Connecting Health Information Technology to the Point of Care: The IHE Method

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Your Presenters

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Presentation Outline

- Objectives and definitions of terms used in this presentation
- Problem discussion
- What and who is IHE
- IHE Nursing Sub-Committee
  - IHE Nursing Profiles
- Connections within the world of Nursing Informatics
Objectives for Workshop

- Discuss interoperability related to IHE process and implementation profile development
- Advance nursing practice no matter where the patient/nurse interaction occurs.
- Endorse methods of nursing data collection across care settings and time
- Encourage participation in the active nursing work of profile development
- Connect with nursing globally to advance continuity of care through interoperability
Terms and Definitions

- **EHR**: Electronic Health Record
- **HIE**: Health Information Exchange
- **Interoperability**: The ability of two or more systems or elements to exchange information and to use the information that has been exchanged. *IEEE, 1990*
- **Content Profile**: A coordinated set of standards-based information/data, exchanged between the functional components of communicating healthcare IT systems and devices. *IHE, 2004*
- **Outcome**: Define the end results of nursing interventions and are indicators of problem resolution or progress toward problem or symptom resolution. *ICN, 2009*
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The Problem

- Nursing documentation may stay within one system, hospital or ambulatory system
- Too many EHR’s, but not enough EHR’s with interoperable nursing data
- How do we collect nursing data across care settings and time
- How (for example) do we develop best practices for all 74 year old females with heart disease?
Using the Nursing Process tool in the Problem Space

Gathering/collecting the details

- Data to collect:
  - Elements, sequence, frequency, location of care delivery,
  - Data sets

- Nursing documentation
  - Thorny question of which terminology to use
  - Format?? Menus?? Flowsheet records?? Narrative??

- Access the patient data
  - Security
  - Privacy issues
  - Consumer
  - Provider
Nursing Process / Problem Space

- **Goals/Outcomes**
  - Setting the goal for interoperability

- **Planning**
  - Standards
  - Terminology, NOT specific

- **Implementation of a nursing IHE profile**
  - Developing
  - Testing
  - Demonstrating

- **Evaluation of the implementation**
  - Did the profile pass the testing
  - Does the profile meet expectations
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An 11-year public-private initiative

Driven by end-users, IHE improves patient care by harmonizing electronic health information exchange

Enables approved standards to seamlessly pass health information amongst care providers on a local, regional and national level

IHE products are freely available to all
IHE: Integrating the Healthcare Enterprise

- Provides a rigorous process for developing integration profiles that address specific real-world interoperability challenges
- Technically robust specifications, facilitating ease of implementation into vendor applications
- Conformance testing, integration statements, demonstrations

**IHE is a key component of the national healthcare IT standards initiative in the US, and around the world**
Standards: Necessary... not Sufficient

Standards are

- Foundational - interoperable and provide communications
- Broad - varying interpretations and implementations
- Narrow - may not consider relationships between domains
- Plentiful - often redundant or disjointed
- Focused - standards implementation guides typically focus on a single standard

Interoperability can only be enabled through a standard process for implementing multiple standards
Connecting Standards to Care

It is important to ensure that the implementation of standards meets clinical and administrative needs

- Clinicians and HIT professionals identify the key interoperability problems they face
- Providers and industry work together to develop and make available standards-based solutions
- Implementers are able to follow common guidelines in purchasing and integrating effective systems

Interoperability is of high value when there is a shared vision on how to implement standards and processes
Proven Standards Adoption Process

Identify available standards (e.g. HL7, DICOM, IETF, OASIS)

Document Use Case Requirements

Develop technical specifications

Testing at Connectathons

IHE Demonstrations

Products with IHE

Timely access to information

Easy to integrate products

Developing standards and their adoption processes.
The IHE Development Domains

11 Years of Steady Evolution 1998 – 2009

Pharmacy
NEW 2009

Radiology
since 1998

Pathology
since 2006

Cardiology
since 2004

Eye Care
since 2006

Laboratory
since 2004

Quality
Research & Public Health
since 2006

Radiation Oncology
since 2004

Patient Care Devices
since 2005

Patient Care Coordination
since 2004

(Healthcare)
IT Infrastructure
since 2003

Eye Care
since 2006

Laying the Groundwork 1998
Italy (Genoa Region) and Austria

- Since 2006: 4 Hospitals and 500 physician offices.
- EMRs import and export documents from their local records.
- All vendor products required to pass IHE-Europe connectathon in April 2005.
- Patients chose to join through one of their care provider

- Lower Austria Region (around Vienna) Deployed in 2007 - Operational. 1.5 Million patients online. 11 hospitals connected.
- Use a number of IHE profiles: workflow, basic framework and privacy/security.
France and Netherlands

- Encourage vendors to submit their products to the IHE-Europe Connectathon.
- Implementation plan under revision.
- Use a number of IHE profiles: workflow, basic framework and privacy/security.
- National DMP Project

- Dutch “e-Radiology” project
  - NICTIZ: capability IHE with national infrastructure
  - First application: focus on Radiology

- Friesland Cardiology Network
  - 5 hospitals (4 Community and one Specialty Hospital)
  - Cardiac Patient Transfer
  - Operational for 6 months
USA and Canada

- HITSP Lab results distribution and sharing, Registration and Medication History for Consumers, Biosurveillance, Medication Mgt, etc.

- 2 NHIN-2 Pilots using IHE profiles (Medical Summaries and Lab).

- Several HIEs projects are operational and using of HITSP/IHE Profiles:
  - Philadelphia and in other parts of Pennsylvania
  - Vermont
  - Providence Oregon
  - Boston Medical Center and affiliated clinics

- Canada Health Infoway:
  - image sharing
  - Radiology workflow

- Toronto East Network - Ontario
- Montreal McGill - Quebec
- Alberta
- British Columbia
Other International IHE Work

China
- MoH selected Lab profiles for lab info sharing. Two pilots planned for 2009.
- Imaging planned for Shanghai

Israel, Jordan, Palestinian Authority
- Public Health Info Affinity Domain
- Middle east Consortium for infectious Disease Surveillance
- Operational-2008

Japan
- Nagoya region network project operational late 2007. Kobe with imaging info sharing

South Africa

Spain: Catalonia
- Close to one million patient records on-line using IHE profiles
IHE offers interoperability for local, regional, specific, or national health information exchange

Goal is to enable exchange between providers’ clinical and administrative systems and ancillary IT systems

Objective is to empower the consumers in having “shared EHR information” between all of its potential healthcare providers (if authorized) and self.

Objective is to empower the providers in choosing when and what information to share, and to trust the information they may use in the care of their patients.
Access to Shared Records: IHE-XDS

Community

Hospital Record

Clinic Record

Specialist Record

Repository of Documents

4-Patient data presented to Physician

Clinic Record

Aggregate Patient Info

Clinic Encounter

3-Records Returned

Repository of Documents

Index of patients records

2-Reference to Records for Inquiry

Clinical Encounter

HIE
A content profile is....

- A sharable information component that can be exchanged.
  - Within an HIE using the IHE document sharing profile
  - Via HIS system using IHE profile standards
- Human and/or machine readable
  - Standards exchange complete structured documents
- A library of reusable profiles
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IHE Changing the Way Healthcare CONNECTS
History of IHE and Nursing

- Early IHE work mostly technical and physician based

- 2006 Nursing Special Interest Group formed and submitted a profile of Functional Status Assessments (FSA)

- 2007 FSA demonstrated at HIMSS Showcase

- 2008 Nursing Subcommittee proposed and initiated

- 2009 Patient Plan of Care Profile in development

- 2010 Planned demonstration at HIMSS 2010 in Atlanta.
Desired Outcomes

- Availability of patient and clinical information prior to admission/transfer
- Minimized complications due to early intervention
- Safe, effective and evidence based care as a result of accurate point of care information
- Improved patient/family education
- Continuity of individualized care plan
- Use of interoperable nursing data communicates health information
Value in IHE Nursing

The value of interoperable electronic health records nursing data includes:

- Plan for early interventions with appropriate resources based on patient acuity including nurse staffing (resource maximization)
- Early intervention minimizes complications
- Complete clinical information promotes safety and improved outcomes
- Continuity of care delivery using a plan of care
- Promotes safer transfers of care and evidence for outcomes improvements
IHE Nursing SC Planning

- Development of a process framework to house the nursing IHE profiles
- Expand the framework for the nursing process to be interoperable
- Framework will communicate consistency of care needs in an individualized plan
- Consensus driven, evidence based process
The IHE Nursing Plan

- **Goal**: Move nursing data between care settings across time

- **Year 1**: Move data from non-hospital settings into acute care and back electronically without regard for vendor application.

- **Year 2**: Use of the Nursing process, a problem solving method, to provide a framework for further profile work.
Considerations

- Need to demonstrate value and feasibility
- Scales chosen are evidence-based with strong reliability and validity.
- Widely accepted cross-enterprise or required/recommended by accrediting agencies

Content Scales

- Numeric Rating Scale (NRS-11) for Pain
- Braden Scale for Predicting Pressure Sore Risk©
- Geriatric Depression Scale (GDS)
- Minimum Data Set – Section G
Use Case Example – FSA

- 76 year old resident of Residential Facility
- Increased weakness and lethargy
- Complains of chills and refuses to get out of bed
- **Assessment findings:**
  - pulse increased, respirations shallow
  - low grade temperature
  - reddened area on coccyx, skin moist
  - fasting blood glucose is out of control
Combined Workflow/Dataflow Diagram

Nurse assesses resident
- Identifies change in functional assessment, Braden scale and glucose level.

Nurse initiates phone collaboration with PCP
- Discusses findings from assessment and labs

PCP reviews patient status
- Reviews EHR data

Patient transferred to acute care facility
- RHIO Document Exchange Server

Hospital admission nurse reviews transmitted EHR data
- Pt acuity & staffing levels review

Unit RN updates daily assessments in the EHR
- Attending reviews patient status
- Patient regains strength, progressing well

Care providers address patient’s medical issues
- Unit RN assesses patient on admission to unit
- Unit placement decision based on current pt acuity, & staffing levels

Patient transferred to long-term care facility
- Nurse compares current assessment to LTC EHR data and initiates POC

Discharge Patient to LTC?
- Yes

Attending reviews progress notes and assessments
- Unit RN updates daily assessments in the EHR
- Unit RN updates daily assessments in the EHR

Patient regains strength, progressing well
- Care providers address patient’s medical issues

Unit RN assesses patient on admission to unit
- Unit placement decision based on current pt acuity, & staffing levels

End of Process

Key:
- Process
- Decision
- Nurse EHR
- Physician EHR

Changing the Way Healthcare Connects
Patient Plan of Care

Year 2

Initial Assessment
(Admission)

In Scope for 2009-10

Planning Process
- Diagnosis
- Outcome Identification
- Planning

Actions
- Implementation
- Evaluation
- Assessment

Summary of Inpatient Care
Use Case: Pneumonia

A 70 year old male is admitted to a hospital unit after presenting to the Emergency Department (ED) with:

- Productive cough and acute rib pain
- Coughing, increased work of breathing
- Increased temperature, heart rate and blood pressure
- Chest x-ray showed bilateral infiltrates
- Lab hematologies showed high White blood cell count
Patient Plan of Care

- **Nursing Diagnosis** (medical diagnosis Pneumonia)
  - Respiratory alteration due to ineffective gas exchange
  - Acute Pain upon coughing

- **Outcome Identification**
  - Stabilize respiratory alteration
  - Acute pain within patient acceptable limits

- **Planning and Implementation**
  - Pulmonary Care
  - Pain Control

- **Evaluation**
  - Re-assessment of patient outcomes
Using the IHE Process for Nursing

Discussion Questions:

- Current nursing issues where you practice
- Define/describe data elements for nursing care summaries/transfers/handovers
- Implementing nursing interventions and accountability for your nursing practice
- Interoperability in nursing practice, what issue in your nursing practice could interoperability help solve?
- How could you make the IHE nursing profiles be reflected your nursing practice?
Key Points

- Use of nursing critical thinking processes and documentation requirements fit well into the IHE method.
- IHE provides a proven process for interoperability between disparate systems.
- Collection of nursing data across time and care settings will allow research to determine evidence based practice guidelines for the future.
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Advancing the Agenda for Patient Care

- Understand and embrace this initiative
- Get involved with Profile development
- Respond to public comment opportunities
- Attend educational workshops
- Attend a HIMSS Interoperability Showcase
- Include IHE Integration Profiles in your RFP’s
- Participate in IHE Committees
Questions and Contacts

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