Calculating the Value of Informatics

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HIMSS

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HIMSS

Vision

To realize the full health potential of every human, everywhere.

Mission

Reform the global health ecosystem through the power of information and technology.

HIMSS

About AMDIS Slide

- Founded in 1997, the Association of Medical Directors of Information Systems has been the premier professional organization for physicians interested in and responsible for healthcare information technology.
- AMDIS Members are the thought leaders, decision makers and opinion influencers dedicated to advancing the field of Applied Medical Informatics and thereby improving the practice of medicine.
- With our symposia, blogs, on-line forum, journal, presentations, sponsored and co-sponsored programs, and networking opportunities, AMDIS truly is the home for the "connected" CMIO.

Welcome

Harm Scherpbier, MD, MS

HIMSS Physician Committee Member
CMIO, HealthShareExchange
Moderator

Karl Kochendorfer, MD, FAAFP, FAMIA

Assistant Vice Chancellor for Health Affairs, Chief Health Information Officer, University of Illinois at Chicago

Karl Kochendorfer, MD, FAAFP, FAMIA is the Assistant Vice Chancellor for Health Affairs, Chief Health Information Officer (CHIO) and Associate Chief Medical Officer (CMO) at the University of Illinois Hospital & Health Sciences System (UI Health) and Associate Professor of Clinical Family Medicine at the University of Illinois at Chicago (UIC). He is a practicing primary care clinician who also delivers babies and cares for hospitalized patients. At UI Health, Dr. Kochendorfer has founded and led many enterprise initiatives, including Meaningful Use (MU), Electronic Medical Records (EMR), Clinical Documentation Improvement (CDI), Clinical Guideline and Protocol Oversight, Clinical Decision Support (CDS), Patient Portal and Data Governance Committees and Teams.

OVERVIEW

- Learning Objectives
- Definitions
- Alignment
- Data Sources
- Metrics (Hard and Soft)
- Wrap-up

LEARNING OBJECTIVES

- Compare commonly used definitions, data sources and metrics for measuring the value of informatics
- Identify hard and soft metrics that you can apply within your organization
- Learn how to communicate this value through the use of examples to your health system leadership

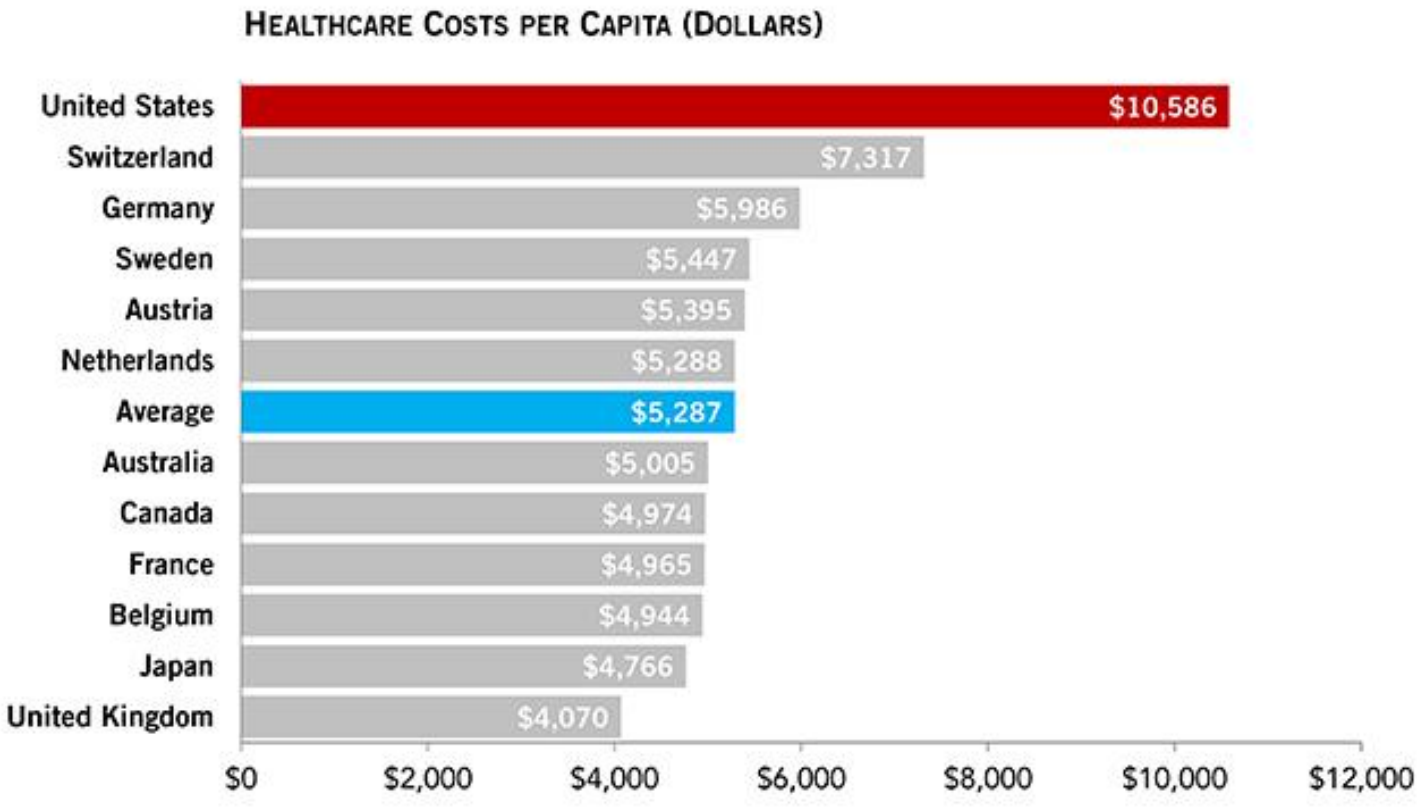
By the end, please post in the chat: What metric or source do you plan to apply within your organization and how or to whom will you communicate it?

WHY EVEN DISCUSS VALUE IN HEALTHCARE

US SPENDING 2X AVERAGE

PETER G. PETERSON FOUNDATION

Per capita healthcare spending in the U.S. is almost twice the average of other wealthy, developed countries



SOURCE: Organisation for Economic Cooperation and Development, *OECD Health Statistics 2019*, July 2019.
NOTES: Data are for 2018. Chart uses purchasing power parities to convert data into U.S. dollars. Average is for other wealthy OECD countries with above median GDP and above median GDP per capita.

PGPF.ORG

US RANKS LAST IN WEALTHY DEVELOPED COUNTRIES

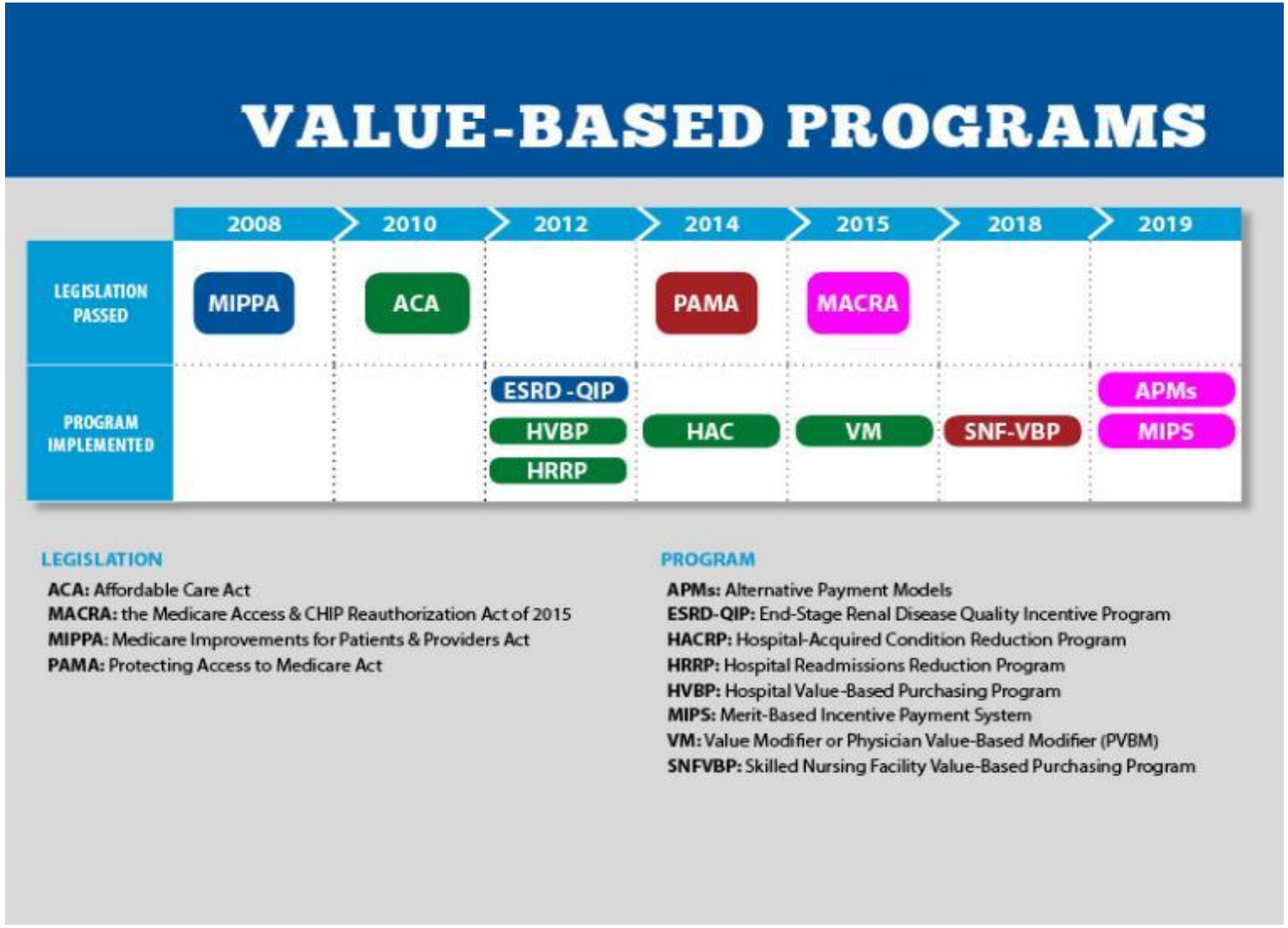
COUNTRY RANKINGS

Top 2*
Middle
Bottom 2*

	AUS	CAN	FRA	GER	NETH	NZ	NOR	SWE	SWIZ	UK	US
OVERALL RANKING (2013)	4	10	9	5	5	7	7	3	2	1	11
Quality Care	2	9	8	7	5	4	11	10	3	1	5
Effective Care	4	7	9	6	5	2	11	10	8	1	3
Safe Care	3	10	2	6	7	9	11	5	4	1	7
Coordinated Care	4	8	9	10	5	2	7	11	3	1	6
Patient-Centered Care	5	8	10	7	3	6	11	9	2	1	4
Access	8	9	11	2	4	7	6	4	2	1	9
Cost-Related Problem	9	5	10	4	8	6	3	1	7	1	11
Timeliness of Care	6	11	10	4	2	7	8	9	1	3	5
Efficiency	4	10	8	9	7	3	4	2	6	1	11
Equity	5	9	7	4	8	10	6	1	2	2	11
Healthy Lives	4	8	1	7	5	9	6	2	3	10	11
Health Expenditures/Capita, 2011**	$3,800	$4,522	$4,118	$4,495	$5,099	$3,182	$5,669	$3,925	$5,643	$3,405	$8,508

Notes: * Includes ties. ** Expenditures shown in $US PPP (purchasing power parity); Australian $ data are from 2010.
Source: Calculated by The Commonwealth Fund based on 2011 International Health Policy Survey of Sicker Adults; 2012 International Health Policy Survey of Primary Care Physicians; 2013 International Health Policy Survey; Commonwealth Fund *National Scorecard 2011;* World Health Organization; and Organization for Economic Cooperation and Development, *OECD Health Data, 2013* (Paris: OECD, Nov. 2013).

CMS CARES ABOUT VALUE



DEFINITIONS OF VALUE, INFORMATICS AND SCOPE OF HEALTHCARE

HOW TO DEFINE VALUE IN HEALTHCARE
Most simplistic and heavily used equation:

$$\text{Value} = \frac{\text{Quality}}{\text{Cost}}$$

How to define Quality:

"The degree to which health services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge." - IOM Study Committee 1990

Institute of Medicine (US) Committee to Design a Strategy for Quality Review and Assurance in Medicare; Lohr KN, editor. Medicare: A Strategy for Quality Assurance: VOLUME II Sources and Methods. Washington (DC): National Academies Press (US); 1990. 5, Defining Quality of Care. Available from: https://www.ncbi.nlm.nih.gov/books/NBK235476/

VARIOUS AIM STATEMENTS RELATED TO VALUE

- **IOM Quality Chasm Report outlined 6 Aims (2001)**
  1. Safe
  2. Timely
  3. Effective
  4. Efficient
  5. Patient-centered
  6. Equitable
- **Institute for Healthcare Improvement (IHI) Triple Aim (2007)**
  1. Patient Experience
  2. Population Health
  3. Cost
- **CMS Triple Aim published in the Affordable Care Act (2010)**
  1. Better Care for Individuals
  2. Better Health for Populations
  3. Lower Cost
- **Bodenheimer's proposed the Quadruple Aim (2014)**

  + Provider Experience

TRYING TO PUT IT TOGETHER

$$\textbf{Value} = \frac{\textbf{Quality}\ [\text{Outcomes (ind + pop, mortality + QOL) + Experience (patient + provider)}]}{\textbf{Cost}\ [\text{Materials + Effort}]}$$

Take home tips:

- Focus on the patient, but don't forget the provider
- Pick quality outcomes that matter to patients
- Patients want their provider to be 3 things:
  - Accessible
  - Affable (Service/Experience)
  - Able (Effective)

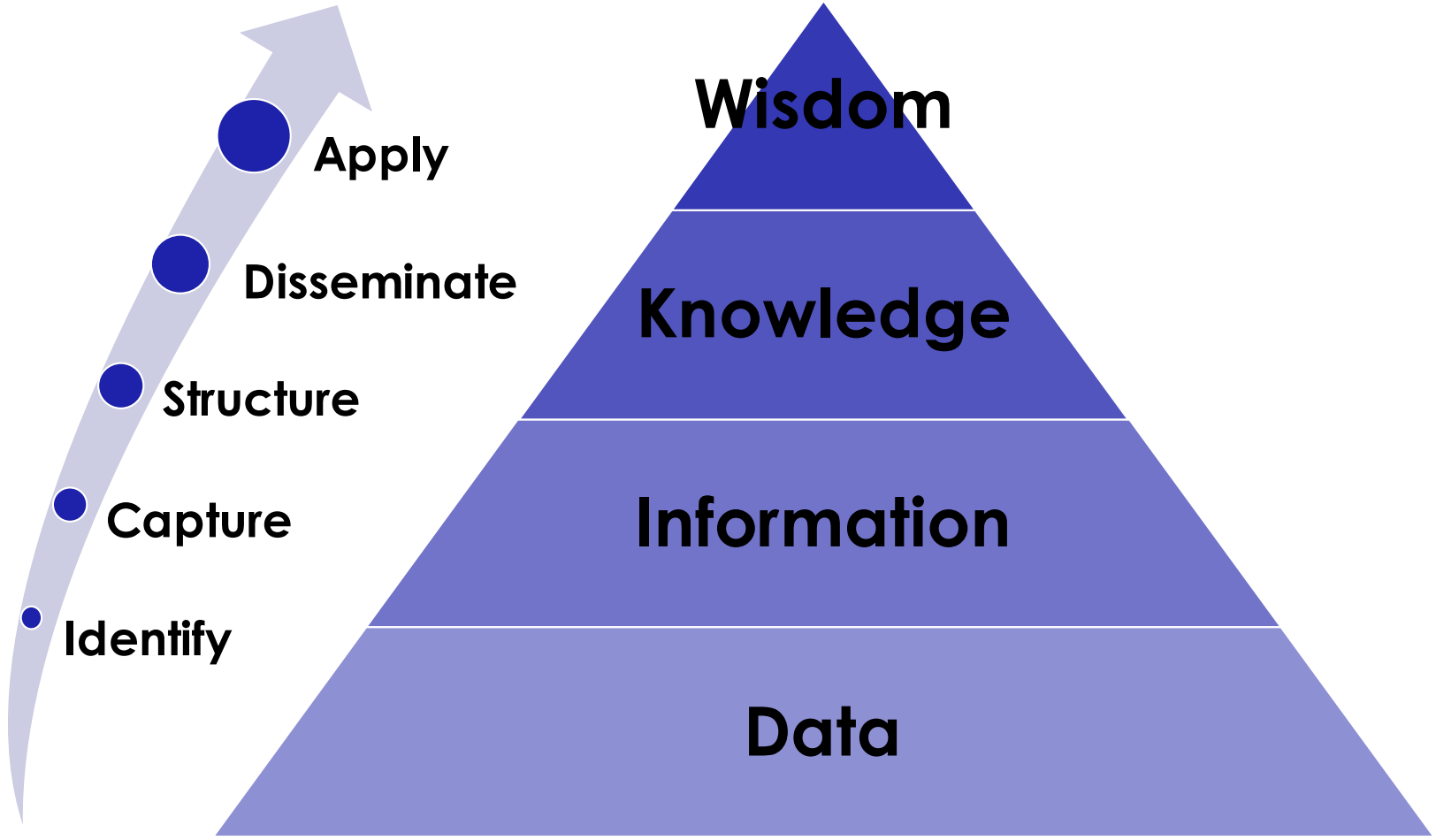
WHAT IS INFORMATICS?

"Health Informatics is the interdisciplinary field that studies and pursues the effective uses of biomedical **data**, **information**, **and knowledge** for scientific inquiry, problem solving and decision making, motivated by efforts to improve human health"

1. Kulikowski CA, Shortliffe EH, Currie LM, Elkin PL, Hunter LE, Johnson TR, Kalet IJ, Lenert LA, Musen MA, Ozbolt JG, Smith JW. AMIA Board white paper: definition of biomedical informatics and specification of core competencies for graduate education in the discipline. *Journal of the American Medical Informatics Association*. 2012 Nov 1;19(6):931-8.

2. Fridsma DB. (2016). The scope of health informatics and the Advanced Health Informatics Certification. *Journal of the American Medical Informatics Association*. 2016;23(4):855-856. doi:10.1093/jamia/ocw099.

WHAT IS KNOWLEDGE MANAGEMENT (KM)?



Who to attribute the Wisdom hierarchy to?

OLDER DESCRIPTION?

Take my instruction **[information]** instead of silver, and **knowledge** rather than choice gold, for wisdom is better than jewels, and all that you may desire cannot compare with her **[wisdom]**.

Proverbs 8:10-11 [ESV]

King Solomon ~950 B.C.

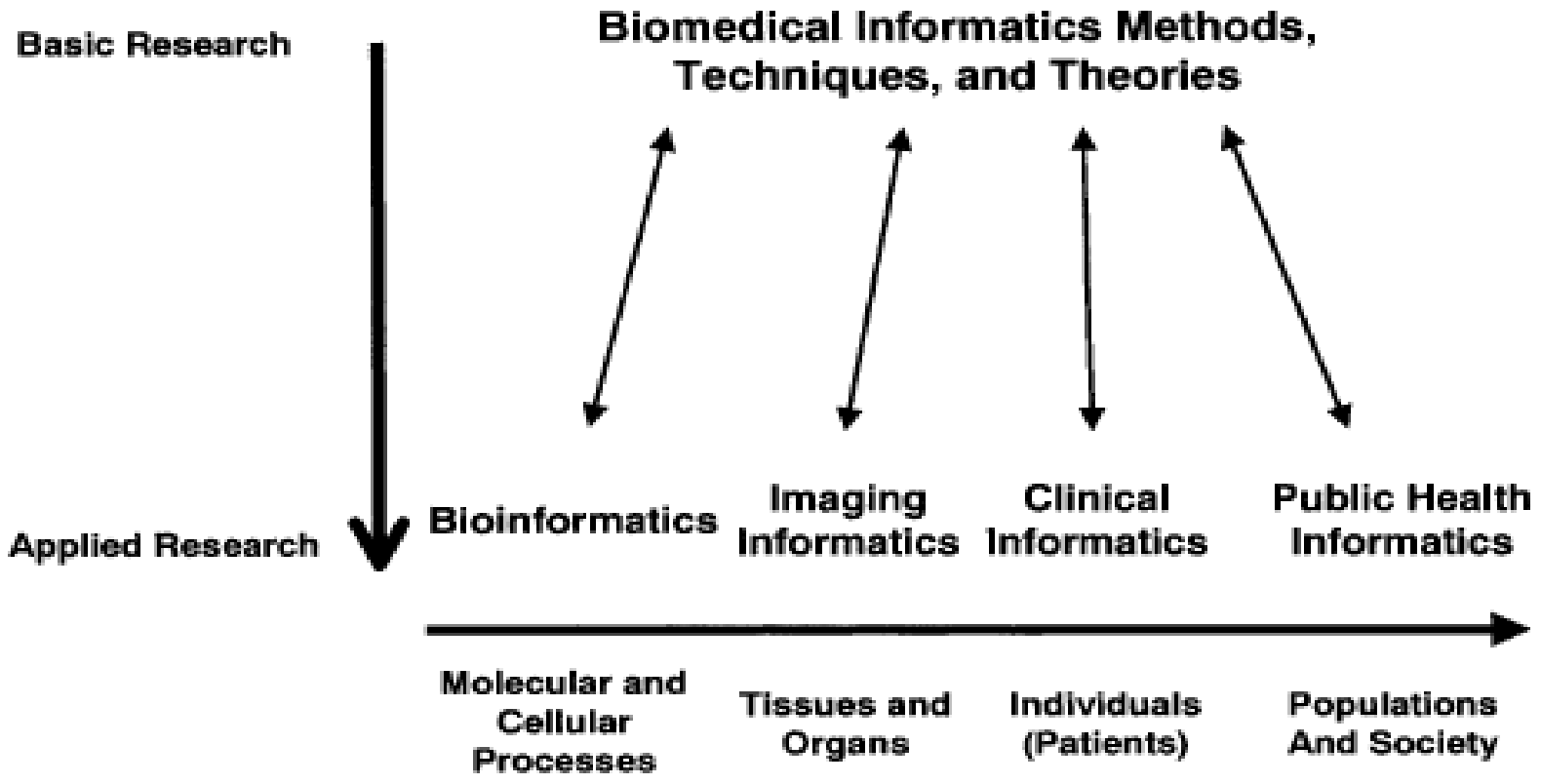
"The Wisest Man to ever live"

WHAT INFORMATICS IS AND IS NOT

- It is not IT; Information technology is hardware, software, security, authentication, etc.
- Informatics includes the use of IT, change management, human-computer interactions, risk management, organizational behavior, workflow redesign, computable language, productivity improvement, safety, quality, evaluation, etc.
- Informatics IS integrative, multidisciplinary and flexible

- Donald E. Detmer, MD

BIOMEDICAL AND HEALTH INFORMATICS

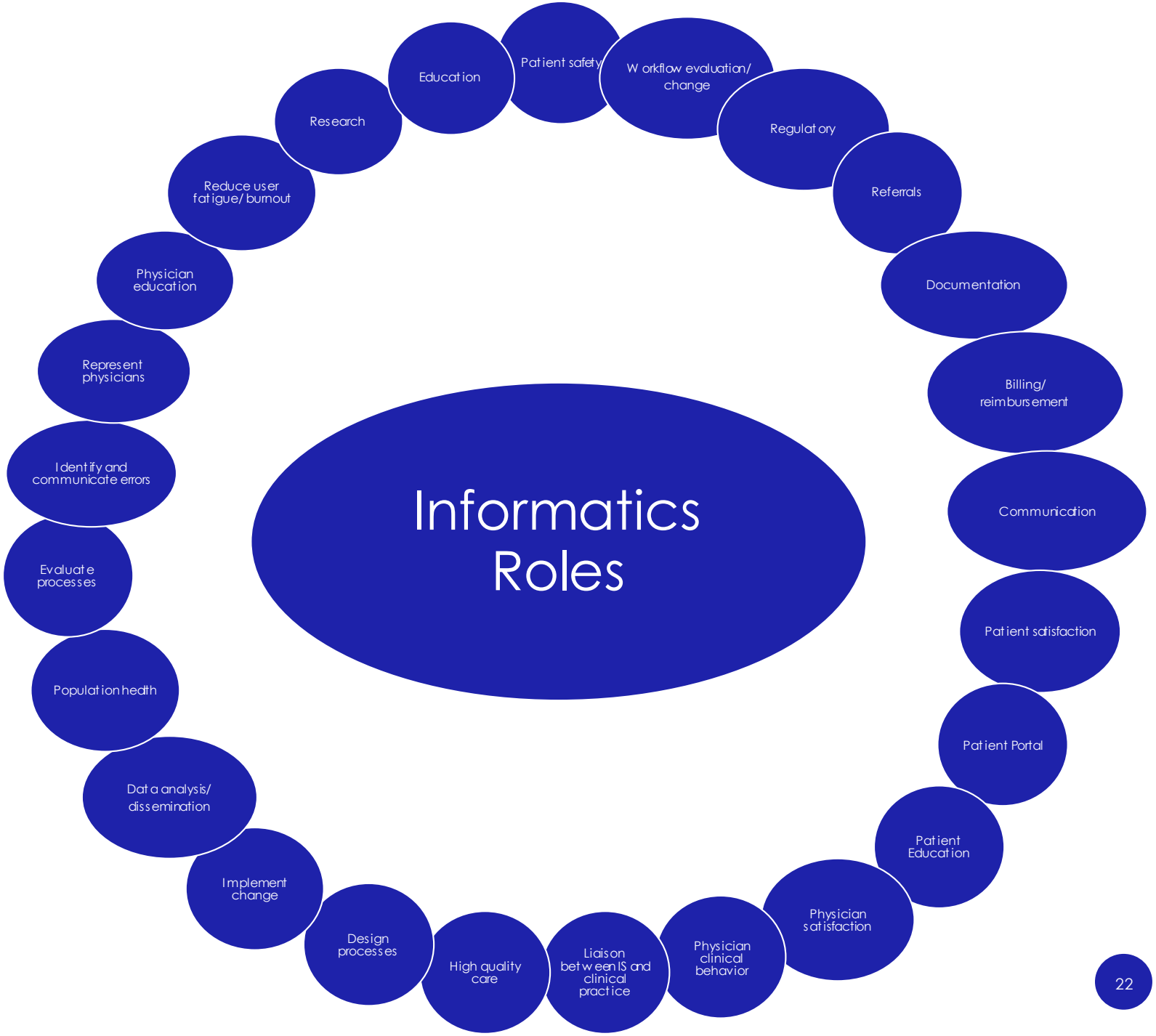


Friedman CP, Altman RB, Kohane IS, et al. Training the Next Generation of Informaticians: The Impact of "BISTI" and Bioinformatics—A Report from the American College of Medical Informatics. JAMIA 2004;11:167–172.

Calculating the Value of Informatics

Clinical informaticians transform health care by analyzing, designing, implementing, and evaluating information and communication systems that enhance individual and population health outcomes, improve patient care, and strengthen the clinician-patient relationship."

- Reed Gardner in the Core Content for the Subspecialty of Clinical Informatics



2 MAJOR CERTIFICATION PATHS

Physicians:

- Anyone from 24 initial boards can subspecialize in Clinical Informatics

- Handled by ABPM (Preventive Medicine) or ABP (Pathology) = 1,868 docs on 1/1/2019

Clinical Informatics Subspecialty (CIS)

Domains
Domain 1. Foundational Knowledge and Skills
Domain 2. Improving Care Delivery and Outcomes
Domain 3. Enterprise Information Systems
Domain 4. Data Governance and Analytics
Domain 5. Leadership and Professionalism

Others:

CAHIIM, Nurses, Public Health, Pharmacy, Non-clinical backgrounds

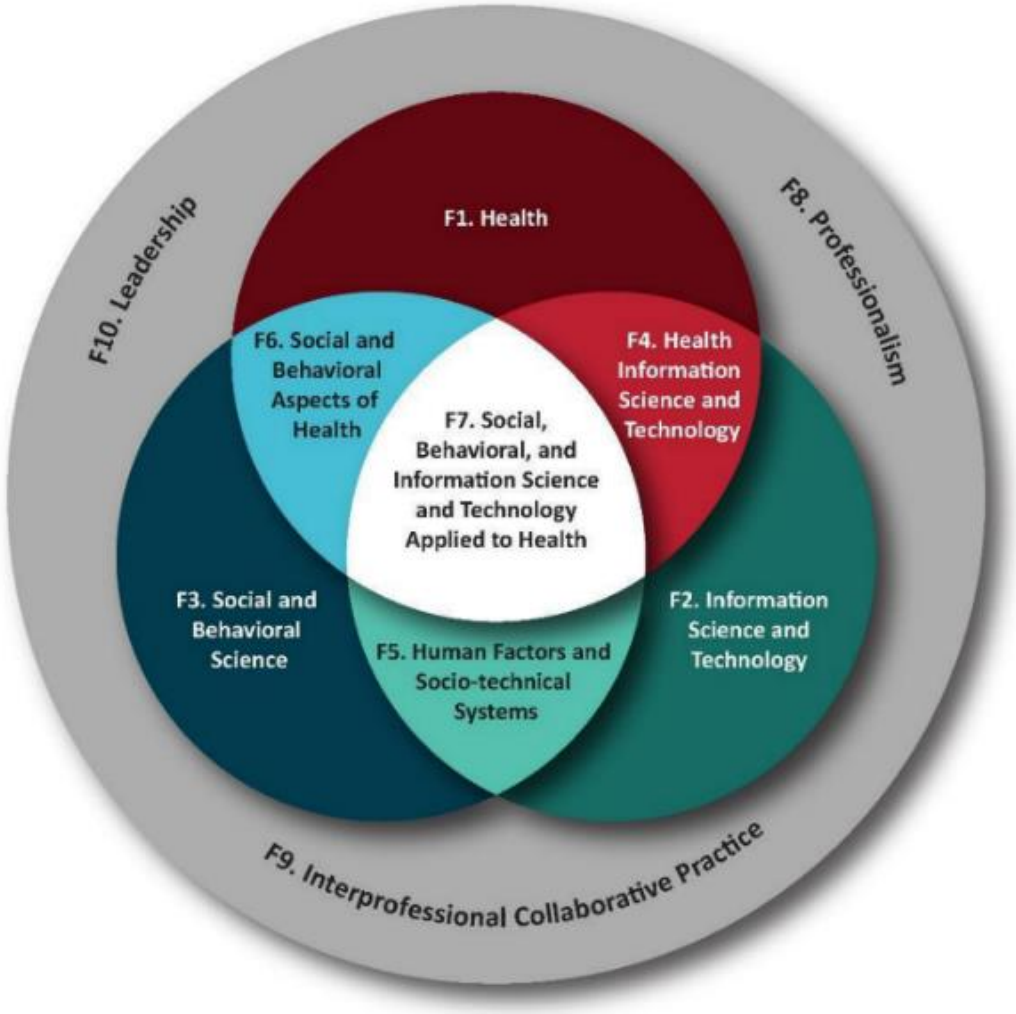
Health Informatics

Domains
Domain 1. Foundational Knowledge and Skills
Domain 2. Enhancing Health Decision-making, Processes, and Outcomes
Domain 3. Health Information Systems
Domain 4. Data Governance, Management, and Analytics
Domain 5. Leadership, Professionalism, Strategy, and Transformation

CORE INFORMATICS DOMAINS

- Foundational Informatics Knowledge
- Improving Care Delivery and Outcomes
- Enterprise Information Systems
- Data Governance & Analytics
- Leadership & Professionalism

CORE COMPETENCIES



From: AMIA Board White Paper: AMIA 2017 core competencies for applied health informatics education at the master's degree level. J Am Med Inform Assoc. Published online October 26, 2018. doi:10.1093/jamia/ocy132

FROM DEFINITIONS TO ALIGNMENT

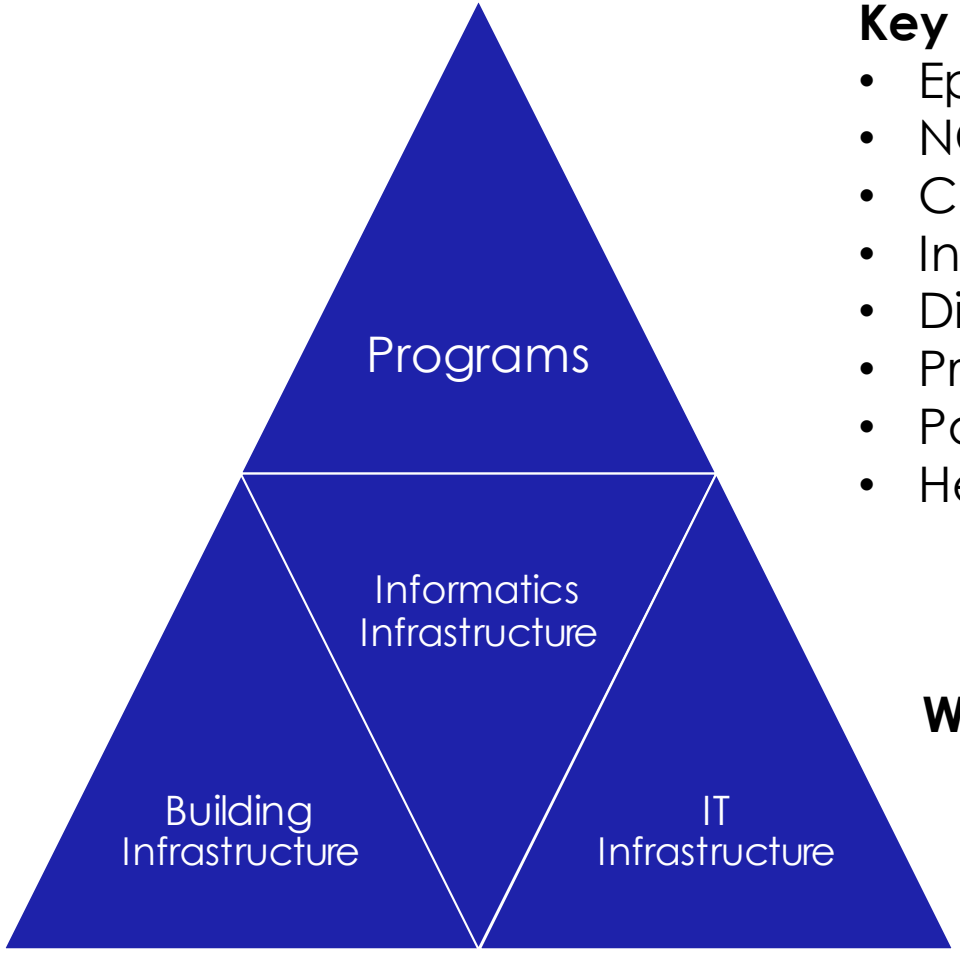
ALIGNMENT

- Hospital/Clinic Initiatives
- Clinical Quality Metrics
- Sepsis
- Meaningful Use
- Regulatory
- Provider Burnout
- Clinical Documentation Improvement (CDI)

UI HEALTH INITIATIVES

What are the Key Initiatives at your Organization?

UI HEALTH INFORMATICS IS FOUNDATIONAL TO KEY PROGRAMS



Key UI Health Programs:

- Epic transition (3i Project)
- NCI Cancer Center Designation
- Center for Clinical Translational Science
- Institute for Healthcare Delivery Design
- Discovery Partners Institute
- Precision Medicine Initiative
- Population Health Efforts
- Health Science Education of the Future

What are the Key Programs at your Organization?

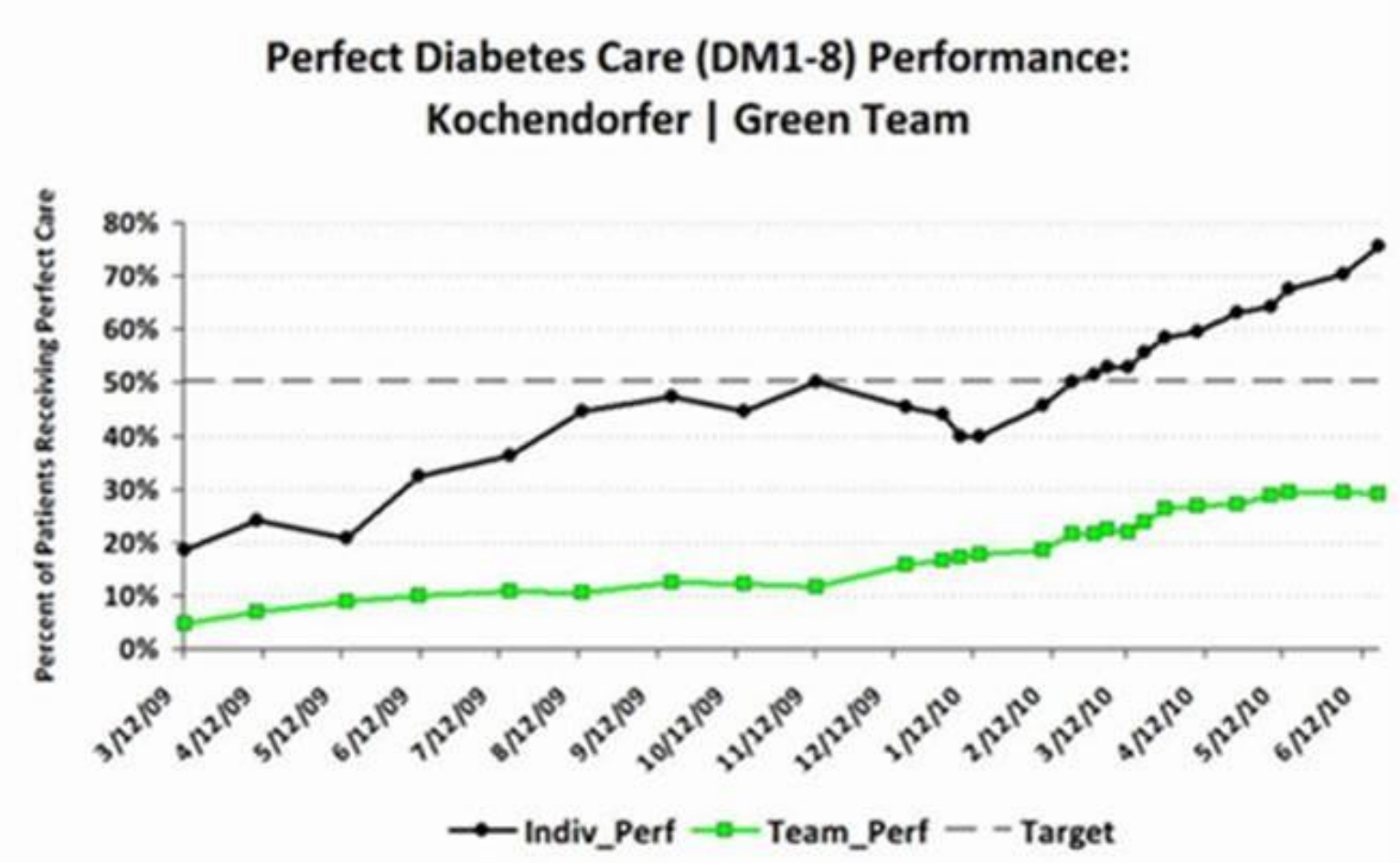
Perception is King,

reality it's Jester.

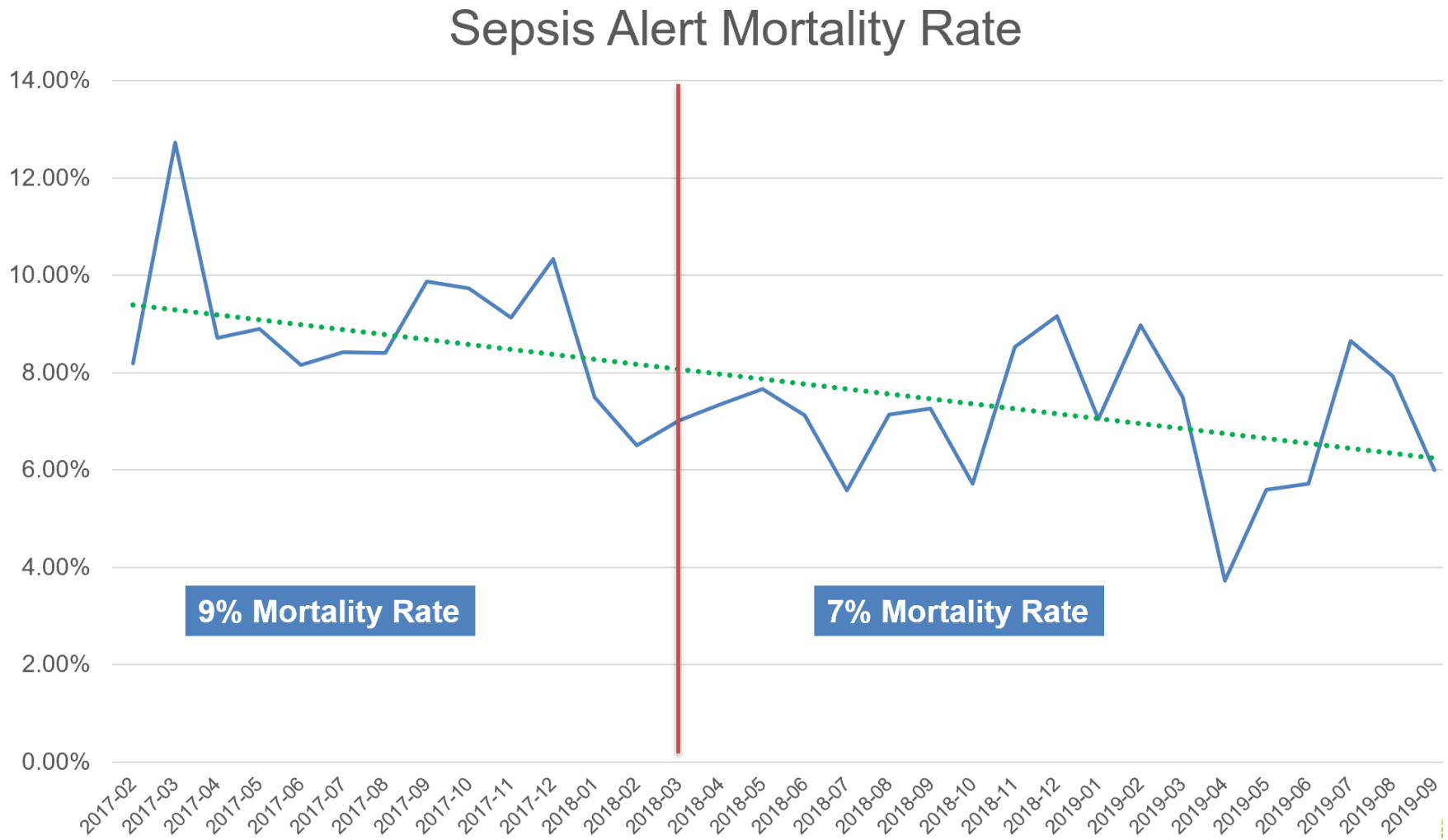
IT TAKES A VILLAGE

The following slides show data from efforts by many people, but at least one informatics person played a key role

CLINICAL QUALITY METRICS



SEPSIS


Sepsis Alert Mortality Rate
14.00%
12.00%
10.00%
8.00%
6.00%
4.00%
2.00%
0.00%
9% Mortality Rate
7% Mortality Rate
2017-02
2017-03
2017-04
2017-05
2017-06
2017-07
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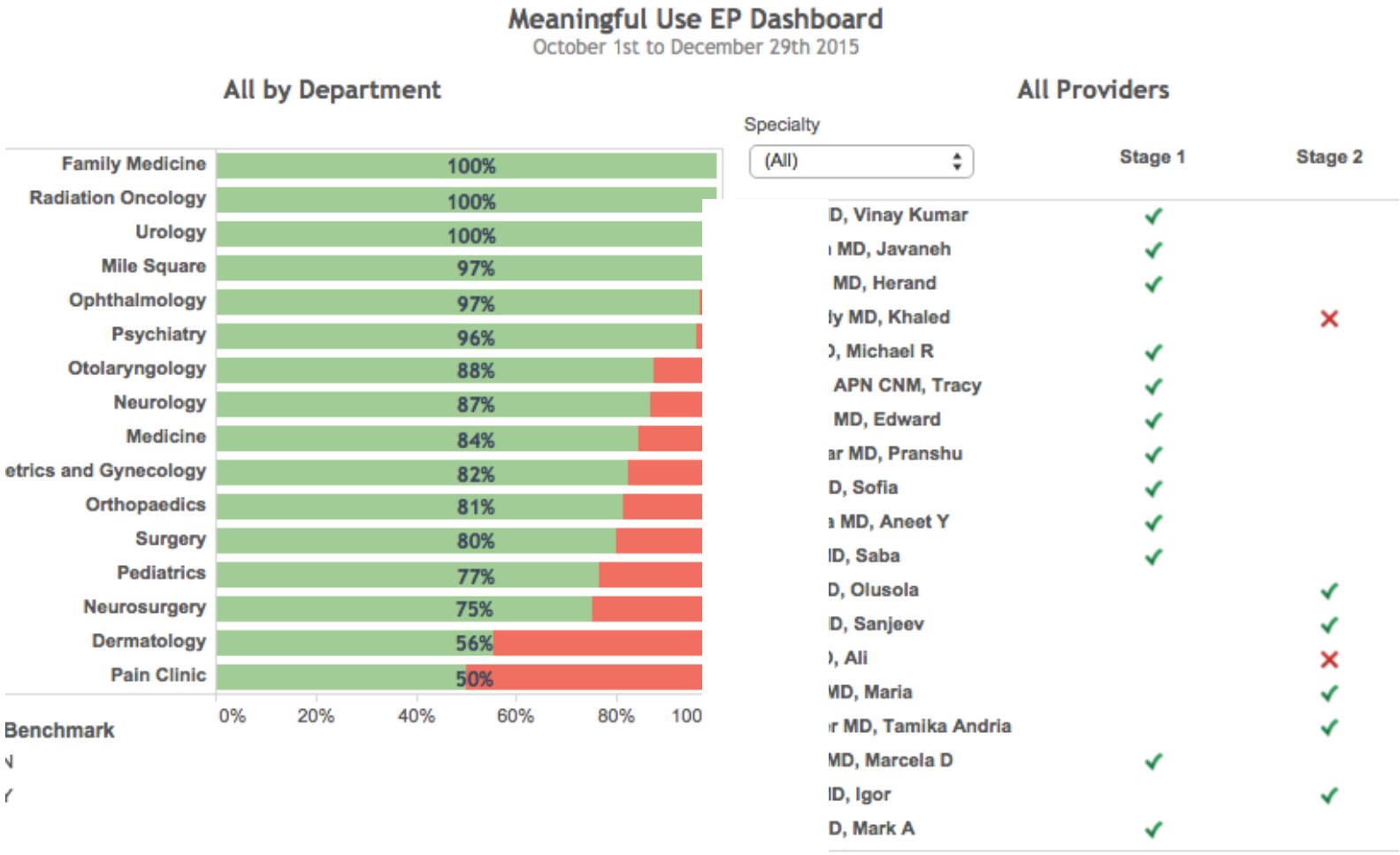
MEANINGFUL USE

Generated **$36M** to date



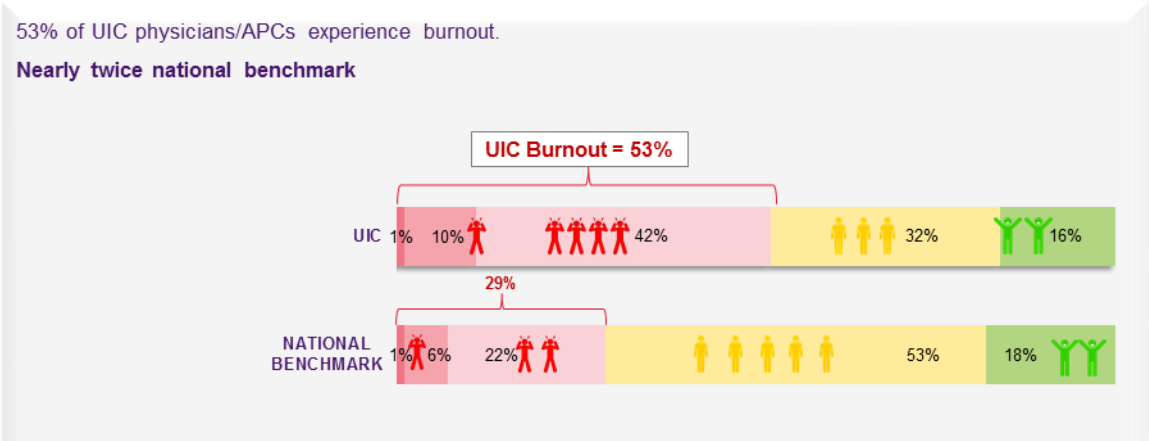
REGULATORY

Reduced volume of undesired outcome and increased compliance

BURNOUT SURVEY

Helped evaluate and communicate current state

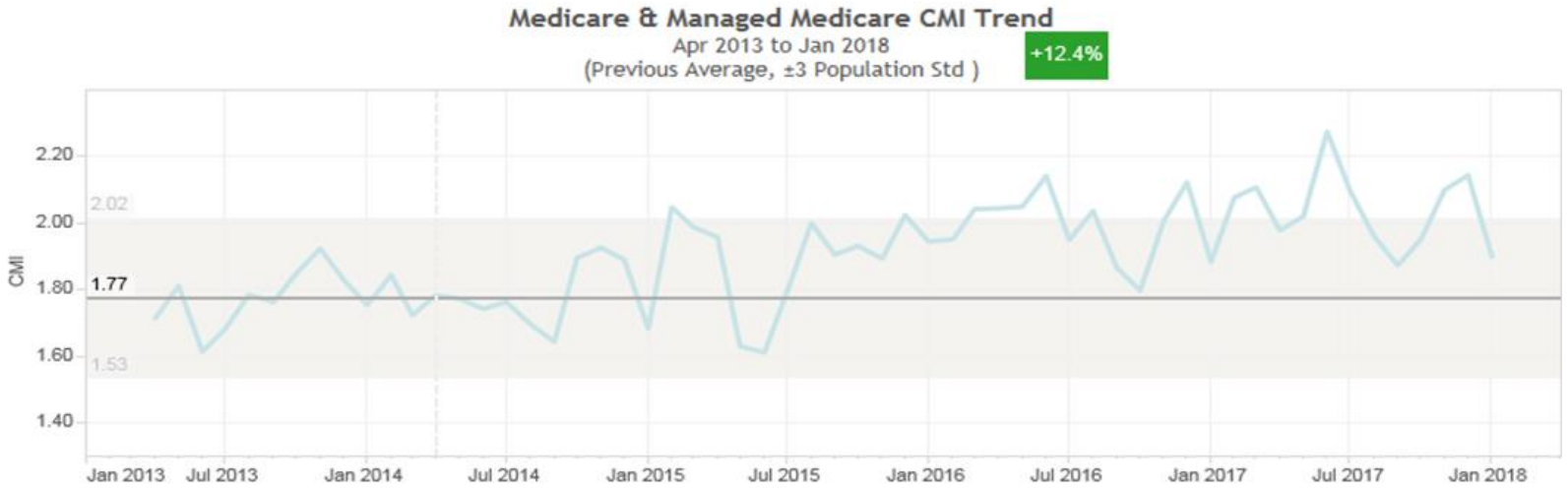
Burnout (Q2)

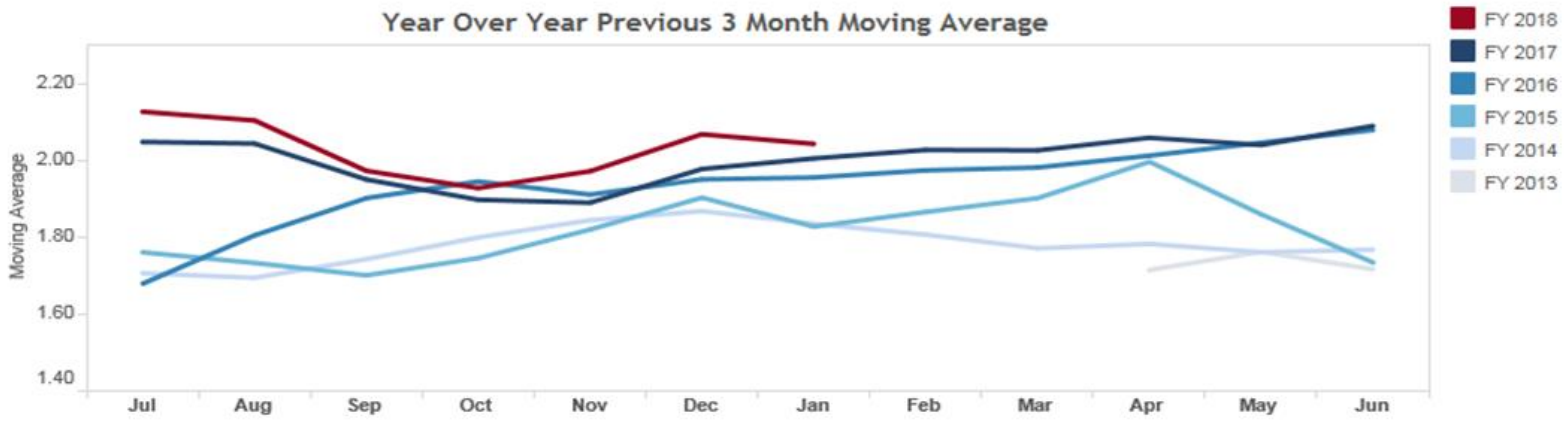


Mini-Z Total and Sub-Scores (Q1-10)

CLINICAL DOCUMENTATION IMPROVEMENT (CDI)

Improved Hospital finances $M/yr





FROM ALIGNMENT TO DATA SOURCES

GOOD DATA SOURCES

- EHRs (know ALL of their tools)
- Data Warehouse and Analytic Platforms
- EHR Usability Surveys (e.g. KLAS Arch Collaborative)
- Patient Satisfaction Survey data (e.g. Press Ganey)
- Burnout surveys (e.g. AMA mini-Z)
- Group Purchasing/Data Aggregation Organizations (e.g. Vizient for academic medical centers)
- State Hospital Association measures/comparisons
- CMS Value-Based Purchasing measures
- National Rankings

Overall and Criteria-Specific Grades for the Hospital Quality Rating Systems

	Average Grade	Grade Range	
		High	Low
CMS Hospital Quality Star Ratings			
Overall Grade	C	B-	C
Potential for Misclassification	D	C	D
Importance/Impact	C+	B	C
Scientific Acceptability	C+	B	C
Iterative Improvement	C-	B	D
Transparency	B	A	B
Usability	B	A	B
Healthgrades Top Hospitals			
Overall Grade	D+	C-	D
Potential for Misclassification	D	C	F
Importance/Impact	B	A	C
Scientific Acceptability	D+	C	D
Iterative Improvement	C	B	D
Transparency	D+	B	D
Usability	C	C	C
U.S. News & World Report Best			
Overall Grade	B	B	B-
Potential for Misclassification	B	B	B
Importance/Impact	B	A	B
Scientific Acceptability	B	B	B
Iterative Improvement	B+	A	B
Transparency	B	A	C
Usability	B	B+	C
Leapfrog Safety Score and Top			
Overall Grade	C-	B-	D
Potential for Misclassification	C-	C	D
Importance/Impact	C+	B	C
Scientific Acceptability	C	B	D
Iterative Improvement	B-	A	C
Transparency	C	B	D
Usability	C+	B-	C

Notes: The "Overall Grade" for a rating system was a separate category assigned by each rater, not an average of the individual criteria for a rating system. "Potential for Misclassification" refers to the likelihood that the rating system incorrectly estimates true hospital performance.

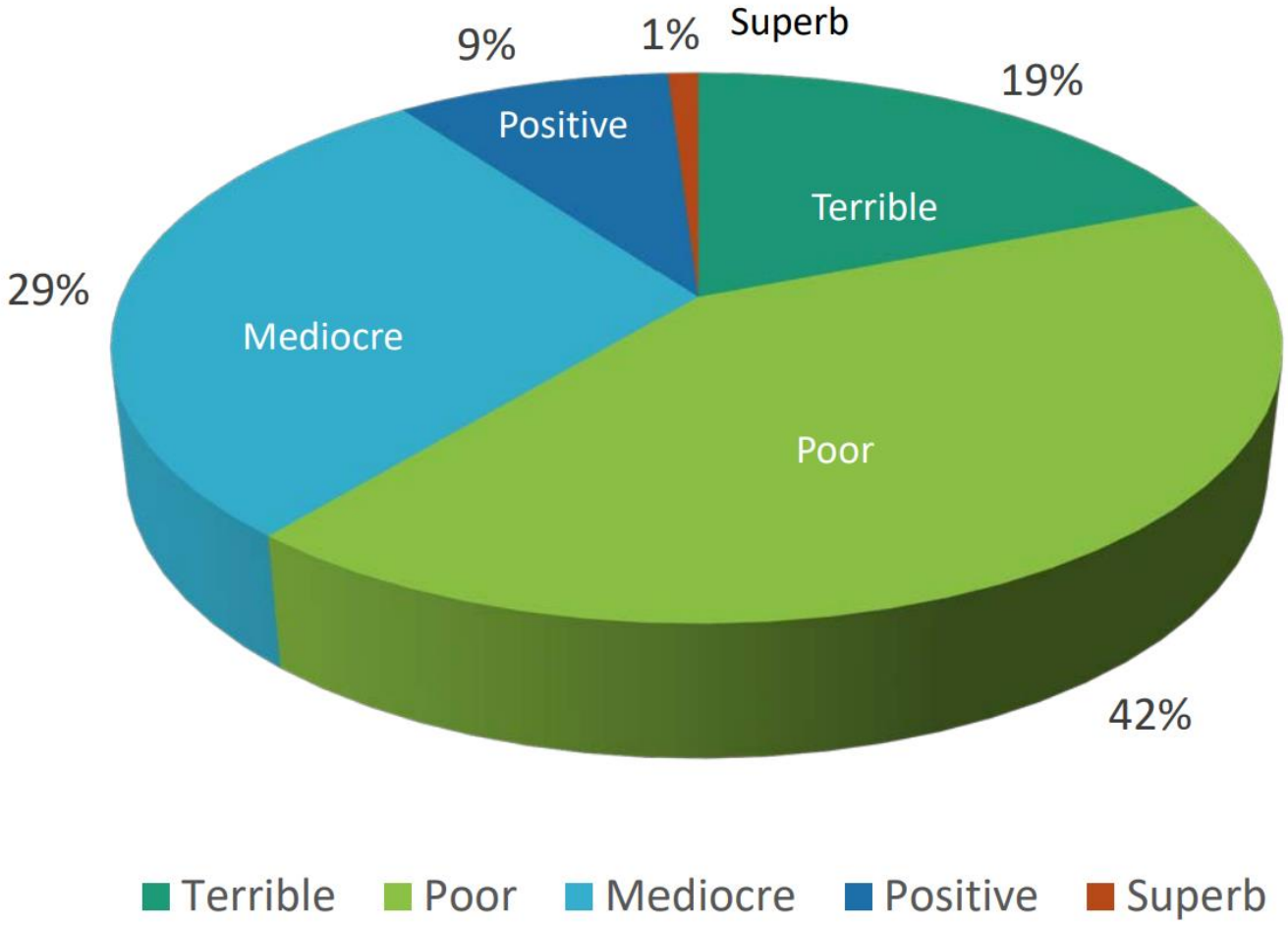
Source: The Authors

RATE THE RATERS

Karl's Summary:
US News: B
Leapfrog: C
CMS Stars: C
Healthgrades: D

FROM DATA SOURCES TO MEASUREMENT

PERCEPTION OF EHR ROI



Survey 1,100 Healthcare Professionals. HealthCatalyst September, 2017

HARD METRICS EXAMPLES #1/2

- Cost (total patient/system cost can be hard, consider salaries, tech cost, and training)
- Chronic disease quality metrics (A1c, BP control)
- Hospital Core measures (AMI, PNA)
- Readmission rates
- Patient Satisfaction
- Patient and Provider Engagement
- Burnout metrics
- Usability studies (time on task, mouse clicks and keyboard strokes)
- Fewer alerts/pop-ups

HARD METRICS EXAMPLES #2/2

- Mortality (O/E)
- DVT/PE rates
- HAI (CLABSI, CAUTI)
- CMI, SOI, ROM, LOS
- Appropriate billing levels
- Patient Portal adoption
- Medication Reconciliation rate
- CPOE Usage

SOFTER METRICS OF VALUE

- Leadership
- Management
- Understanding Workflows
- Standardization
- Innovation
- Research
- Education
- Good Will/Publicity

LEADERSHIP

- Vision setting
- Communicating the vision
- Peacemaking
- List the number of committees and their outcomes (e.g. EHR, Data Governance)
- EHR Physician "builder" programs (may provide licensing discounts)

MANAGEMENT

- Building provider training programs
- Project management
- Supervision
- Budget creation
- Doing performance evaluations
- Interviewing and search committees

UNDERSTANDING WORKFLOWS

- Being bilingual
- Can be more efficient than IS
- Happier providers
- Automation (sending push notifications)

STANDARDIZATION

- Extend the use of standards (e.g. ICD10, SNOMED, LOINC, RxNorm)
- Knowing the # of hospital beds
- Assess new technology
- Improve information exchange

INNOVATION

- AI/machine learning opportunities
- Practical Blockchain solutions
- Assessing the latest "buzz words"
- Knowing where technology can be applied to pain points
- Assessing new technology solutions

RESEARCH

- Grant funding
- New ways of measuring quality (e.g. Retract and Reorder measure, Fragmentation index)
- # of studies that were done
- # of publications (h-index)
- # of invention disclosures, patents
- # of academic promotions
- Academic affiliations

EDUCATION

- Clinical Informatics Fellowship training grads
- Online Masters Program – revenue generation
- # of diverse trainees
- Share successes
- List activities

GOOD WILL/PUBLICITY

- Feel good stories (e.g. Better Health through Housing)
- Press releases (e.g. CNN, NPR)
- Journal publications (e.g. JAMA)
- Helping to standardize and automate the data we push to our public website on basic metrics
- Looked at automating the ED wait times on highway billboards

OTHER RANDOM IDEAS AND WRAP-UP

WRAP-UP

Other possible value-added activities:

- Project Tracking
- SWOT Analysis
- Map Your Maturity/Evolution
- Informatics Team's Mission/Vision
- Personal Mission Statement

Calculating the Value of Informatics

TRACK YOUR PROJECTS

#	Program	Project Name
1	**3i (Integrated Info Infrastructure)**	
	1A	MPI - Master Provider Index
	1B	EMR Usability Survey
	1C	Governance Examples
	1D	Hosting Examples
	1E	Legacy data
2	**CDI (Clinical Documentation Improvement)**	
	2A	Expand to Medicaid
	2B	Provider Messaging
	2C	Optum CDI Optimization
	2D	Documentation Compliance
	2E	Data Analysis
3	**Joint Commission Readiness**	
	3A	Advance Directives
	3B	Verbal Order compliance
	3C	Pain Management
4	**Quality, Safety & Risk**	
	4A	Sepsis Team
	4B	Mortality Review
	4C	Hand Washing
	4D	PARS

#	Program	Project Name
5	**EMR Committee**	
	5A	Committee/Subcommittee(s)
	5B	Physician Handoff
	5C	Inpatient Rounding Report
	5D	NICU Rounding Report
	5E	Documentation Optimization
	5F	Improving OrderSets
	5G	Reviewing Rules
	5H	Health Maintenance
6	**Patient Engagement**	
	6A	Portal Steering Committee
	6B	Patient Satisfaction Dashboard
	6C	ED Wait Times App
7	**MACRA/MIPS**	
	7A	ACI/MU
	7B	Quality
	7C	TSoC
	7D	eClipBoard
8	**Population Health**	
	8A	Improving PCP Field Use
	8B	BCBS Metrics
	8C	Mammogram reports
	8D	Diabetic panel management
9	**Physician Informatics Group**	
10	**GPOC - Guidelines and Protocols**	
11	**Enterprise Imaging**	
12	**Data Governance**	

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Calculating the Value of Informatics

SWOT ANALYSIS FOR INFORMATICS

INTERNAL FACTORS	
STRENGTHS (+)	**WEAKNESSES (–)**
History of being a HIT/Informatics Leader IS Department processes, structure and success Online curriculum for Masters Program Interdisciplinary leaders (7 health science colleges) Partnerships Certification/Clinical Informatics (CI) Fellowship Expertise from genomic to public health informatics Location – in the IMD within a world-class city	Lack of coordination (>40 informaticians in >10 units) Org. culture (hx of customization, workarounds) Still too many silos Shortage of senior informatics faculty on campus Disparate financial support Lack of appreciation of informatics across colleges and University P&T Limited resources in Data Analytics

EXTERNAL FACTORS	
OPPORTUNITIES (+)	**THREATS (–)**
Re-imagine care through data Agile interfacing of innovative technology with EHR Improved finances with improved efficiency Improved provider satisfaction w/ informatics input Build expertise in Imaging Informatics Build new capabilities in AI and Machine Learning Grant dollars available for Informatics related efforts Philanthropic dollars for support	Other more coordinated sites stealing talent Competitors leveraging informatics more Lack of talent nationwide and world-wide Grandfathering of CI diplomates reducing applicants Industry salaries

Evolution of Informatics 3.0

A CHIO, often with Medical Information Officers reporting to them, partners with other executives such as the chief transformation officers, chief innovation officers, chief medical officers and chief information officers to design and develop strategies for digital healthcare.

Stage	1.0 Technology	2.0 Information	3.0 Value
Enterprise strategic focus:	• Fee for service reimbursement • Consolidation of hospitals • Acquisition of practices	• Clinical integration • Coordination of care across siloes • Patient engagement • Enterprise performance management • Population health management	• Risk management • Predictive & prescriptive modeling • Personalized medicine • Virtual care • Retail care • Consumer behavior management
Enterprise information & technology focus:	Procurement, implementation & maintenance of enterprise systems such as EHR, ERP and Revenue Management	Harvesting information to improve enterprise performance management and population health management	Care delivery redesign and value based reimbursement drive digital healthcare strategies and processes
Leader responsibility:	CMIO is 'Doc in IT'. Helps physicians through EHR adoption and CPOE	CMIO leads health informatics center of excellence with local support	CHIO partners to drive convergence of quality, informatics & analytics
Reports to:	Chief Information Officer	Chief Medical Officer	Chief Transformation Officer
Primary work emphasis:	EHR and Meaningful Use	Use of information, people, process and change	Care delivery transformation and innovation
Domain:	Acute care	Continuum of care	Anytime, anywhere
Decision-making model:	Command & control, hierarchical	Dyads and triads, matrix leadership	Collaboration

Source: Health Informatics Emerging Practices Research, Maestro Strategies

OUR TEAM'S VISION

Vision:

"Transform the patient care delivered at UI Health and beyond through disruptive innovations in health informatics operations, research, education and commercialization opportunities"

Make sure it aligns with the broader organization and for us at an academic medical center, this means making sure it aligns with the University, Hospital and the seven Health Science Colleges.

PERSONAL MISSION STATEMENT

"To develop, deploy and evaluate health IT solutions, so that clinicians can better care for their patients by adhering to the quadruple aim of higher quality, lower cost, and improved patient and provider experience."

WRAP-UP

Please share a metric/source/activity that you plan to bring back to your organization and if you're ready, please share how or to whom you will communicate it to.

Questions?

HIMSS20

Global Health Conference & Exhibition

Be the change

MARCH 9–13, 2020 • ORLANDO, FL

Orange County Convention Center

SAVE THE DATE

AMDIS CMIO Crash Course -Health Informatics: Partnering for the Future

Sunday, March 8, 2020 | 7:00am – 4:30pm ET

Hyatt Regency Convention Level | Orlando, FL

EARLY BIRD pricing is available until February 10th.

AMDIS/HIMSS Physicians' Executive Symposium

Back to the Future: Embracing the Patient – Physician Relationship

Monday, March 9, 2020 | 8:30 am – 4:30pm ET

OCCC W304 A-H | Orlando, FL

SAVE THE DATE

AMDIS Roundtable

Tuesday, March 10, 2020 | 10:00 am – 12:00pm ET

OCCC W313|Orlando, FL

HIMSS CMIO Roundtable

Tuesday, March 10, 2020 | 4:15pm – 5:15pm ET

OCCC W303A |Orlando, FL

Networking Reception immediately following

Thank you.

Contact Yvonne Patrick
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HIMSS