable 340 days in the hospital).

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Population Health

The Challenge

Several years after our big bang go live, we are continuously working to optimize our system for clinicians and staff. A key element of our ongoing success is the effort put forth by our stakeholder groups, multidisciplinary workgroups designed to evaluate and improve particular aspects of our electronic health record (EHR). This case study describes how OSUWMC's Clinical Decision Stakeholder Group implemented a program to reduce alert fatigue by identifying non-value added alerts and reducing the alerts' prevalence in the EHR.

Resulting Value / ROI

The number of alerts per medication order and the number of overridden alerts per medication order have decreased since early 2016, when we began implementing our program. We project that due to these efforts, OSUWMC will achieve an annual reduction of 110,000 medication alerts and 1.76 million practice alerts

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Physician Productivity

The Challenge

Our mission statement includes "Cincinnati Children's will improve child health and transform delivery of care through fully integrated, globally recognized research, education and innovation. " Although we had implemented a clinical information system for inpatient in 2002, we did not have a totally integrated system that could provide our institution with the data and decision support needed for clinical care, research, and education

Resulting Value / ROI

We have done a formal study of the impact of these interventions. The results are still preliminary but very promising. Some highlights include: • A high water mark of 10,720 patient days between transplant rejection episodes (our previous best was 7830 days). • Eight fewer transplant rejections compared to our median rate. • Estimated dollar savings of $680,000 in hospital charges (at a rate of $80,000 per rejection).

Patient Care

CONCLUSION

- **There are benefits to advanced EMR capabilities… but the ROI requires "persistence and patience".**
  - Be prepared for a medical staff satisfaction dip
    - It appears to return to normal levels after two years
    - Remember that huge age disparity
  - Be prepared for nursing to hear the brunt of medical staff dissatisfaction
    - What else is new?
    - Nursing is IT's ambassadors … make Nursing satisfied first
- **Work on the high touch AND high tech**
  - EMR adoption is NOT just an IT department initiative… it requires an Organizational Development orientation.