



Beyond the EHR. What is Next for Nursing Informatics?

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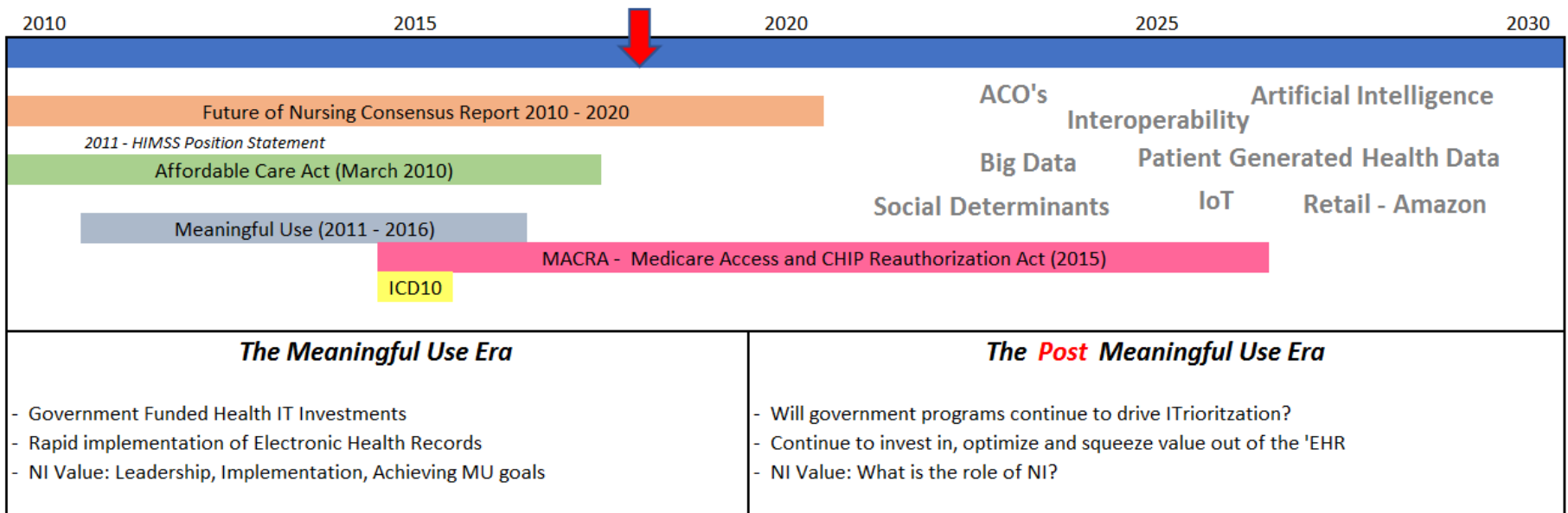


Objectives

- The participant will describe two or more national initiatives that impact Nursing
- The participant will cite one or more examples of Nursing Informatics value post EHR implementation
- The participant will identify two or more emerging technologies that will impact Nursing practice



How Did We Get Here?





US EMR Adoption Model 2010 - 2017

Stage	Description	2010	2017
Stage 7	Complete EMR, External HIE, Governance, Disaster Recovery	1.0%	6.4%
Stage 6	Technology enabled medication, Blood & Human Milk	3.2%	33.8%
Stage 5	MD Documentation, Intrusion/Device protection	4.5%	32.9%
Stage 4	CPOE with CDS, Business Continuity	10.5%	10.2%
Stage 3	Nursing Documentation, eMAR, role based security	9.0%	12.0%
Stage 2	CDR, Internal Interoperability, basic security	14.6%	1.8%
Stage 1	+ PACS, DICOM	7.1%	1.5%
Stage 0	All 3 ancillaries. Pharmacy, Lab Radiology	10.1%	1.4%



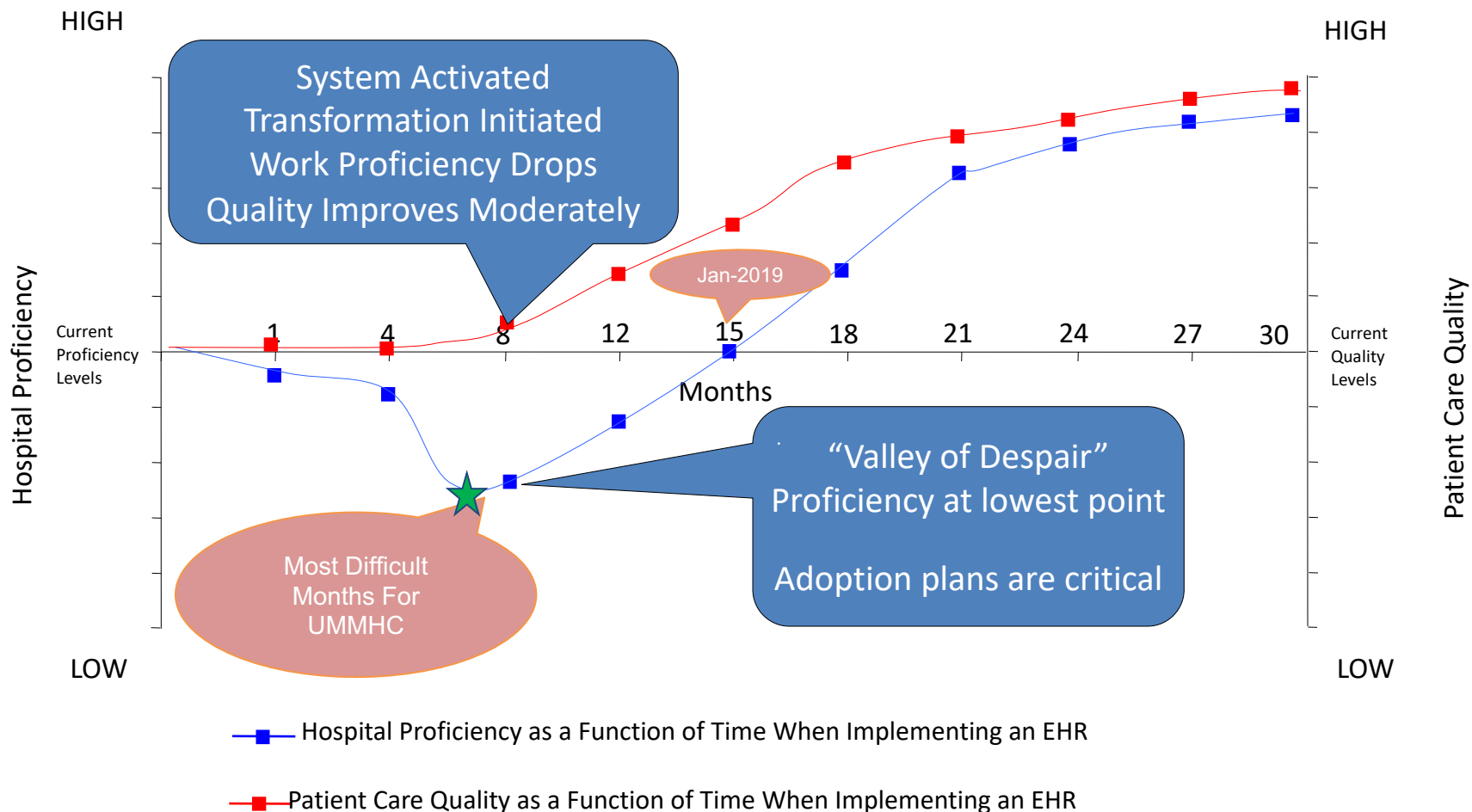
UMass's Epic Journey

One Patient, One Record

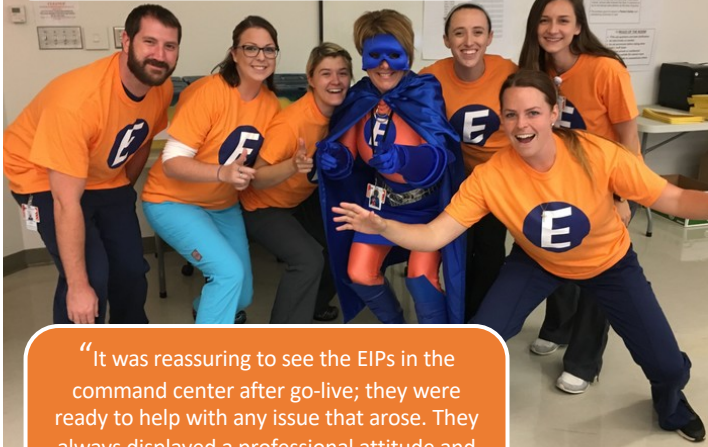


Organizational Change Theory: "Valley of Despair"

Hospital Proficiency/Patient Care Quality as a Function of Time When Implementing an EHR



"We couldn't have done this without you!"
- Linda Scoble



"It was reassuring to see the EIPs in the command center after go-live; they were ready to help with any issue that arose. They always displayed a professional attitude and the smiles on their faces were infectious."
- Deb Turner

"Thank you for your help!! Great job!! Flexible and dependable."
- Edyta Soltan

EPIC Implementation Partner

"Words cannot express the pride we have for each and every one of you! You took the EIP position and made it your own while staying positive and embracing such a major change called EPIC."
- Melissa Ryzewski & Kerrie Singer

"Each will be an asset to the Med Center since they are starting with a solid knowledge base in Epic and many nursing workflows through their teaching of PIT scenarios."
- Kathy Clement



"The EIPs were terrific to work with-smart- positive-full of energy- detailed investigators - problem solvers!" - Judy Connelly



"The EIPs I worked with demonstrated such strong critical thinking and problem solving skills, patience with learners and flexibility. What a great addition to our nursing workforce."
-Kathy Brule

"Humble Epic Heroes, exceeded all expectations and raised the bar for any new grad to follow in their footsteps."
- Karen Uttaro

"Thank God for the EIPs! They were so capable and involved from very early on, it was impressive to say the least. They are off to a great start of some very promising nursing careers."
- Timily Kennedy





Nursing & Informatics

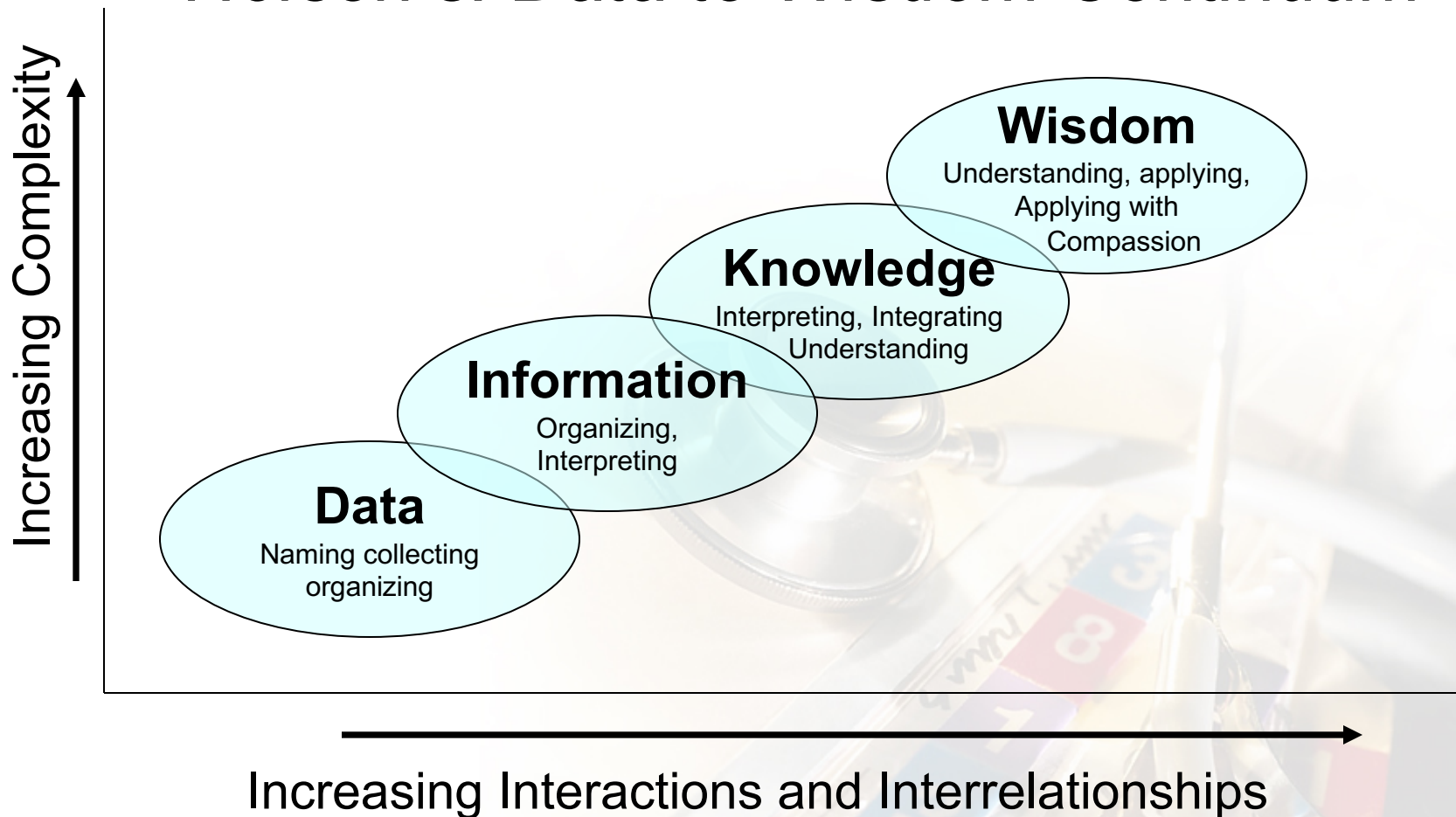
Putting It All Together !!





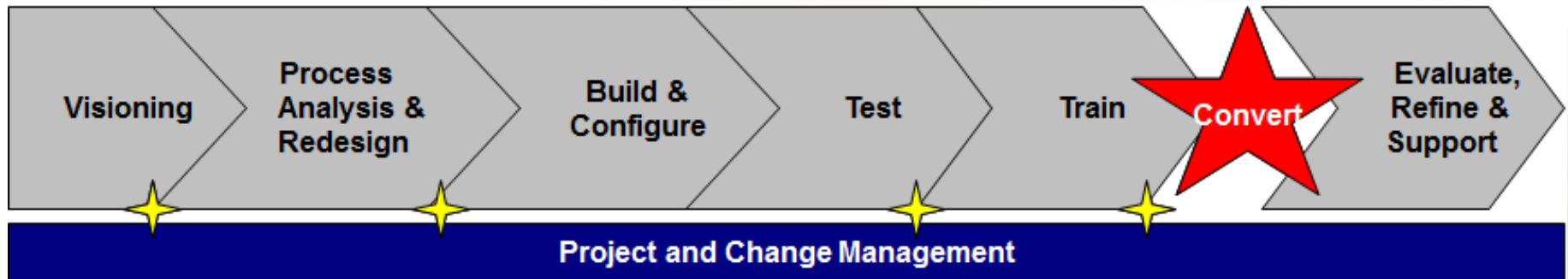
Nursing Informatics

Nelson's: Data to Wisdom Continuum

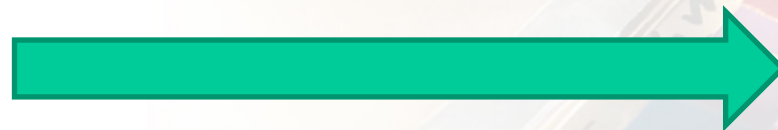


NI Role During “Implementation”

- Focus has been on the SDLC
- IT dominates early phases; with operational “input”
- Operations becomes “owner” with IT in support role



IT



Practice



Post EHR Challenges

- Unintended Consequences
 - Workarounds
 - **Communication Challenges**
 - Workflow Changes
 - Click Overhead
 - **Reporting & Analytics**
 - **Data Rich; Information Poor**
 - Resource Constraints
 - Optimization
- Optimization
 - Review Nursing Data Sets
 - Eliminate Redundancy
 - ↓ Click Overhead
 - Provide Mobility
 - Standard Work
 - Best Practices
 - Identify Enhancements

Communication



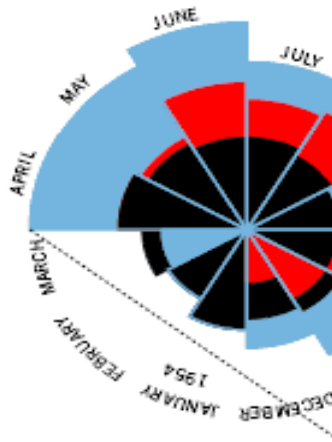


Data & Analytics

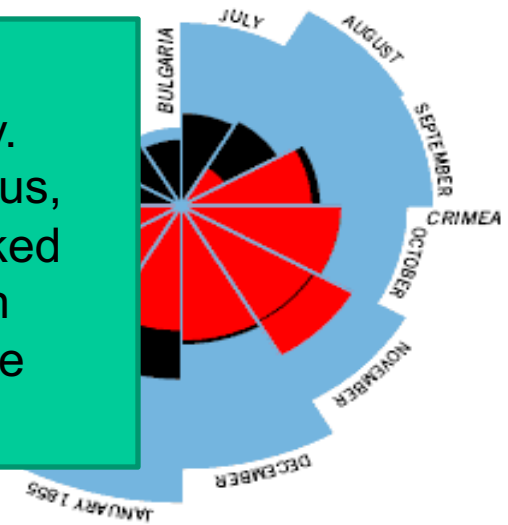
DIAGRAM OF THE CAUSES OF MORTALITY IN THE ARMY IN THE EAST

2.
APRIL 1855 TO MARCH 1856

1.
APRIL 1854 TO MARCH 1855



The Russians were a minor enemy. The real enemies were cholera, typhus, and dysentery. Once the military looked at that eloquent graph, the modern army hospital system was inevitable

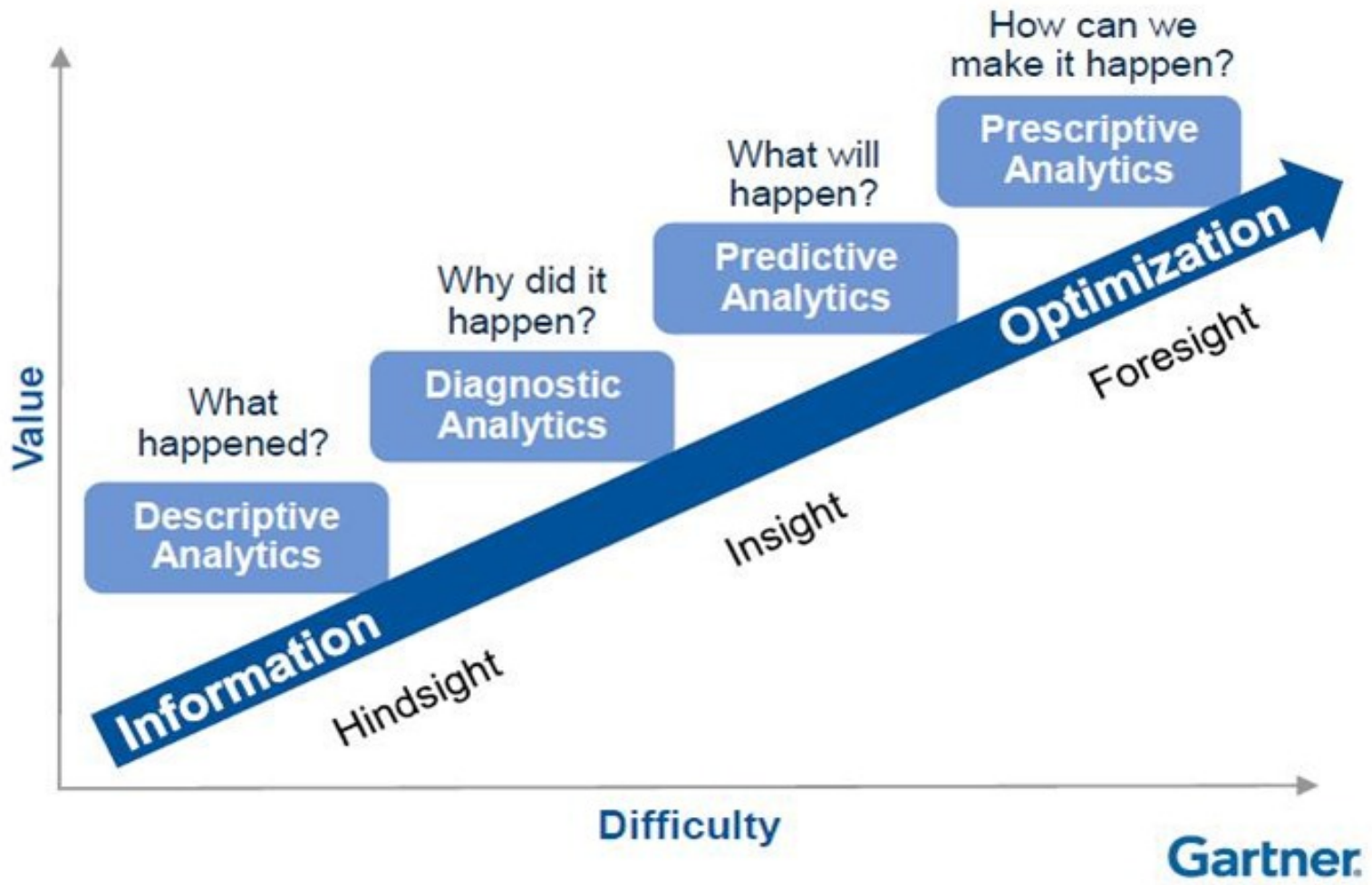


The Areas of the blue, red, & black wedges are each measured from the centre as the common vertex
The blue wedges measured from the centre of the circle represent area for area the deaths from Preventible or Mitigable Zymotic Diseases, the red wedges measured from the centre the deaths from wounds, & the black wedges measured from the centre the deaths from all other causes
The black line across the red triangle in Nov' 1854 marks the boundary of the deaths from all other causes during the month
In October 1854, & April 1855, the black area coincides with the red, in January & February 1856, the blue coincides with the black
The entire areas may be compared by following the blue, the red & the black lines enclosing them.

Florence Nightingale, 1856



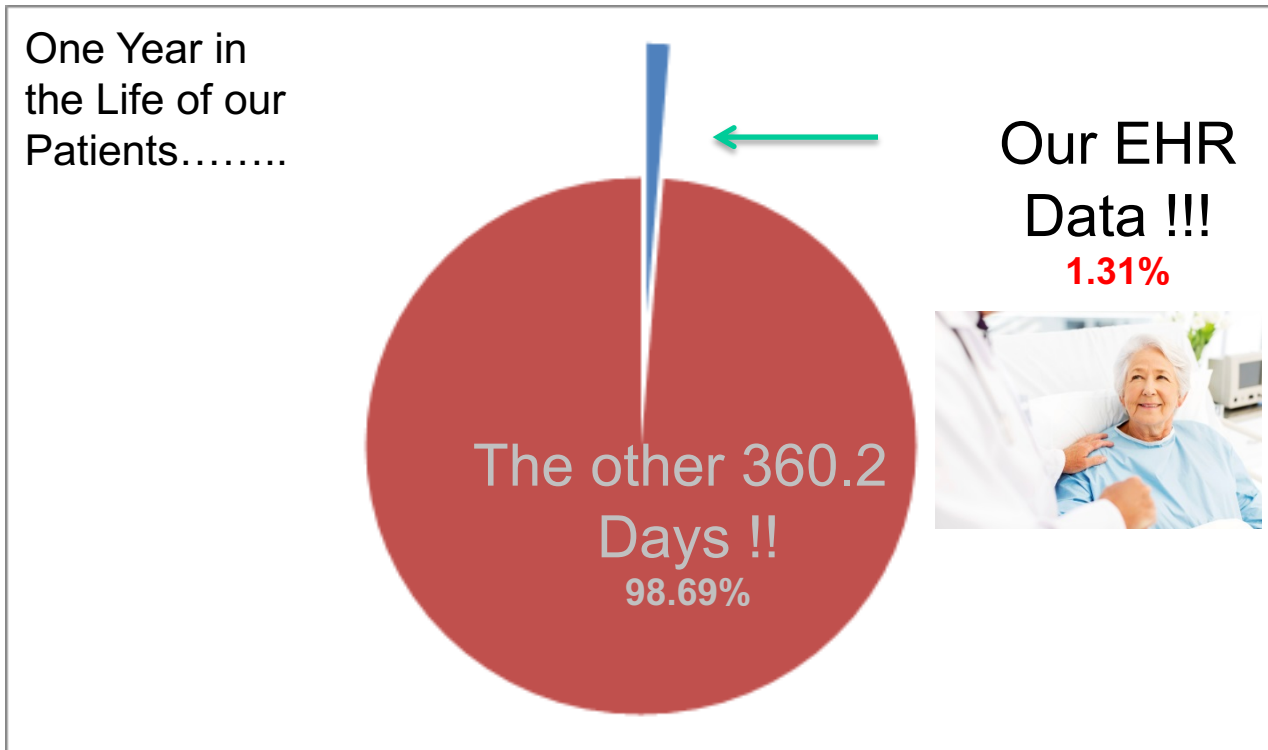
Reporting Maturity





EHR = Big Data?... I Don't Think So !!

If the average length of stay in a hospital is 4.8 Days





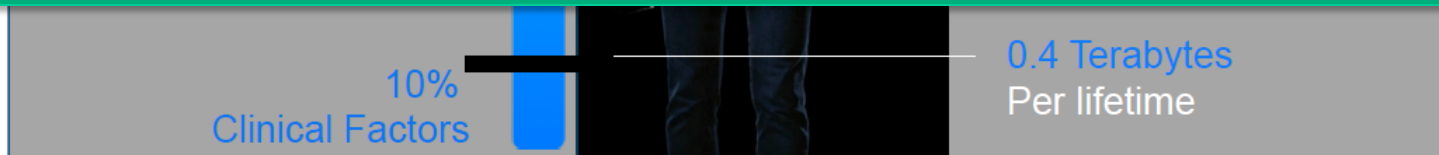
Vast amounts of data that can have a great impact on our health remains

🐦 #HIMSS16

IT IS ESTIMATED THAT

80%

OF CLINICAL DATA IS UNSTRUCTURED



HIMSS16

© 2015 International Business Machines Corporation

IBM Watson Health // SOURCE: ©2015 J.M. McGinnis et al.,
"The Case for More Active Policy Attention to Health Promotion,"
Health Affairs 21, no. 2 (2002):78-93





Data Today

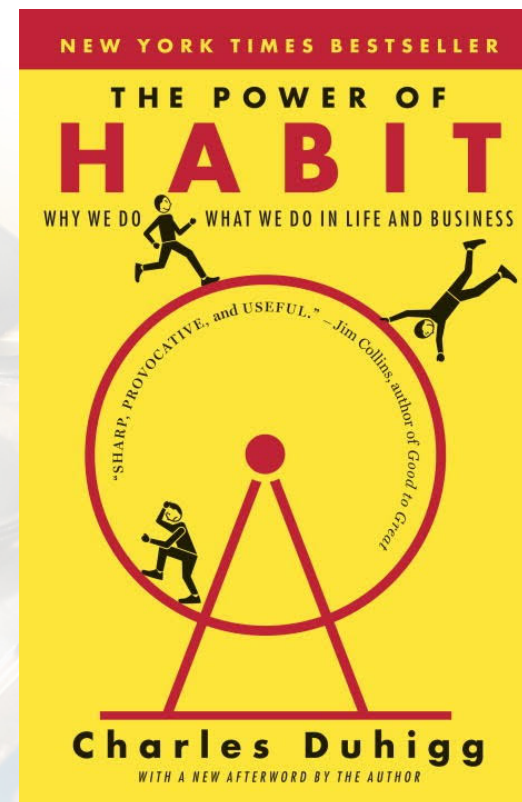
FEB 16, 2012 @ 11:02 AM 3,136,552 VIEWS

The Little Black Book of Billionaire Secrets

How Target Figured Out A Teen Girl Was Pregnant Before Her Father Did

Data Today

- Ubiquitous
- The Internet of Things
- ?Privacy
- Social Media
- eCommerce





Now What?

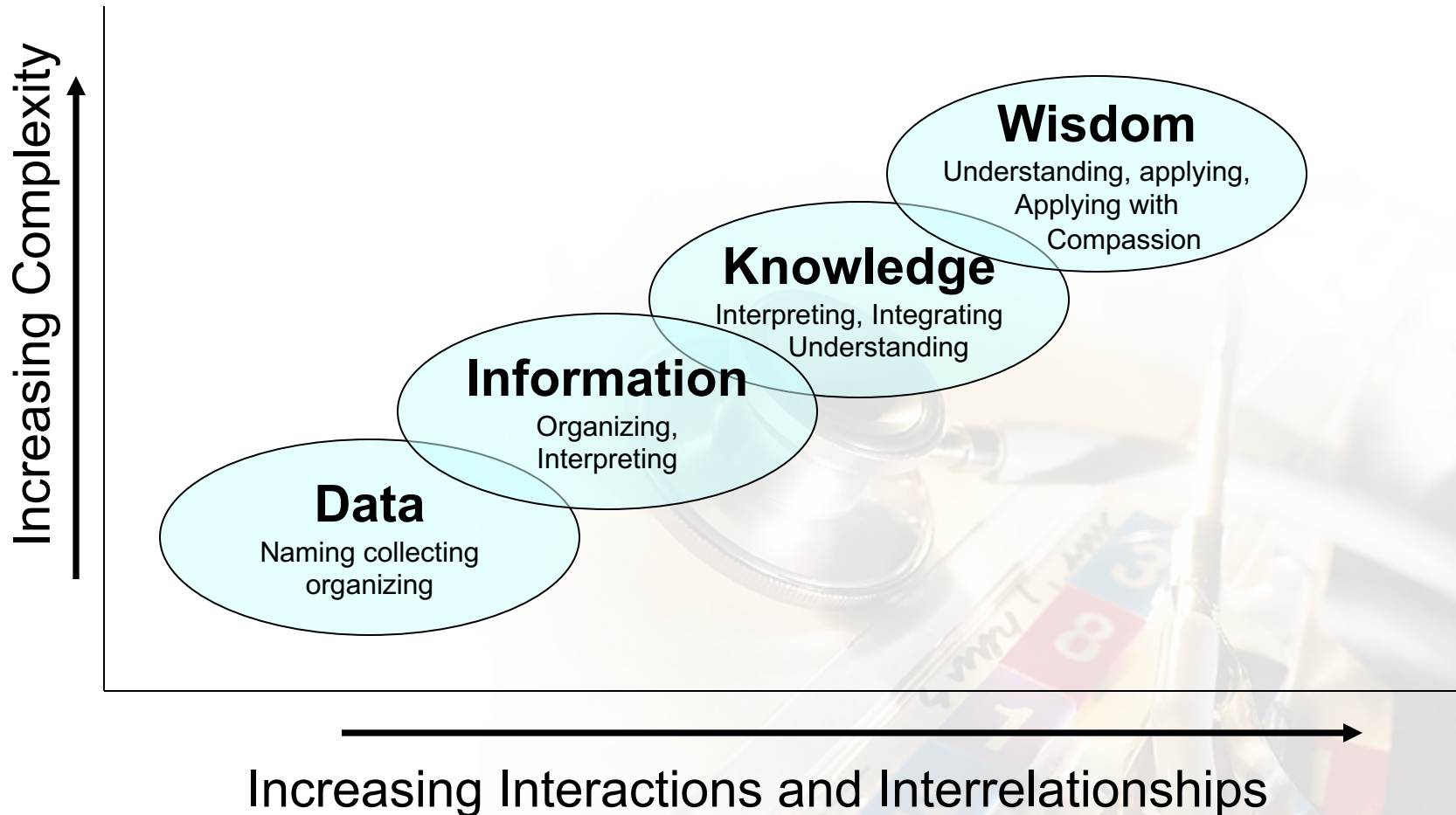
The Evolving Role of NI





This is STILL our Scope !!!

Nelson's: Data to Wisdom Continuum



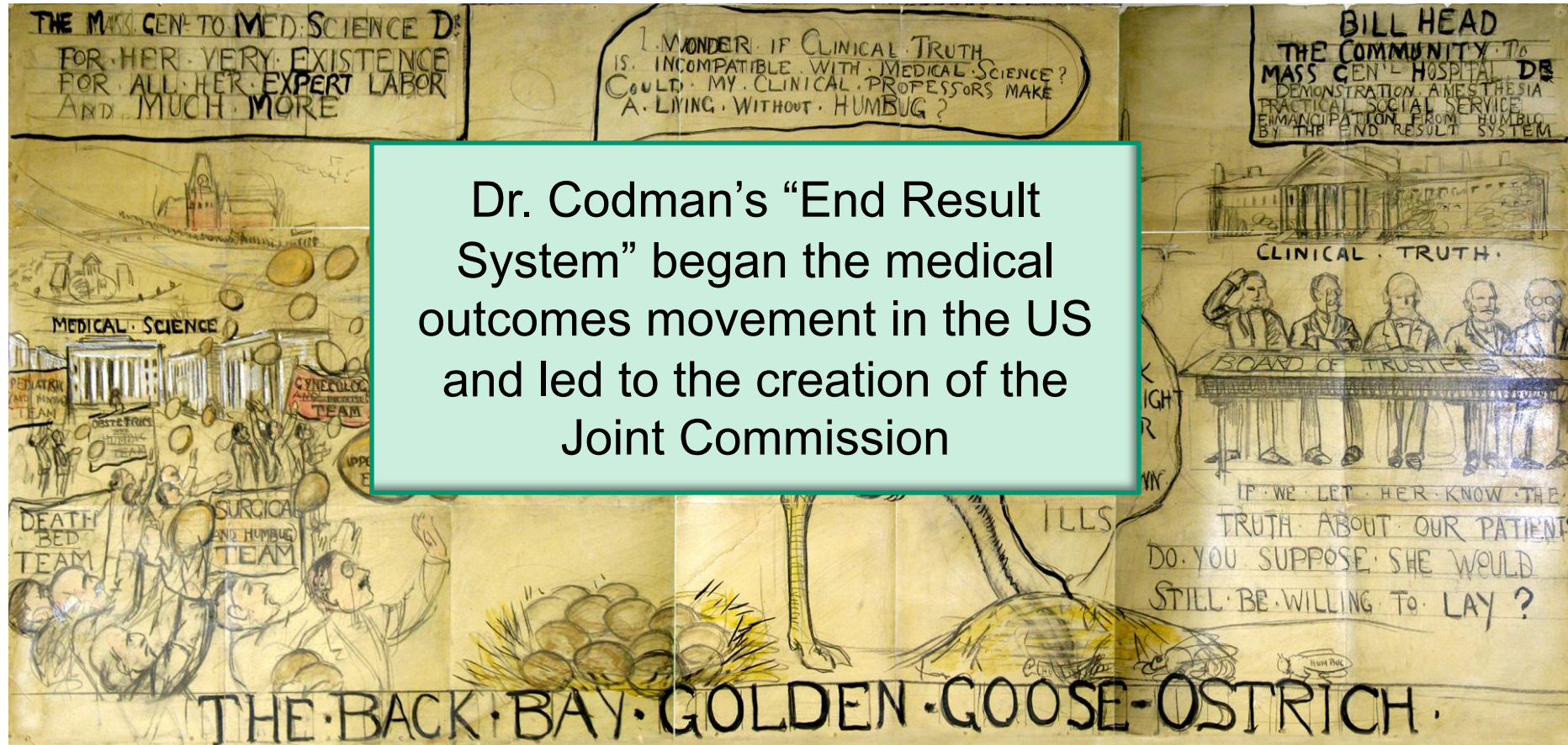
“It may seem a strange principle to enunciate as the very first requirement in a hospital that it should do the sick no harm.”



Florence Nightingale



1915: Dr. Ernest Amery Codman



Dr. Codman's "End Result System" began the medical outcomes movement in the US and led to the creation of the Joint Commission

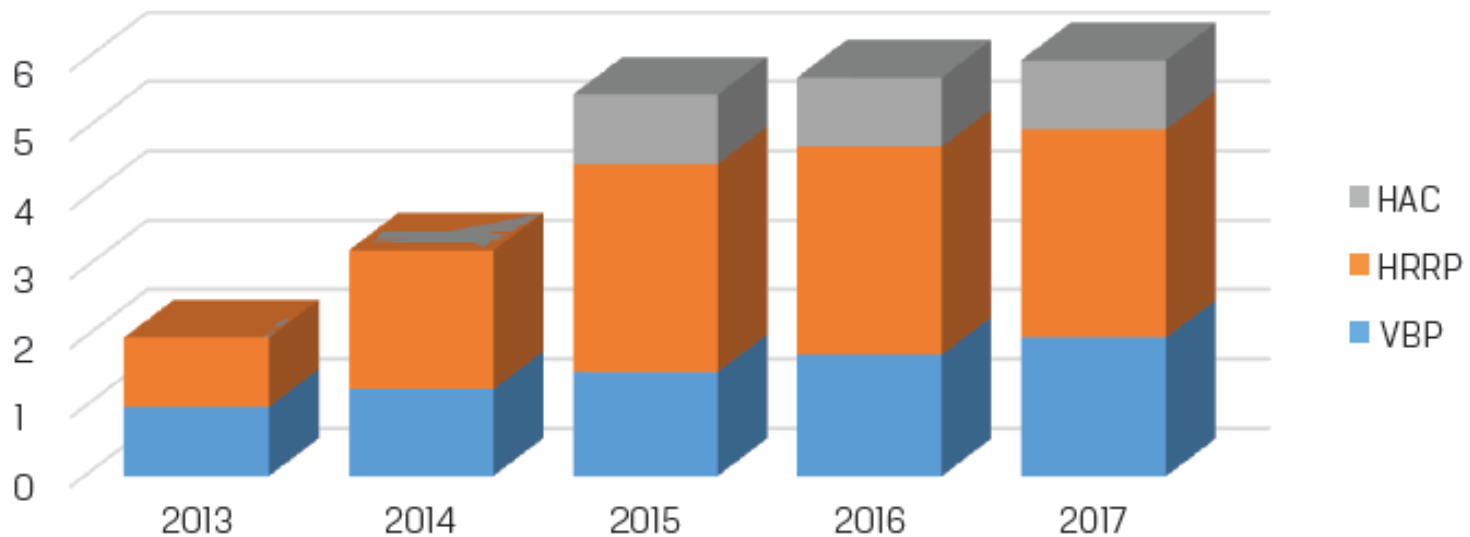
The End Result System



Quality and P4P

GRAPH 5

Share of Hospital Payment at Risk Under CMS Quality Incentive and Penalty Programs (%)



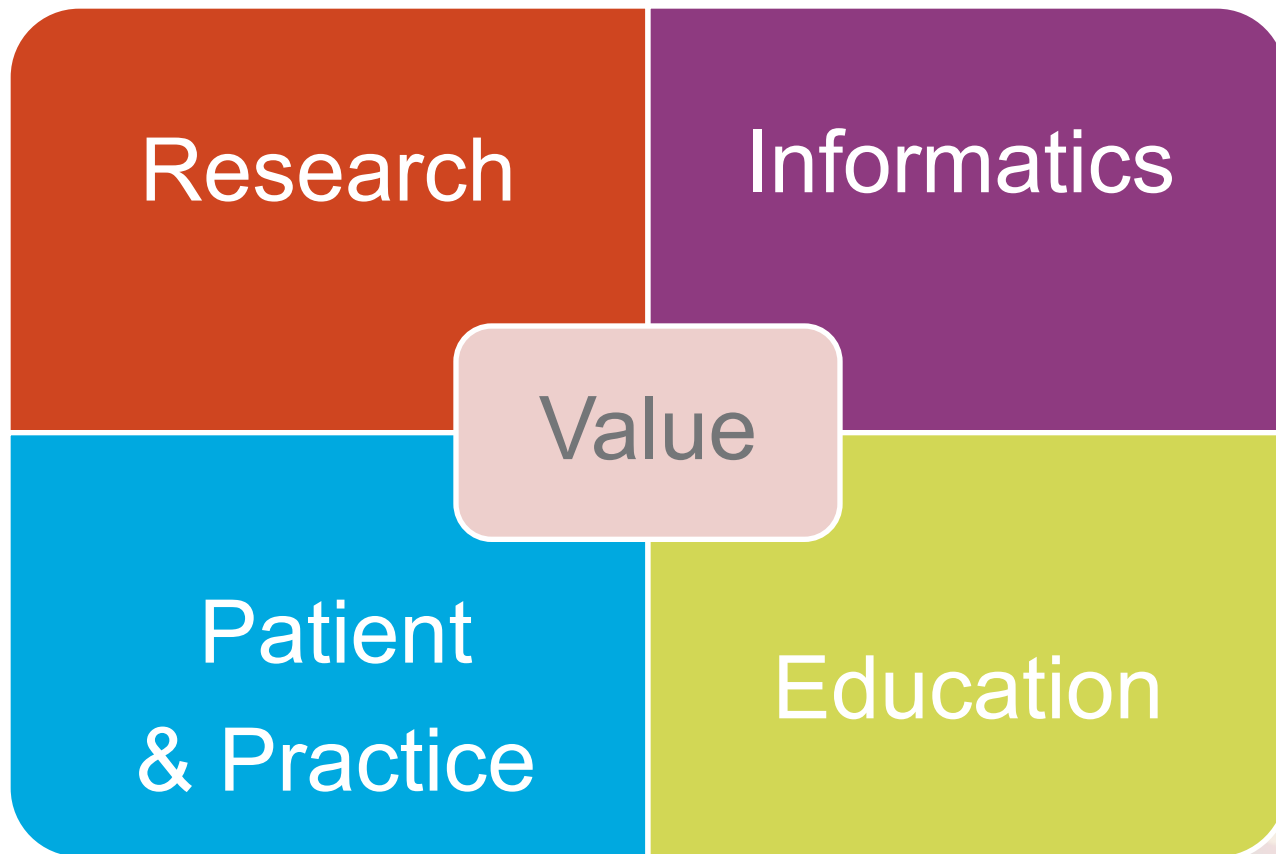


Our Team is RIPE !!

- Having the right team assembled is essential. Demonstrating value requires a team approach inclusive of Research, Informatics, Patient/Practice, Education

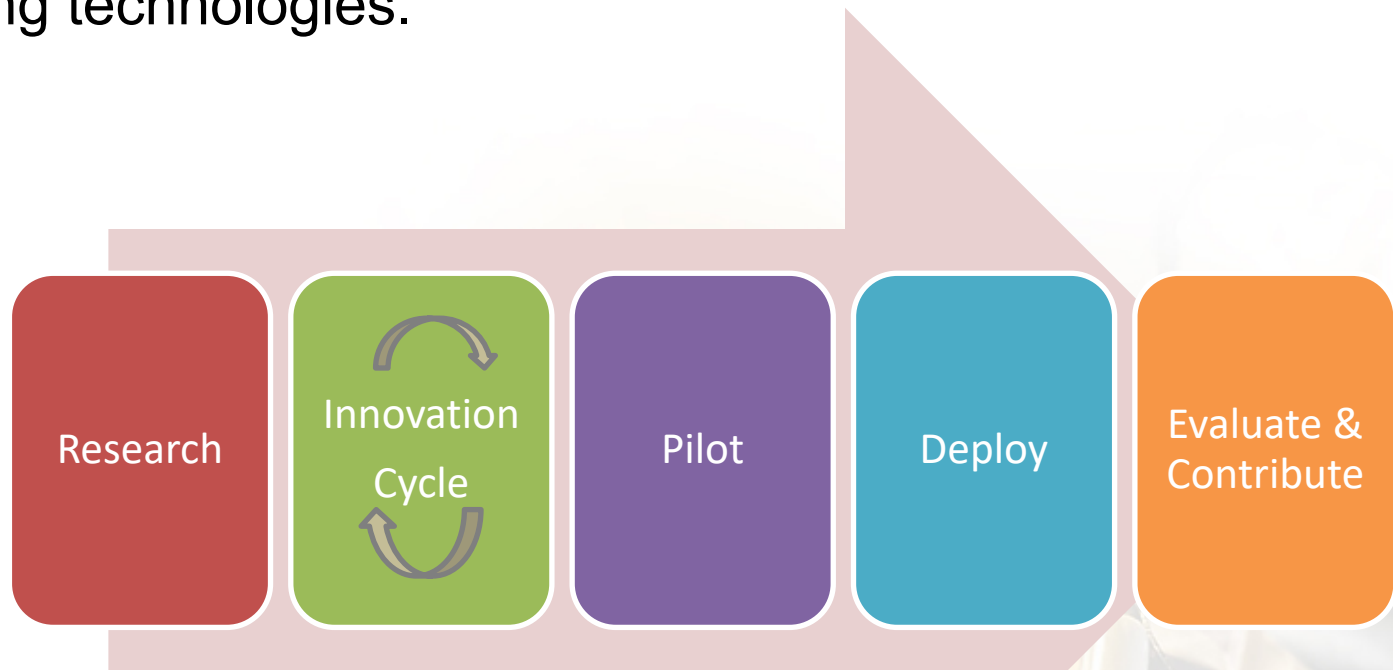


A Framework for Demonstrating VALUE



The TEQI Methodology

Similar to the SDLC, the Technology Enabled Quality Improvement methodology guides quality initiatives that utilize enabling technologies.





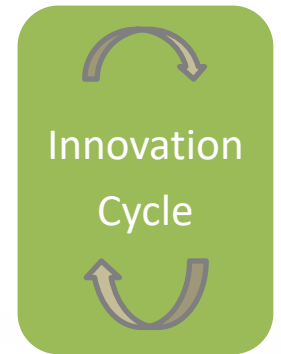
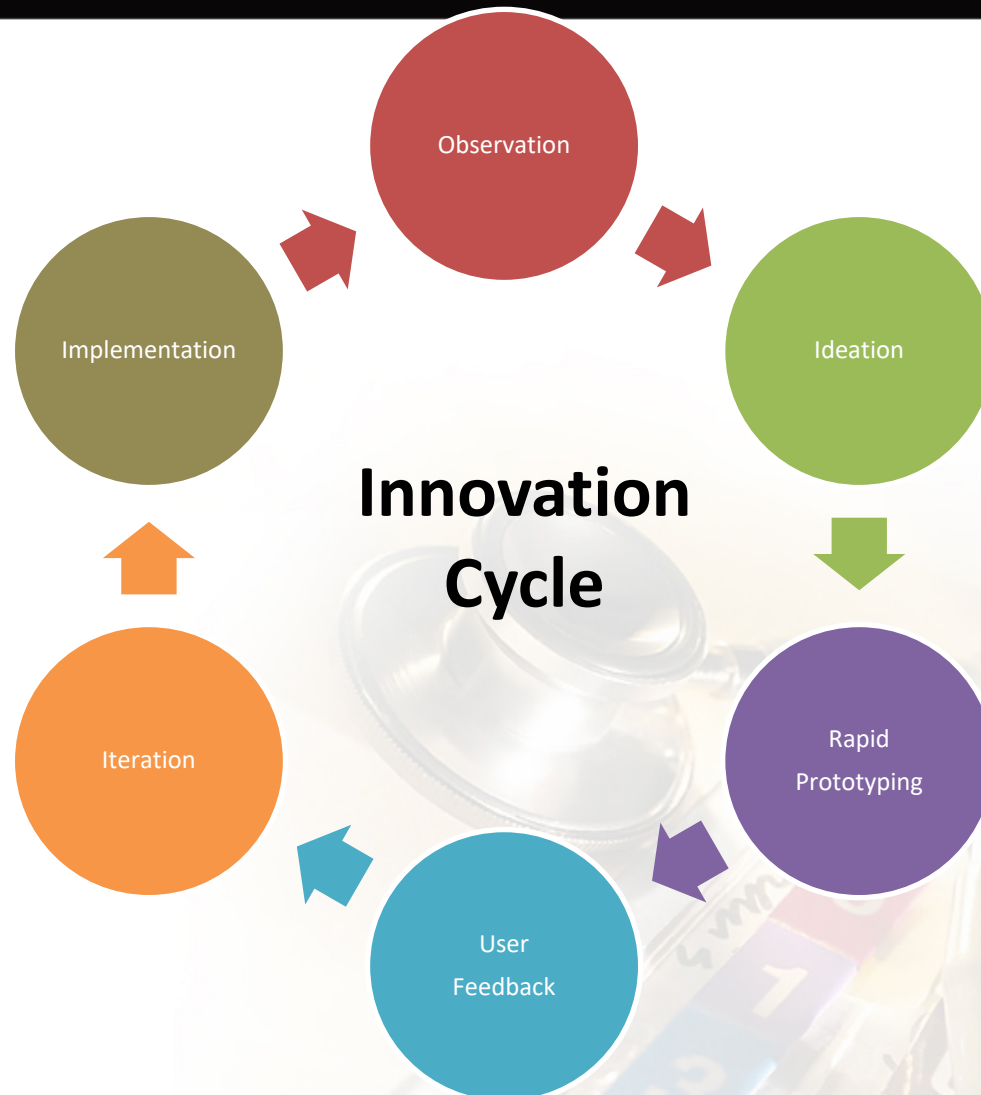
Our Methodology

- Evidence Based
- Research Scientist part of every TEQI
- Literature Review
- Contribution to research
- Collaboration

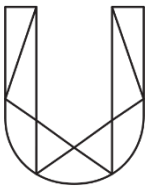


Research

The Innovation Cycle



IDEO





Innovation – *can be new ways of using what we already have*



VIA 9GAG.COM

The TEQI Methodology



- Pilot and Learn
- Deploy
- Evaluate
- Contribute

P.D.S.A



TEQI Guiding Principles

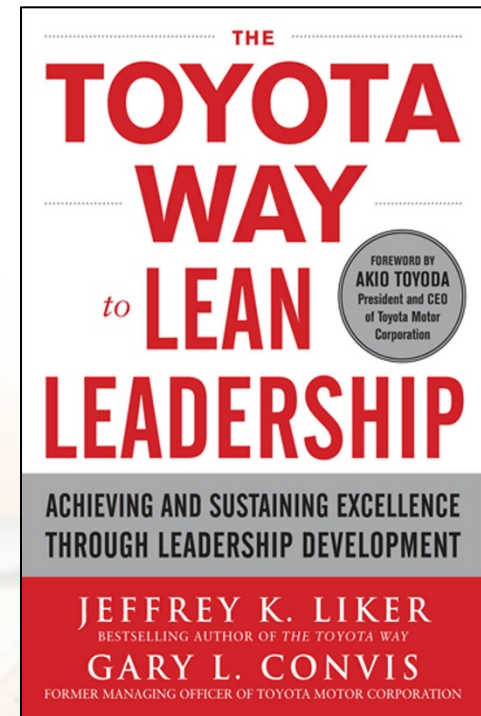
- The Agency for Healthcare Quality and Research defines the six domains of healthcare quality as care that is: Safe, Timely, Effective, Efficient, Equitable and Patient Centered. “STEEEP”
- TEQI adds an additional “E” for Evidence-based and is addressed as follows:

S
T
E⁴
P

Domain	TEQI
<u>S</u> afe	Literature review
<u>T</u> imely	LEAN
<u>E</u> ffective	Evaluation (Measured Outcomes)
<u>E</u> fficient	LEAN
<u>E</u> quitable	All Patients/All Settings
<u>E</u> vidence based	Research focus
<u>P</u> atient Centered	RIPE Team – “P” is for patient and practice

What is LEAN?

- **Lean** is a set of operating philosophies and methods that help create a maximum value for patients by reducing waste and waits.
- The approach was originally derived from the Toyota car company production line system: a continuous process improvement system comprising of structured inventory management, waste reduction and quality improvement techniques
- Lean utilizes a continuous learning cycle that is driven by the 'true' experts in the processes of health care, being the patients/families, health care providers and support staff



Lean: Eliminating Waste

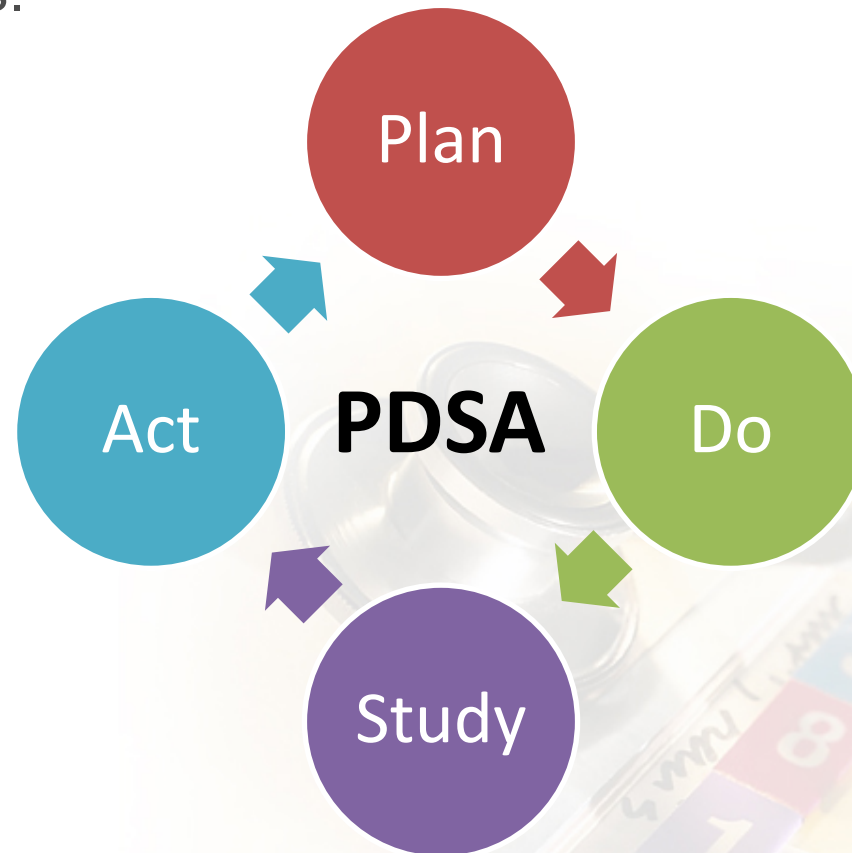




Lean: Categories of Waste

Waste	Healthcare Examples
Defect	Time spent looking for an item missing from a surgical case cart.
Over-production	Performance of unnecessary diagnostic procedures.
Transportation	Unnecessarily moving patients, specimens or materials throughout a system
Waiting	Patients waiting for an appointment
Inventory	Letting supplies expire and then disposing of them
Motion	Employees may walk miles per day due to a poor hospital layout,
Over-processing	extra data stamps put onto forms, but that data never being used. Asking patients for same data multiple times.
Human potential	Employees are not engaged, heard or supported. Also, underutilizing or mis-utilizing employees.

- The PDSA – Plan, Do, Study, Act methodology is used with TEQI projects.







Surveillance Systems

“Code Blue !!”
400 to **54**
(2006) (2016)





Artificial Intelligence

The theory and development of computer systems able to perform tasks that normally require human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages.

Google



On The Horizon: Alexa and Children's Boston





Sepsis: Johns Hopkins

“Computer algorithm could aid in early detection of life-threatening sepsis”



- TREWS – Targeted, Real-time, Early Warning System
- *Science Translational Medicine*, August, 2015
- Combines 27 factors to assess patient risk
- Henry, Hager, Pronovost, Saria



Data Visualization



Patient	Room	Flu		
Patient 1	5W-12	✓		
Patient 2	5W-08	✗		
Patent 3	5W-01	✓		
Patient 4	5W-04	✓		

2016-2017*
Performance Period

69%

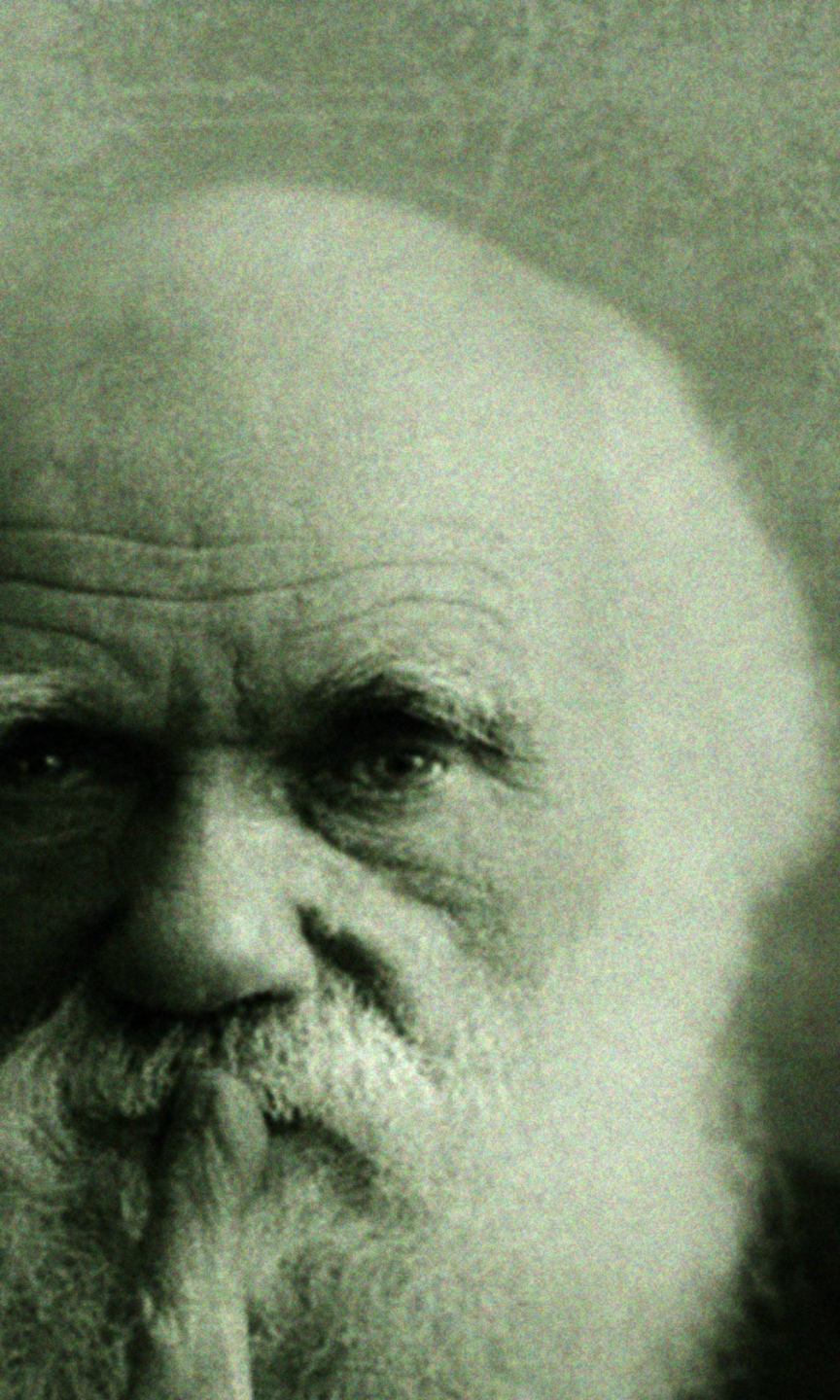
2015-2016
Performance Period





Change Theory

Need for Change	+	Shared Vision	+	Leadership Commitment	+	Employee Involvement/Commitment	+	Integrated Organizational Changes	+	Performance Measures	:	Lasting Change
⊖		✓		✓		✓		✓		✓	:	No Action
✓		⊖		✓		✓		✓		✓	:	Fast Start that Fizzles
✓		✓		⊖		✓		✓		✓	:	Anxiety and Frustration
✓		✓		✓		⊖		✓		✓	:	Strong Resistance
✓		✓		✓		✓		⊖		✓	:	"Silo" View
✓		✓		✓		✓		✓		⊖	:	No Measurable Results
✓		✓		✓		✓		✓		✓	:	LASTING CHANGE



“It is not the
strongest of the
species that
survives, nor the
most intelligent,
but the one most
responsive to
change.”

~Charles Darwin, 1809

Florence Nightingale



“The real heroes are those who find a way to improve things around them through the course of their daily lives.

In the nursing industry, there are many heroes who leave fine imprints of positive change because they deliver exceptional care to patients than what’s expected of them.

Keep doing whatever you’re doing and you could be one of them.”



Thank You and Questions !!



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Resources

- **New England Nursing Informatics Consortium**
- **www.nenic.org**

- **HIMSS – Health Information Management Systems Society**
- **www.himss.org**

- **Alliance for Nursing Informatics**
- **www.allianceni.org**

- **ANIA-CARING**
- **www.ania-caring.org**