SINI 2016
26th Summer Institute in Nursing Informatics
Informatics at the Crossroads of Care Coordination
July 20-22, 2016
University of Maryland School of Nursing, Baltimore, Maryland
UNIVERSITY of MARYLAND SCHOOL OF NURSING

Track A
Informatics Essentials

Faculty

Eun-Shim Nahm, PhD, RN. FAAN
Michele Lardner MS, RN-BC
Patricia P. Sengstack DNP, RN-BC, CPHIMS
Seth Carlson, MS
Ruth Schleyer, MSN, RN-BC
Jude Simonds, MSN, RN, NE-BC
Donna Montgomery, MBA, BSN, RN-BC
LaVerne Perlie, MSN
Helen Caton-Peters, MS, RN
Panelists

Track A: Overall Goals

- To provide an in-depth overview of the practical knowledge and skills required for nursing informaticists.

- To discuss future opportunities with seasoned informatics nurse specialists.

- This track is designed specifically for attendees with less than two years of experience in the field of health care/nursing informatics.

Overview

Day 1

1. Introduction to Clinical Informatics & Meaningful Use: *Core CI concepts, HIT systems, standards, and MU*

2. Use Cases: What Are They? How to Develop Themes And Methods to Test Them: *Understand how Use Cases can contribute to improved design for clinical systems and demystify their testing strategies.*

3. Making It Stick: CIS Implementation & Maintenance: *Accelerate system adoption with a focus on the nursing informatician's key role throughout the system life cycle*

Day 2

4. Enabled, Engaged, and Empowered (E3) Patients: Future of Care Delivery: *Explore current and emerging technology approaches to consumer engagement in healthcare*

Overview

5. **CIS Implementation: Show Me the Outcomes and $$$$!!!:** *Review the implementation of alerts and reminders to support uptake of EBP for timely urinary catheter removal in a large health system*

6. **Data Analytics: Applications in Clinical Settings:** *Using analytics, we can now harness data for predictive analytics and drive prescriptive care*

Day 3

5. **Becoming a Competent Nursing informatician and Beyond:** *In this panel discussion, expert panel members will briefly share their career experience and explain potential career opportunities in various HIT areas.*

Introduction to Clinical Informatics & Meaningful Use Application

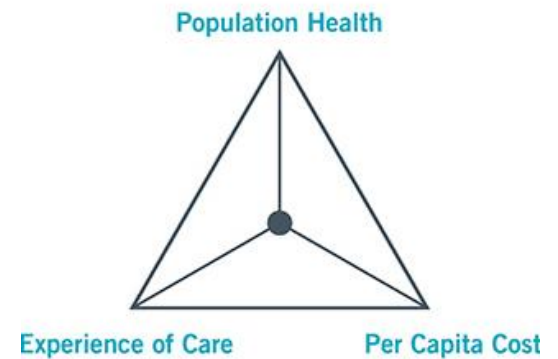Eun-Shim Nahm, PhD, RN. FAAN
University of Maryland School of Nursing

Michele Lardner MS, RN-BC
National Institutes of Health, Clinical Center

Changing HealthCare Trend

The IHI Triple Aim
Population Health
Experience of Care
Per Capita Cost

$$Value = \frac{Quality^*}{Payment^\dagger}$$

Common Requirements to Support Changes

- Accurate information delivered to the right people at the right time

- Resources and enabling infrastructure

    ➔ Meaningful use of EHR and health information exchange / Interoperable systems
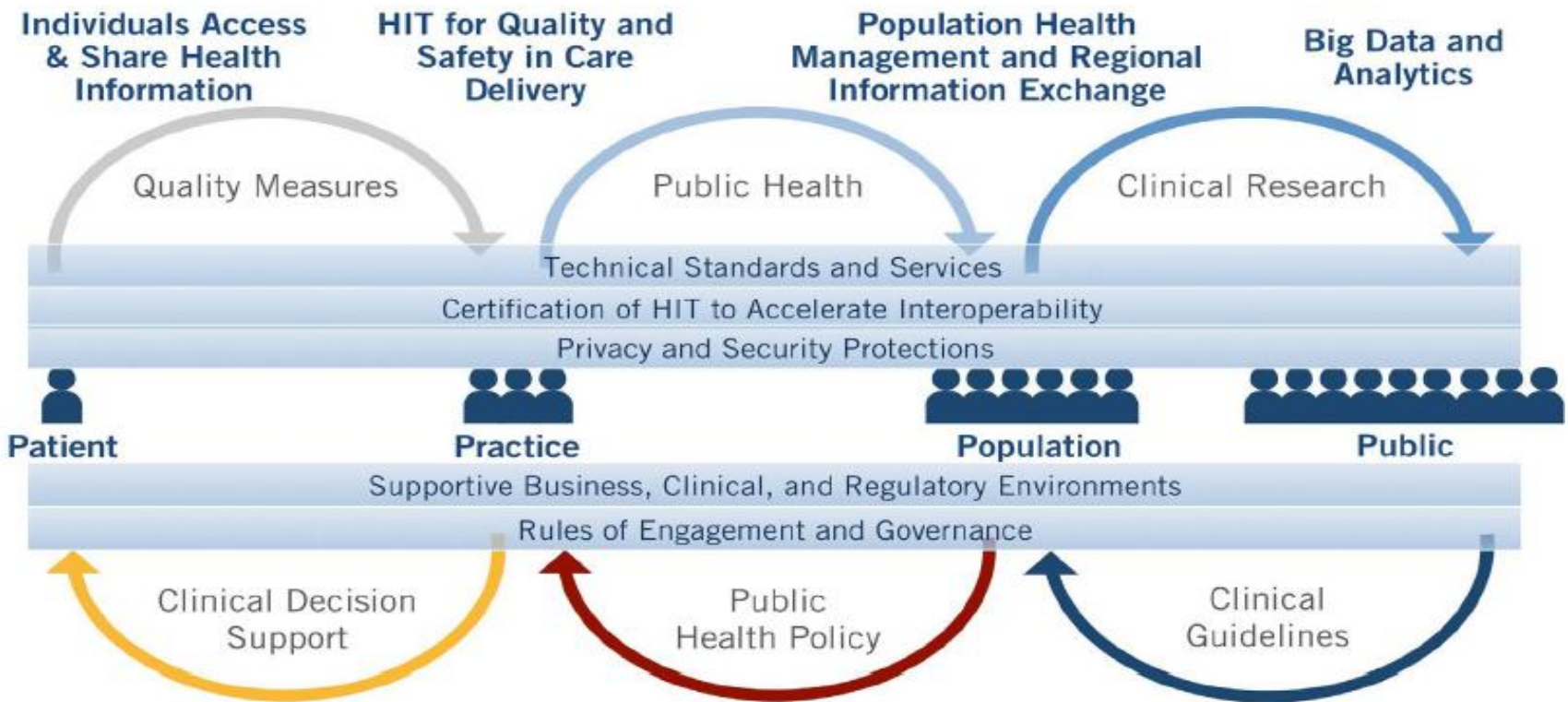
Health Care/Clinical Informatics

- Systems
  - Electronic Health Records
  - Registration systems
  - Lab/Radiology systems
  - Dietary systems
  - Systems that monitor quality of care
  - Finance systems
  - And other systems…..
- Various settings
- Differnet stakeholders

Health IT Ecosystem

Part I: Introduction to Clinical Informatics

# Definitions

- Health informatics is defined as the interdisciplinary study of the design, development, adoption, and application of information technology (IT) based innovations in healthcare services delivery, management, and planning. (*National Library of Medicine*)

- Clinical Informatics is concerned with information use in health care by clinicians. CI includes a wide range of topics ranging from clinical decision support to visual images; from clinical documentation to provider order entry systems; and from system design to system implementation and adoption issues. (American Medical Informatics Society)

Definitions

- **Nursing Informatics (NI)** is a specialty that integrates nursing science, computer science, and information science to manage and communicate data, information, knowledge, and wisdom in nursing practice. *(American Nurses Association)*
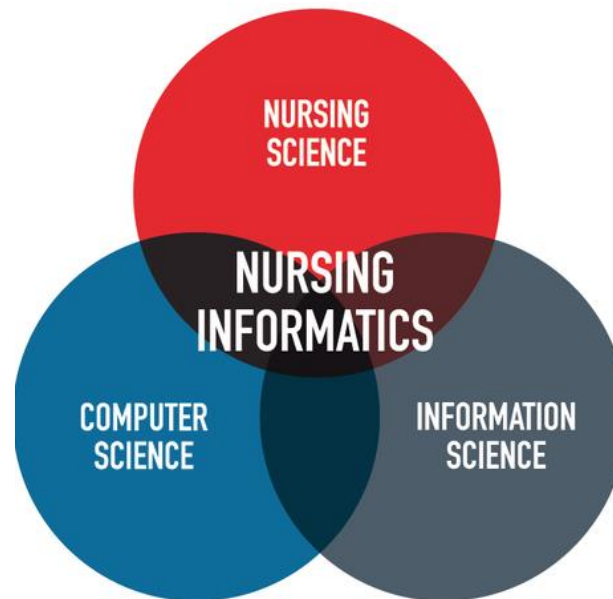
Clinical Informaticists

- Clinical personnel
  - Physicians, Nurses, Pharmacists, Dentists, etc.
    - Focus: Patient care
    - Responsibilities: Manage and process clinical data, information, and knowledge to support clinical practice.

Clinical Informaticists

- **Informatics Nurses (INs):** "…those generalists who have gained experience in the field but do not have educational preparation at the graduate level in an informatics-related area."

- **Informatics Nurse Specialists (INSs):** "…those formally prepared at the graduate level in informatics or a related field"

Functional Areas of NI/CI/HCI

Selected examples

- Systems Analysis and Design

- Coordination, Facilitation, and Integration

- Information Management and Operational Architecture

- Development of Systems, Products, and Resources

- Quality and Performance Improvement

- Research and Evaluation
- Administration, Leadership, and Management

- Education and Professional Development
- Policy Development and Advocacy

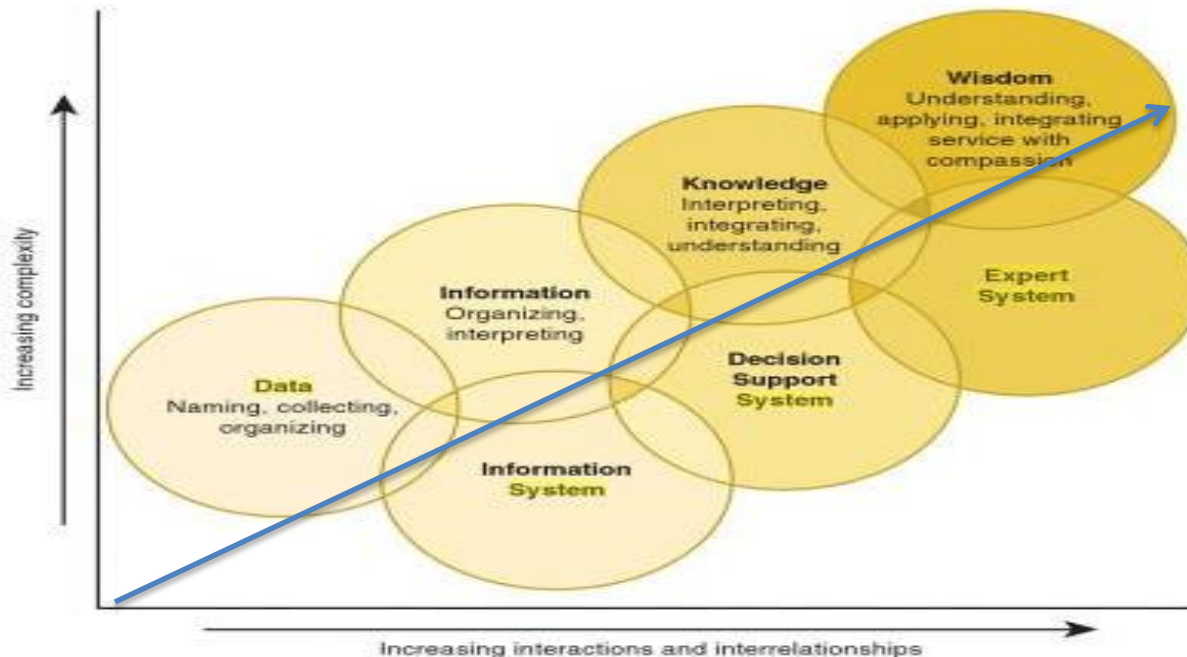- Genetics and Genomics

Study of Nursing Knowledge

- Conceptual Framework: Gave and Corcoran, 1986
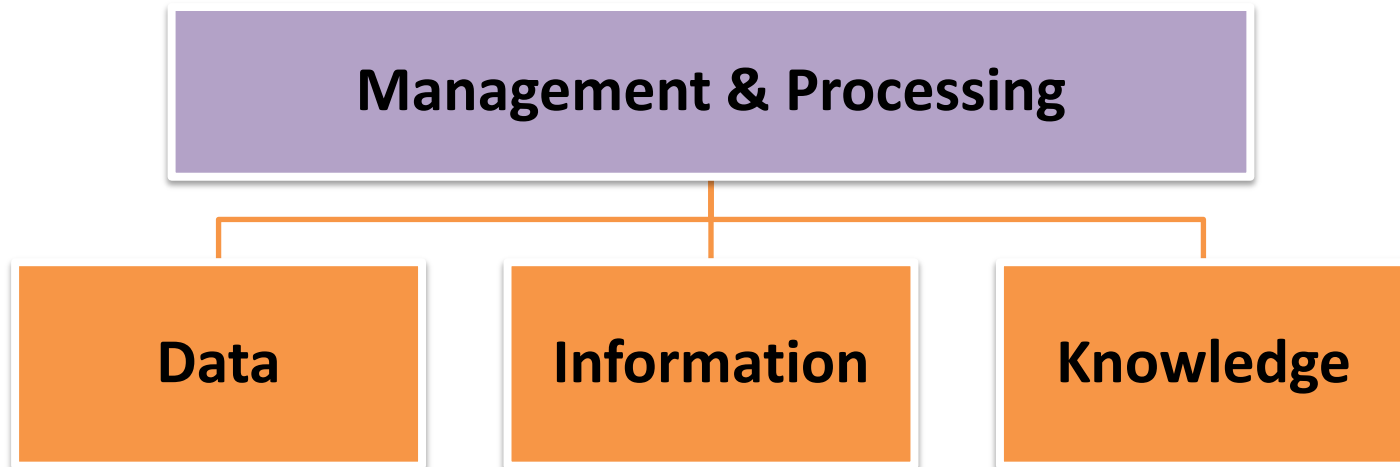
Moving from Data to Expert System

- Ramona Nelson, 2013

- Information, decision support, and expert systems represent and enable the evolution of data to information knowledge to wisdom.

Why do we use information systems in health care?

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Solutions!!!!!!!

Electronic Health Record

"An electronic record of health-related information on an individual that conforms to nationally-recognized interoperability standards and that can be created, managed, and consulted by authorized clinicians and staff across more than one healthcare organization."

(The National Alliance for Health Information Technology)

EHR-Concept Overview

- The EHR represents the integration of healthcare data from a collection of systems.

[Figure]

Clinical Information Systems

- Computerized provider order entry (CPOE)

- Clinical decision support systems (CDSS)

- Clinical documentation systems are used throughout healthcare.

- And others

Management of Health Data

- Healthcare Analytics
  - Analytics is the discovery and communication of meaningful patterns in data using simultaneous application of statistics, computer applications and operations research.
  - Analytic findings help healthcare professionals make more effective and efficient decisions in healthcare.

    Examples:
    - High cost medication prescription patterns among primary care providers (brand name drugs vs. generic names)
    - Top 3 reasons for hospital readmissions within 30 days after discharge
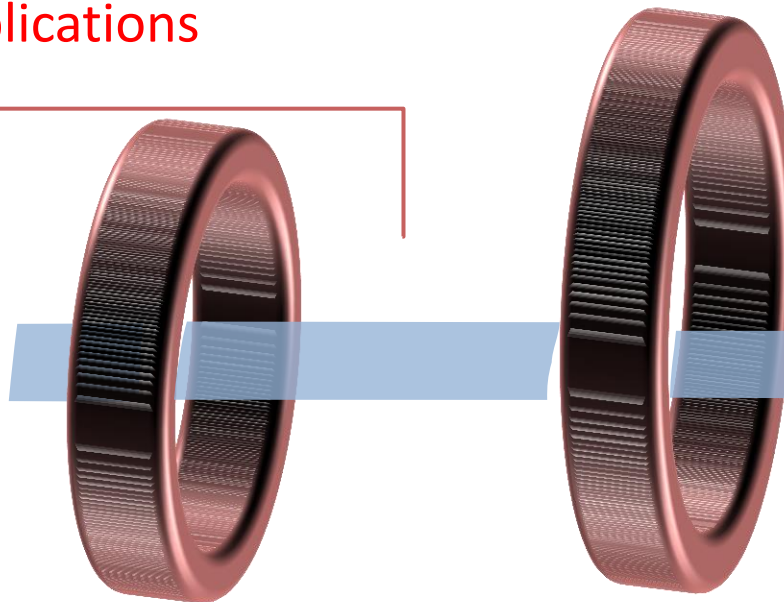
Major Standards

Purpose of Standardized Terminologies in Healthcare Informatics (HI)

To meet the need for valid, comparable data that can be used across information system applications

Support clinical decision making and the evaluation of process and outcomes of care

Qualtiy Care

PresenterMedia

Major Standards: *ICD-9-CM/ICD-10-CM*

- WHO Collaborating Center for the Classification of Diseases for North America.

- ICD-9-CM is a medical disease classification used in the US as a billing classification.

- By October 1, 2015 all healthcare services that receive Medicare and Medicaid reimbursement will be required to submit ICD-10-CM.

Major Standards

- Current Procedural Terminology (CPT): Developed by the AMA and adopted by CMS and most insurance companies as reimbursement codes.

- RxNorm: Developed by the NLM to be a standard for representing drug information in EHRs

- Systematic Nomenclature of Medicine-Clinical Terms (SNOMED CT): Developed by the International Health Terminology Standards Development Organization and to be used in EHRs for data entry and retrieval *(free use license managed by the NLM)*

Major Standards

- **Logical Observation Identifiers Names and Codes (LOINC®):** Developed by the Regenstrief Institute and provides a standard set of universal names and codes for identifying individual laboratory and clinical results.

- **ANA Recognized 12 Standardized Languages for Nursing:** e.g., NANDA, NIC, CCC, Omaha system, etc.

  (http://www.nursingworld.org/MainMenuCategories/ThePracticeofProfessionalNursing/Nursing Standards/Recognized-Nursing-Practice-Terminologies.pdf)

Health Information Exchange

(http://www.healthit.gov/providers-professionals/health-information-exchange/what-hie)

- Health Information Exchange (HIE):
  - Electronic sharing of health-related information among organizations
  - Provision of services to enable the electronic sharing of health-related information

- Importance of HIE
  - Reduce duplication of services and operational costs
  - Governs and manages the data exchange process

Interoperability vs. HIE

- "Interoperability" and "HIE" are often used interchangeably, but they are not same.

- Interoperability is "the ability of two or more systems to exchange and use the information that has been exchanged." *(IEEE Standard Computer Dictionary)*

- Exchange of information is necessary for interoperability.

Trends in Health care Informatics

- Meaningful Use

- eHealth/Patient Portal

- Big Data

- Patient-Centered Medical Home

Part II. Meaningful Use Application

Sun Tzu

"And therefore the general who understands war is the controller of his people's fate and the guarantor of the security of the nation."

*Michaelson, G.A. (2001). Sun tzu: The art of war for managers. Avon, MA: Adams Media Corporation

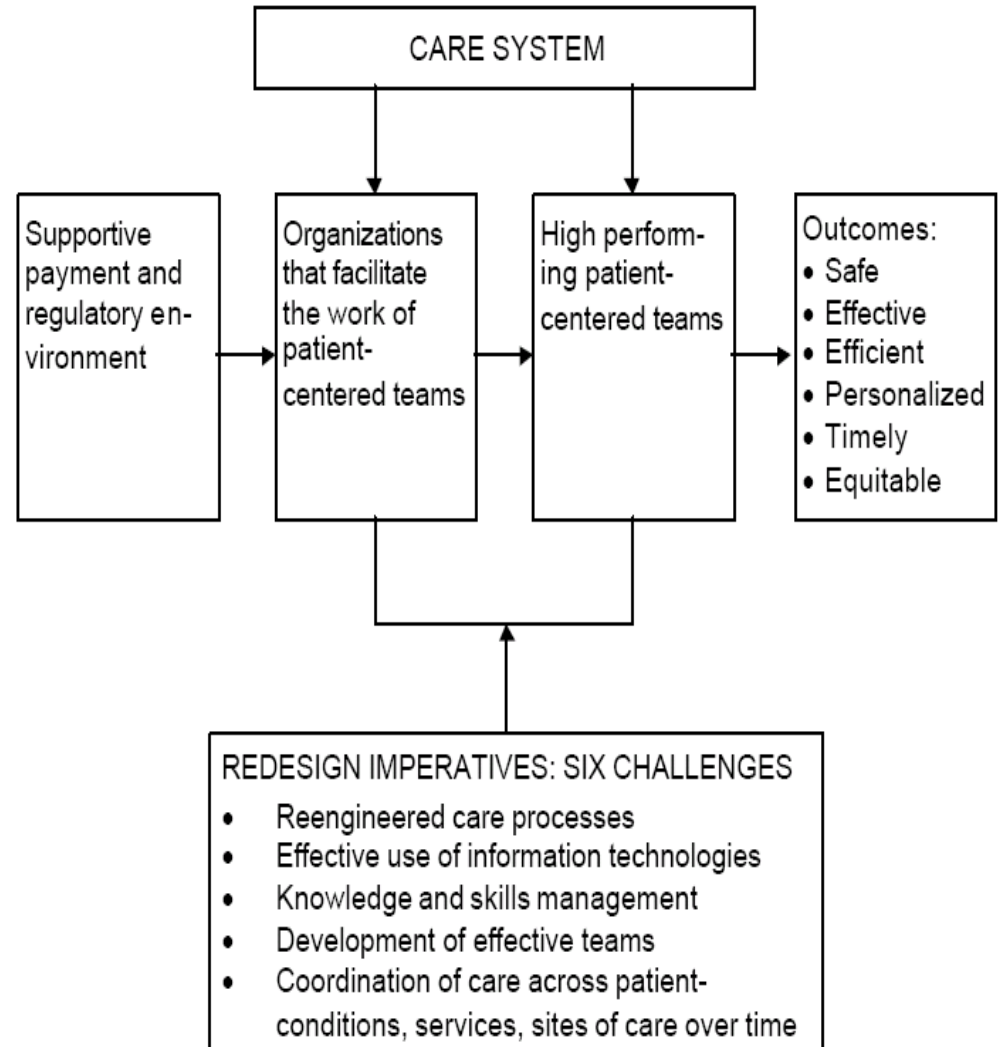# MU History

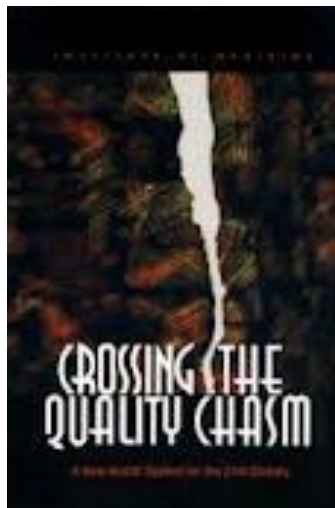# Institute of Medicine

THE PROBLEM

- To Err is Human: Building a Safer Health System (1999)

    – Errors are caused by faulty systems, processes, and conditions that lead people to make mistakes or fail to prevent them.

Institute of Medicine

- *THE PLAN*

- Crossing the Quality Chasm (2001)

CARE SYSTEM

| Supportive payment and regulatory environment | Organizations that facilitate the work of patient-centered teams | High performing patient-centered teams | Outcomes:
• Safe
• Effective
• Efficient
• Personalized
• Timely
• Equitable |

REDESIGN IMPERATIVES: SIX CHALLENGES

- Reengineered care processes
- Effective use of information technologies
- Knowledge and skills management
- Development of effective teams
- Coordination of care across patient-conditions, services, sites of care over time

Office of the National Coordinator (ONC)

- Created under Health and Human Services in 2004 mandated in 2009 under Health Information Technology for Economic and Clinical Health Act (HITECH)

Accountable Care Act (2010)

- The Affordable Care Act includes a number of policies to help physicians, hospitals, and other caregivers improve the safety and quality of patient care and make health care more affordable. By focusing on the needs of patients and linking payments to outcomes, these delivery system reforms will help improve the health of individuals and communities and slow cost growth.

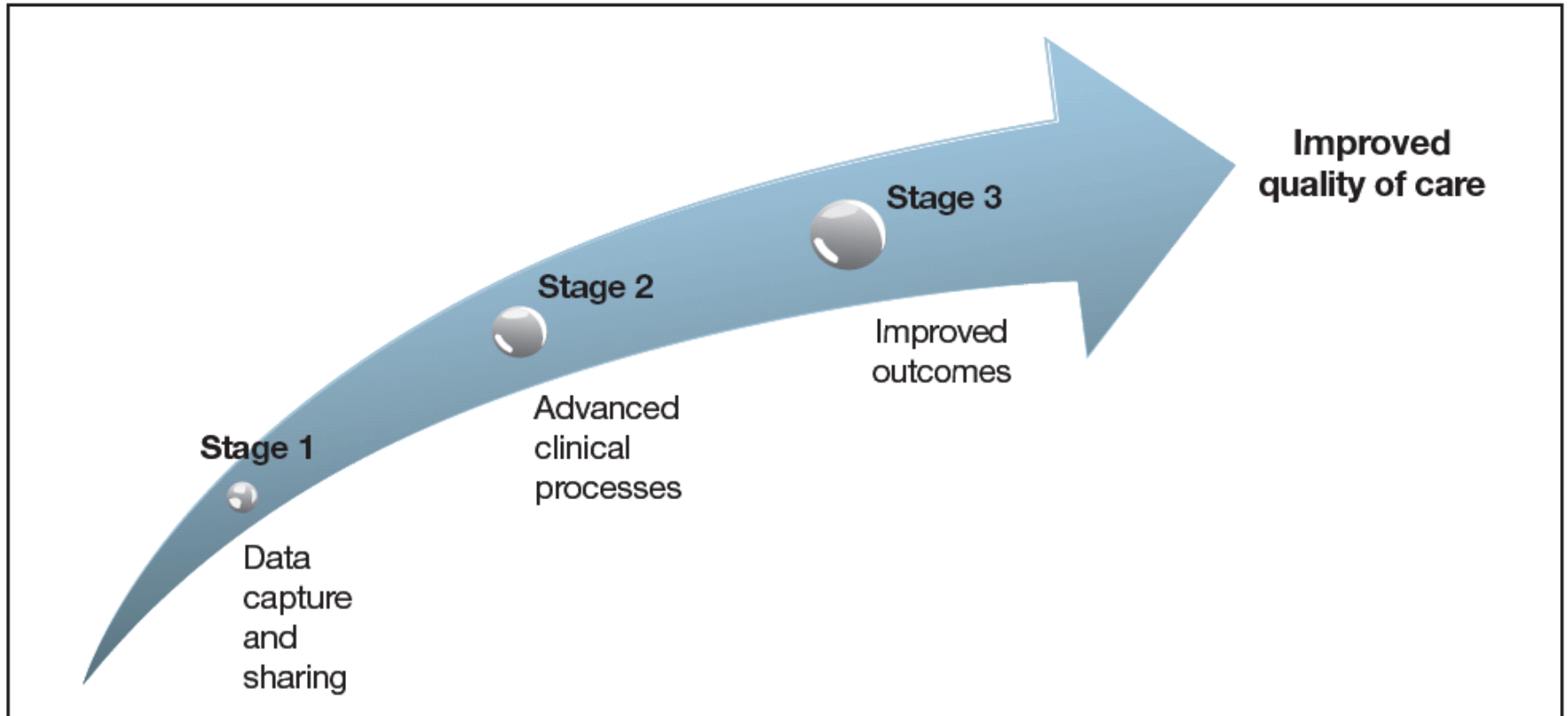 *www.Healthcare.gov*

WHAT IS IT?

Under the American Recovery and Reinvestment Act of 2009, CMS specifies three main components of Meaningful Use:

1. The use of a certified EHR in a meaningful manner, such as e-prescribing.

2. The use of certified EHR technology for electronic exchange of health information to improve quality of health care.

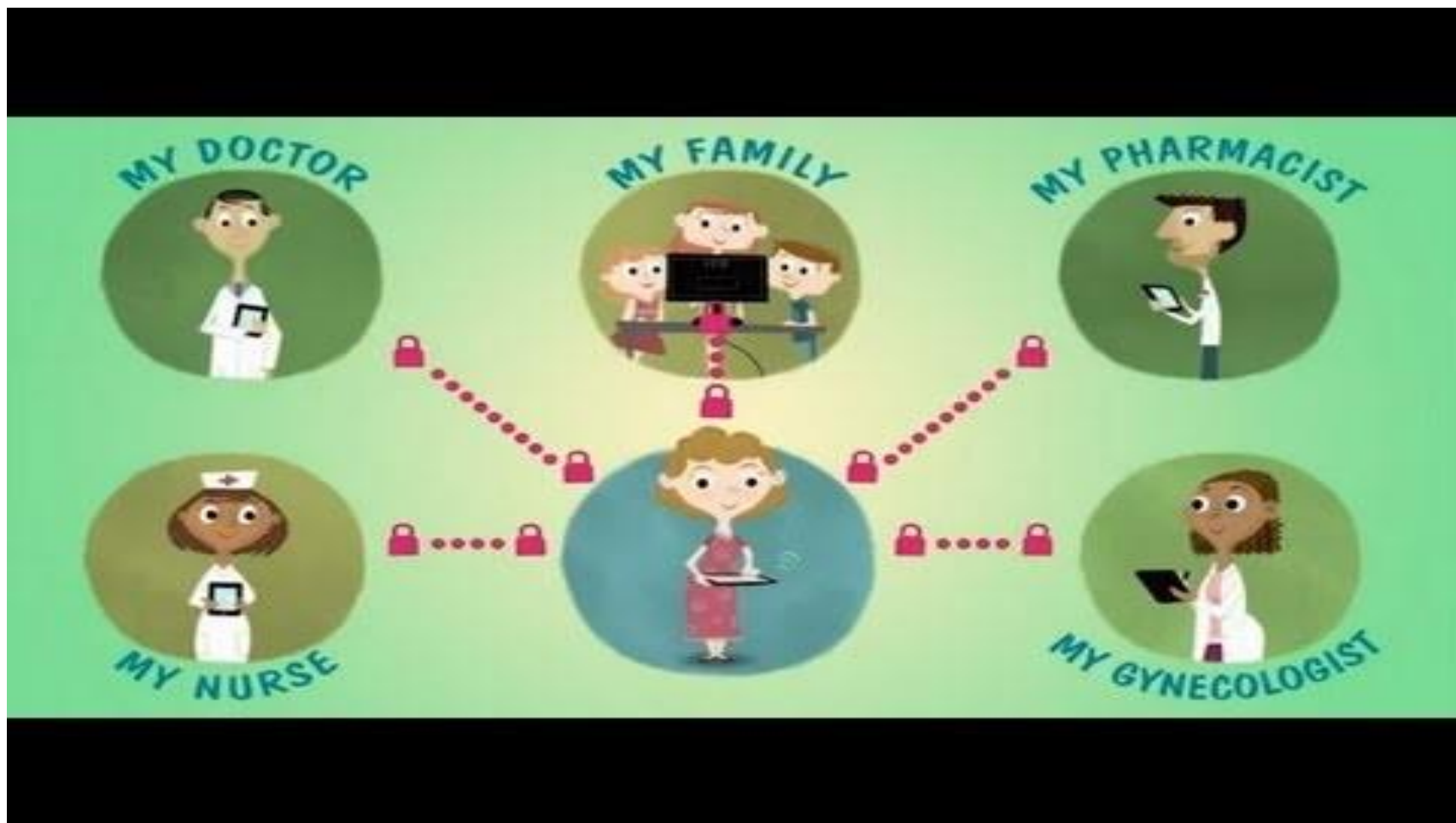3. The use of certified EHR technology to submit clinical quality and other measures.

CMS & Meaningful Use

21ˢᵗ Century Healthcare

Timeline

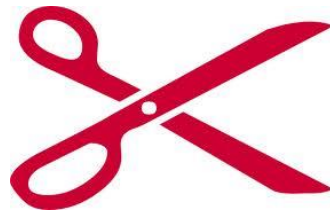| Stage 1: Meaningful use criteria focus on:	Stage 2: Meaningful use criteria focus on:	Stage 3: Meaningful use criteria focus on:
Electronically capturing health information in a standardized format	More rigorous health information exchange (HIE)	Improving quality, safety, and efficiency, leading to improved health outcomes
Using that information to track key clinical conditions	Increased requirements for e-prescribing and incorporating lab results	Decision support for national high-priority conditions
Communicating that information for care coordination processes	Electronic transmission of patient care summaries across multiple settings	Patient access to self-management tools
Initiating the reporting of clinical quality measures and public health information	More patient-controlled data	Access to comprehensive patient data through patient-centered HIE
Using information to engage patients and their families in their care		Improving population health

https://healthinformatics.wikispaces.com/Meaningful+Use

I get the quality…

Show me the $$$

Predicted Medicare Cuts 2013-2022

Medicare reimbursement will be tied to OUTCOMES:

State	County	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2013-2022
District of Columbia	WASHINGTON DC	$8.23 M	$38.05 M	$59.83 M	$73.92 M	$85.06 M	$103.48 M	$128.24 M	$151.93 M	$175.61 M	$201.44 M	$1025.78 M
MARYLAND	MONTGOMERY	$11.98 M	$47.54 M	$72.71 M	$87.24 M	$108.73 M	$137.25 M	$171.62 M	$205.28 M	$238.94 M	$274.03 M	$1355.32 M
VIRGINIA	ARLINGTON	$1.52 M	$6.73 M	$10.47 M	$12.75 M	$15.25 M	$18.71 M	$23.24 M	$27.59 M	$31.95 M	$36.65 M	$184.87 M

University of Minnesota Sept. 2012
http://www.carlsonschool.umn.edu/medical-industry-leadership-institute/publications/documents/BookandRamletpaperonMedicare.pdf

So, what do I need to keep in mind as the NI at my organization?

KEEP
CALM
AND
FOCUS ON
MEANINGFUL USE

Personal Case Study:
Virginia Hospital Center

- Attested to both stages 1 & 2

- Through the valiant efforts of a hard working team, blood, sweat and tears

- Not easy, but constant communication was necessary and involvement from all levels of leadership/staff in the hospital

VIRGINIA HOSPITAL
CENTER

NI Tips from the Field

- Understand the history so you can tell the story and explain it to your endusers

- Have an "elevator speech" about MU

- Make time to study the requirements

- Know your organization's clinical quality measures

NI Tips from the Field

- Know your resources:

    -CMS/ONC

    -Vendor

    -HIMSS

    -Countless think tanks:

https://www.advisory.com/-/media/Advisory-com/Research/ITSC/Resources/2012/MU-Pocket-Guide-3-1-13.pdf

    -Peers who are early adopters

ABC

The **Advisory** Board Company

IT Strategy Council

Pocket Quick Guide Comparison Stage 1 to Stage 2
Meaningful Use Final Rule Objectives and Measures

NEW! Indicates new measure finalized for Stage 2

Red Italic Font indicates measure combined from Stage 1 with existing or new measure finalized for Stage 2

☐ Detailed highlights box

■ Stage 1 measure with finalized changes starting in 2013/2014

■ Clinical quality measures change

Stage 1

Final Meaningful Use Category	EP	EH and CAH	Core or Menu	Measure Brief
Final Core and Menu Set Stage 1 core and menu set measures on the left appear in the same list since this table is sorted top to bottom by the Stage 2 grouping of base, core, and menu set measures.				
Demographics	●	●	Core	> 50%
Clinical Decision Support	●	●	Core	One rule
Implement Drug-Drug and Drug-Allergy Interaction Checks	●	●	Core	Enabled
CPOE – Computerized	●	●	Core	> 30%

Stage 2

Final Meaningful Use Category	Base EHR, Core, or Menu Set	Measure Brief
Final Base Set Base Set measure EHR functionality required by all EPs and EHs without regard to Stage of meaningful use being demonstrated.		
Demographics	Base	> 80%
Clinical Decision Support	Base	**2 Measures** 5 CDS interventions; drug-drug and drug-allergy checks enabled
CPOE – Computerized Provider	Base	**3 Measures** > 60% med orders

NI Tips from the Field

- Advocate on your organization's behalf if you are not getting what you need from your vendor

- Facilitate the workflow and engage the users

- If you are not the person coordinating the process/project, make sure you are able to explain the clinical components to the person who is

- Know where the audit book is

Basic Tips

- "Stick to the standards" and avoid customizing

- If you must customize do it in a thoughtful way

- Stay up to date with the latest versions of software.

Bowles, K. H., Potashnik, S. & Shih, N. (October, 2011). Barriers to Meaningful Use: A Case for Sticking to the Standards. Achieving Meaningful Use in Research with Information Technology Column. Online Journal of Nursing Informatics (OJNI),15 (3). Available at http://ojni.org/issues/? p=876

Thank you
Questions?