Informatics: Preparing Faculty to Teach Tomorrow's Nurses

AACN

Transform 2021 Conference

Dallas, TX

December 2-4

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Informatics

- Domain 8: Informatics and Healthcare Technologies
- Major concepts in the descriptors:
  - patients, communities, diverse populations, information, communication, data, knowledge, safe care, documentation, ethical, legal, professional, regulatory standards, workplace policies.

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Nursing Informatics Definitions

Nursing Informatics is the "science and practice (that) integrates nursing, its information and knowledge, with information and communication technologies to promote the health of people, families, and communities worldwide." (adapted from AMIA Special Interest Group on Nursing Informatics 2009).

Nursing informatics "is the specialty that integrates nursing science with multiple information and analytical sciences to identify, define, manage and communicate data, information, knowledge and wisdom in nursing practice." (HIMSS)

Nursing informatics (NI) is the specialty that integrates nursing science with multiple information and analytical sciences to identify, define, manage and communicate data, information, knowledge and wisdom in nursing practice. (ANA)

The Healthcare Environment

Health Optimization

- Population Health
- Value Based Care
- Pivot from Sick to Healthy

Data and Technology Affirmation

- Building Blocks for Care Analysis
- Prediction
- Data Sharing

The Healthcare Environment

Consumerism

- Patient Self Care
- Distrust
- Researching Treatment Options
- Patient Generated Data

Business migration

- Patient as Marketing Opportunity
- Competition: Amazon, Apple, CVS, Walmart and Walgreens
- Insurers Delivery Services

The Healthcare Environment

Price Frustration

- Failed Initiative
- $3 Million Annual Spending
- Radical Change Race
- Prescription Quantity and Variety

Clinician Increased Intermediation

- New Gatekeepers
- Mergers to Reduce Expense
- Less Care Coordination
- High Tech vs. High Touch

Stakeholders

Providers

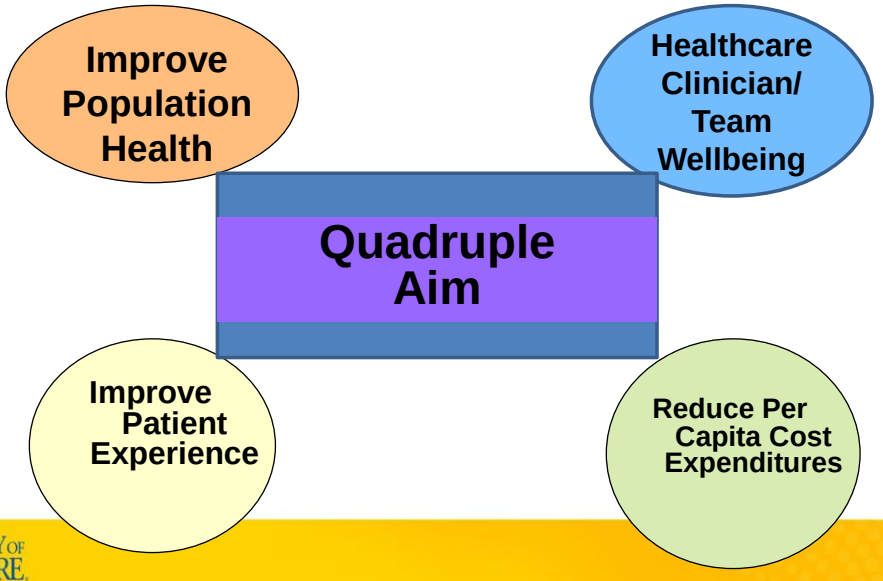
Patients

Insurers

Government

Hospitals

[Institute for Healthcare Improvement The IHI Triple Aim]



Types of Healthcare Informatics

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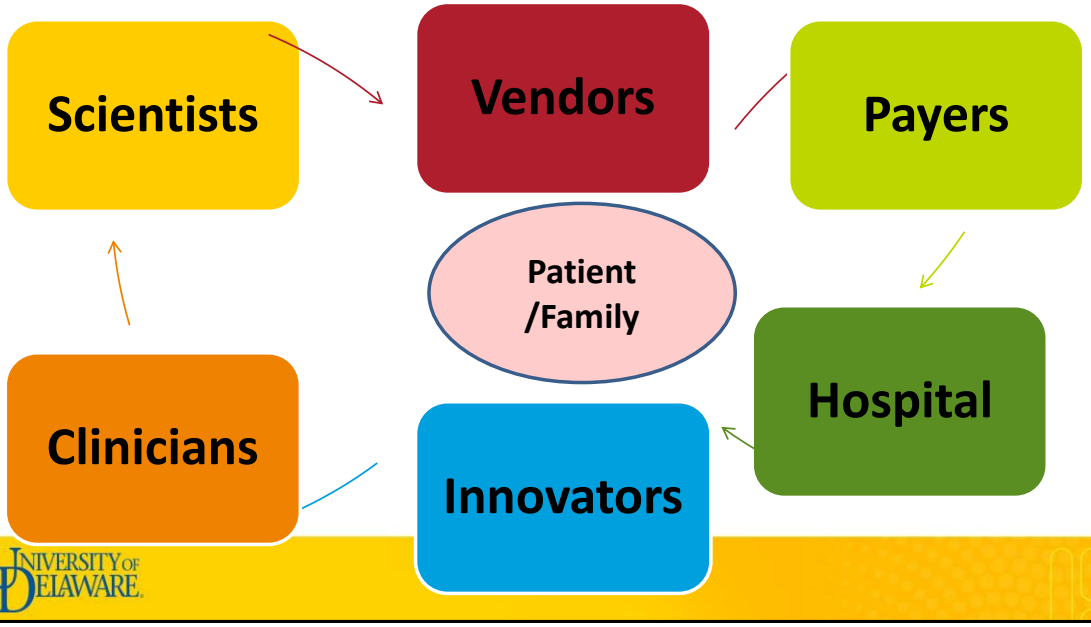
Partnership



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Key Concepts for Learners

- Informatics is more than the Electronic Medical Record
- Quality Data promotes Knowledge Creation resulting in Application of Unique Wisdom
- Clean Data is Useful Data
- Professional Standardized Language
- Healthcare Data = Cybercriminal Delight = No Unauthorized Use of Systems
- Many types and branches of informatics - Nursing Voice throughout
- High Touch before High Tech
- Technology for Patient Sake, not for Technology Sake

Healthcare Informatics Strategies

Population	Patient/Consumer	Nurse/Clinician	Payer
Bio Surveillance/GIS	Patient Education/ Serious Gaming/Apps	Clinical Decision Support	Big Data Analytics
Disease Modeling/ Predictive Analytics	Telehealth/ Patient Remote Home Monitoring	Computerized Provider Order Entry	Value Based Care Measures
Genomics Monitoring	Personal Health Records	Digital Imaging Systems	Accountable Care Organization Data Repository
Social Determinants of Health Data	Chronic Illness Social Networking	Electronic Medical Records	Natural Language Processing
Research/ Entrepreneurship	Personal Health Monitoring/IOT	Clinician Education	
Machine Learning	Patient/Provider Communication	Electronic Prescribing	
	Electronic Discharge Instructions	Robotics	
	Personalized Healthcare	State/Regional Health Information Networks	
		Virtual Reality/Artificial Reality	
		Supply Chain Management	

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8.1 Technology Tools	8.2 Data to Wisdom	8.3 Diverse Population/Settings	8.4 Documentation /Communication	8.5 Policies
Clinician Education	Bio -Surveillance GIS	Clinical Decision Support	Electronic Medical Records	Electronic Prescribing
Personal Health Monitoring/IOT	Disease Modeling/ Predictive Analytics	State/Regional Health Information Networks	Patient/Provider Communication	Cybersecurity
Electronic Discharge Instructions	Genomics Tracking	Digital Imaging Systems	Computerized Provider Order Entry	Information Blocking
Artificial Intelligence	Social Determinants of Health Data	Value Based Care Measures	Telehealth/ Patient Home Monitoring	Personal Health Records
Chronic Illness Social Networking	Big Data Analytics	Virtual Care	Patient Education/Apps	API/Interoperability
Supply Chain	Accountable Care Organization Data Repository	Personalized Healthcare	Natural Language Processing	
Machine Learning		Patient Education /Serious Gaming / Apps		
Internet of Things				
Entrepreneurship				
Robotics				

8.1 Describe the various information and communication technology tools used in the care of patients, communities and populations.

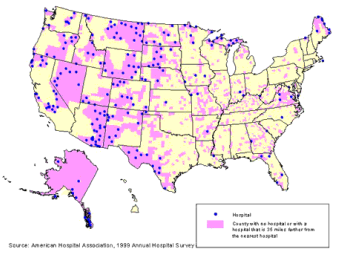
Entry-Level

- Clinician Education
- Personal Health Monitoring/IOT
- Electronic Discharge Instructions
- Chronic Illness Social Networking

Advanced-Level

Artificial Intelligence

- Supply Chain
- Machine Learning
- Internet of Things
- Entrepreneurship
- Robotics



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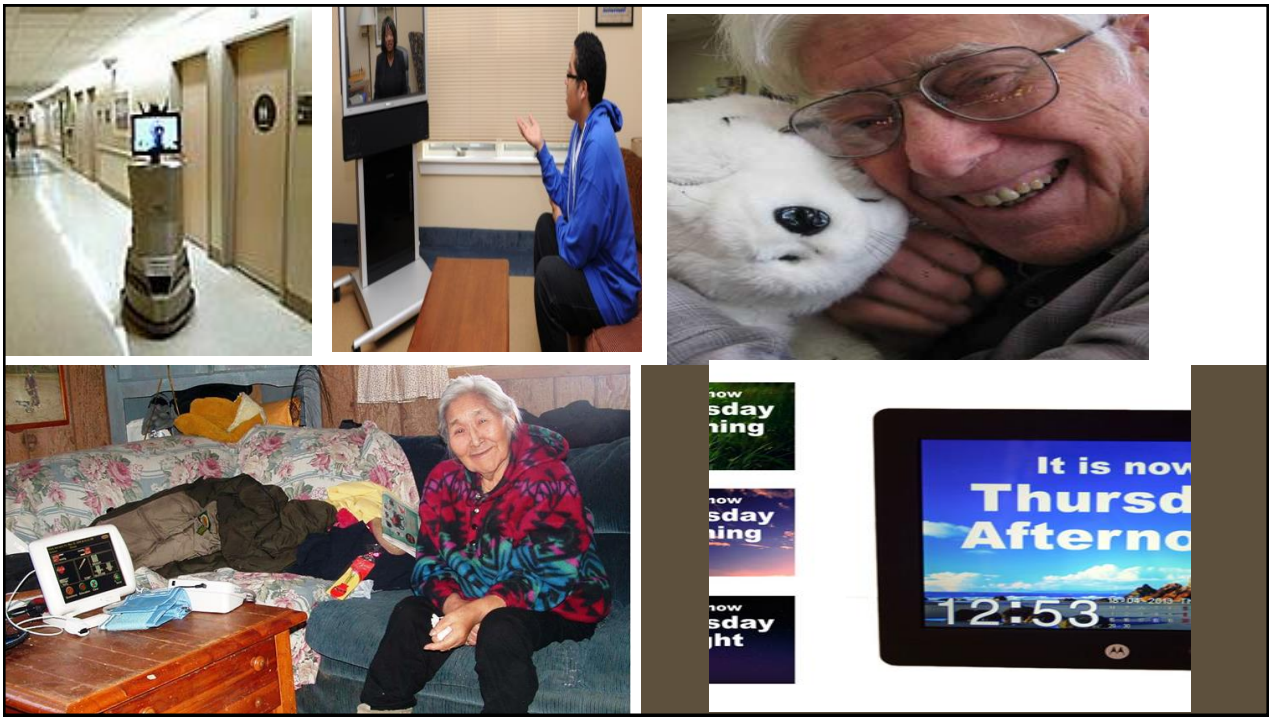
8.2 Use information and communication technology to gather data, create information, and generate knowledge.

Entry-Level

- **Social Determinants of Health Data**
- **Disease Modeling/Predictive Analytics**

Advanced-Level

- **Disease Modeling/Predictive Analytics**
- **Genomics Tracking**
- **Big Data Analytics**
- **Accountable Care Organization Data Repository**



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8.3 Use information and communication technologies and informatics processes to deliver safe nursing care to diverse populations in a variety of settings.

Entry-Level	Advanced-Level
•State/Regional Health Information Networks •Virtual Care /Patient Portals •Patient Education /Serious Gaming /Apps	•Clinical Decision Support •Value Based Care Measures •Personalized Healthcare •Digital Imaging Systems

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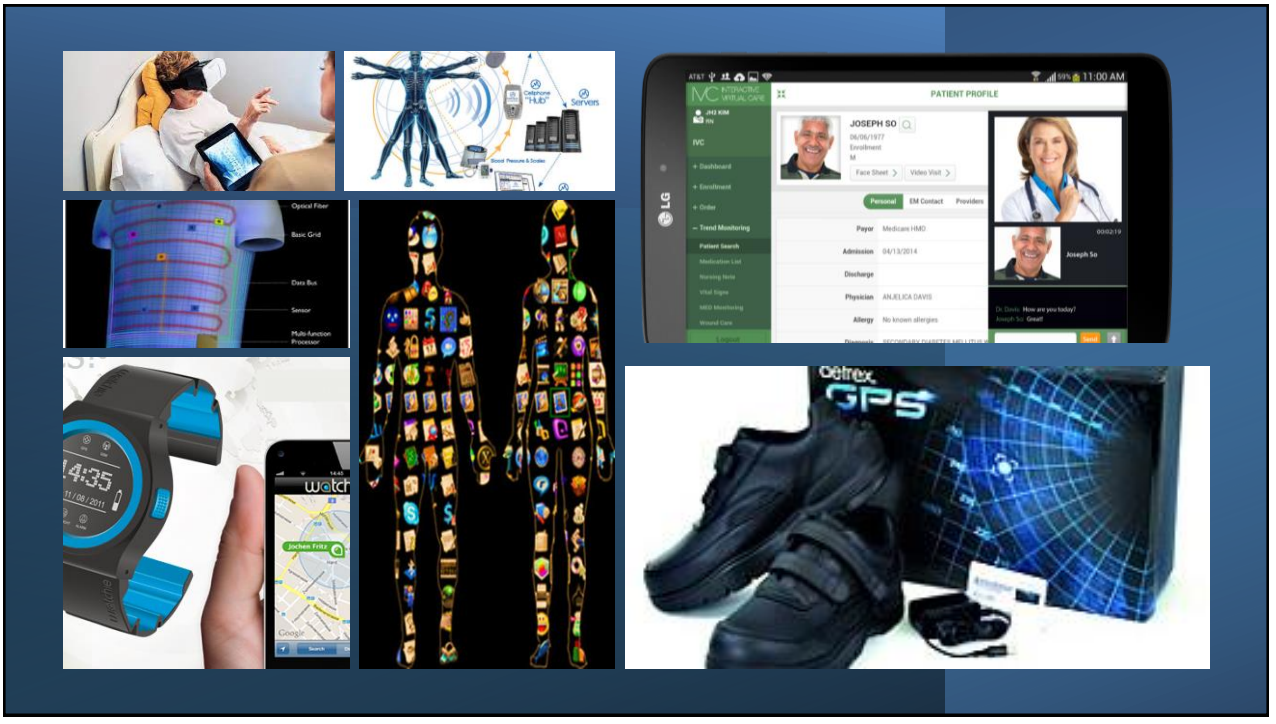

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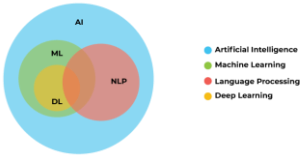
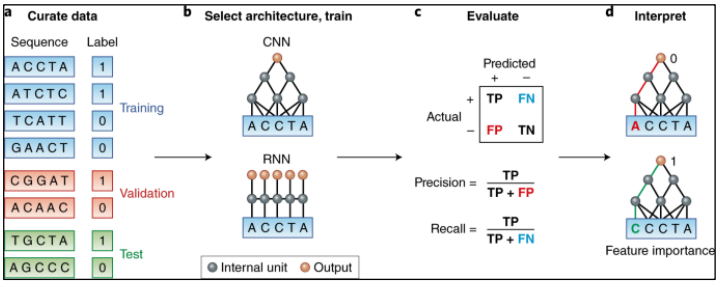
8.4 Use information and communication technology to support documentation of care and communication among providers, patients and all system levels.

Entry-Level	Advanced-Level
•Electronic Medical Records •Computerized Provider • Order Entry •Telehealth/ Patient Home Monitoring	• Natural Language Processing • Patient/Provider Communication





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8.5 Use information and communication technologies in accordance with ethical, legal, professional and regulatory standards, and workplace policies in the delivery of care.

Entry-Level

- **Electronic Prescribing**
- **Cybersecurity**
- **Personal Health Records**
- **HIPAA**

Advanced-Level

- **Information Blocking**
- **API/Interoperability**

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To Integrate or Not Integrate

- Integration
  - **Benefits**
    - Match Topics to Courses
    - Application of Topics to Content
    - No Additional Course(s)
    - More Faculty Develop Knowledge
  - **Concerns**
    - Redundant Material
    - Omissions
    - Need Qualified Faculty
- No Integration
  - **Benefits**
    - In Depth Coverage
    - Research Option
    - Student Interest
  - **Concerns**
    - Specialty Course
    - Specialty Faculty
    - Possible Incomplete Coverage

Textbooks / Resources for Consideration

- ***TIGER:* An Initiative for Technology and Health Informatics Education**
- **Informatics for Health Professionals 2nd Edition** by Kathleen Mastrian (Author), Dee McGonigle (Author)
- **Health Informatics: An Interprofessional Approach 2nd Edition** by Ramona Nelson PhD RN-BC ANEF FAAN (Author), Nancy Staggers PhD RN FAAN (Author)
- **Health Informatics: Practical Guide Seventh Edition** by William R. Hersh (Author), Robert E. Hoyt (Author)
- **Health Informatics: Practical Guide for Healthcare and Information Technology Professionals (Sixth Edition) 6th Edition** by Robert E. Hoyt (Editor), Ann K. Yoshihashi (Editor)
- **Biomedical Informatics: Computer Applications in Health Care and Biomedicine** (Health Informatics) 4th Edition, by Edward H. Shortliffe (Editor), James J. Cimino (Editor)

- *To understand the whole, it is necessary to understand the parts.*
- *To understand the parts, it is necessary to understand the whole.*
- *Such is the circle of understanding.*

- Ken Wilbur

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"You can have data without information, but you cannot have information without data." – Daniel Keys Moran, an American computer programmer and science fiction writer.

"When we have all data online it will be great for humanity. It is a prerequisite to solving many problems that humankind faces." – Robert Cailliau, Belgian informatics engineer and computer scientist who, together with Tim Berners-Lee, developed the World Wide Web.

"Without big data analytics, companies are blind and deaf, wandering out onto the web like deer on a freeway." – Geoffrey Moore, author and consultant.

"In God we trust. All others must bring data." – W. Edwards Deming, statistician, professor, author, lecturer, and consultant.

"It is a capital mistake to theorize before one has data." Sherlock Holmes, "A Study in Scarlett" (Arthur Conan Doyle).

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Disrupt, Innovate, Engage and Thrive

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