Ensuring Competent Nurses Working in Technology and Data Rich Environments

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5/22/2021

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OBJECTIVES

1. Differentiate competencies, accreditation, certification, and licensing for the US
2. Discuss the external forces driving expected competency change in the US
3. Explain the issues when trying to cross the education practice gap
4. Confirm international and interprofessional competency harmonization efforts
5. Describe resources that will assist in building the bridge

DEFINING TERMS

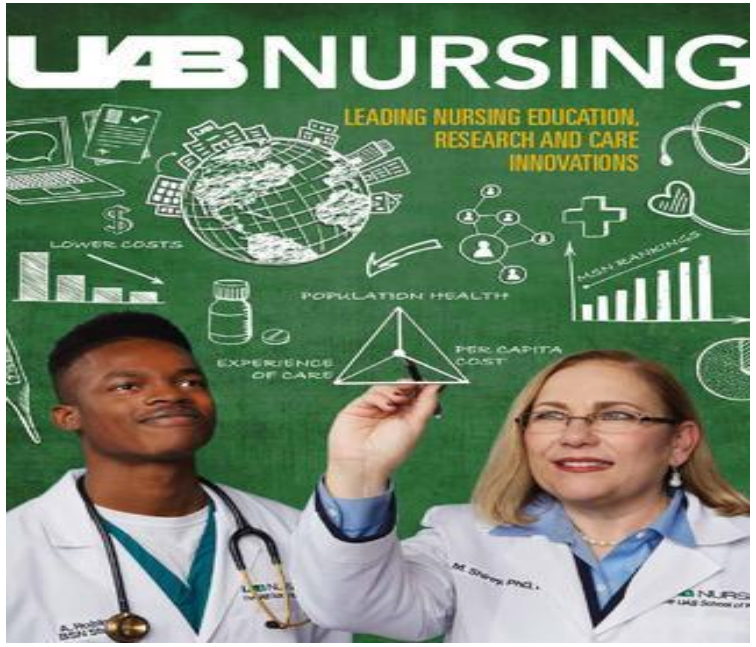
- Skills – specific learned abilities that you need to perform a job well.
  - A nurse informatician may be a skilled computer programmer or screen builder.
- Competencies – represent a person's knowledge and behaviors that lead them to be successful at a job or occupation.
  - A nurse informatician must be a competent problem solver, analytic thinker, communicator, and collaborator.

DEFINING TERMS

- Academic standards – define what student should be competent to do at a specified time. (AACN)
- Educational Accreditation -The analysis and study of educational programs. It measures the quality of the programs and if they are offered equally to all students in the institution. (CCNE)
- Hospital Accreditation - A self-assessment and external peer assessment process used by health care organizations to accurately assess their level of performance in relation to established standards and to implement ways to continuously improve (The Joint Commission)

CLINICAL PRACTICE AND EDUCATION

- Consider that education is not much different than a factory production line that must put out a product that meets a need.



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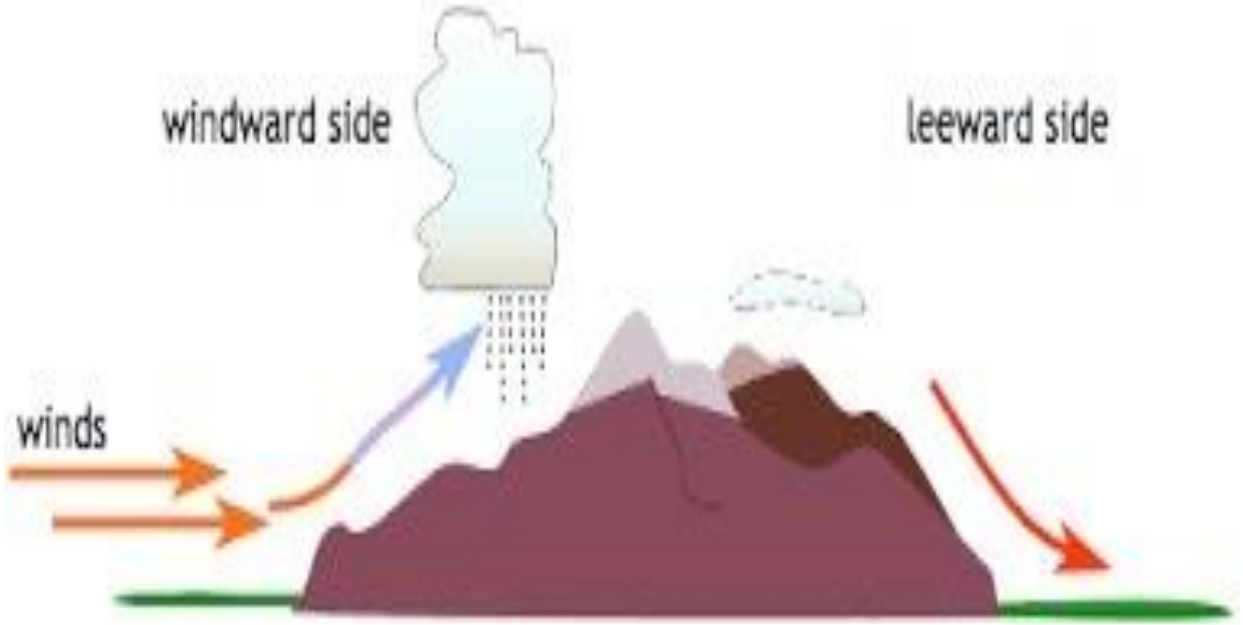
DRIVING FORCES SHAPE COMPETENCIES



WHY?

TECHNOLOGY AND DATA RICH ENVIRONMENTS

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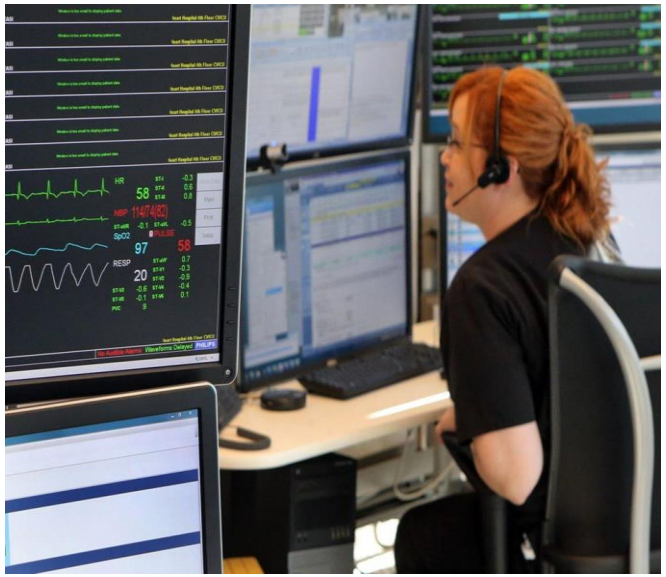
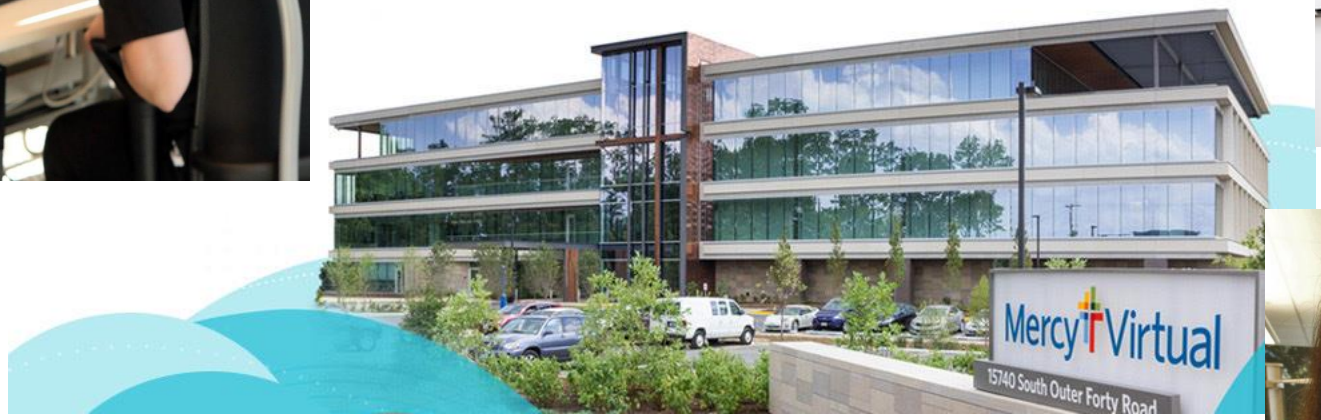
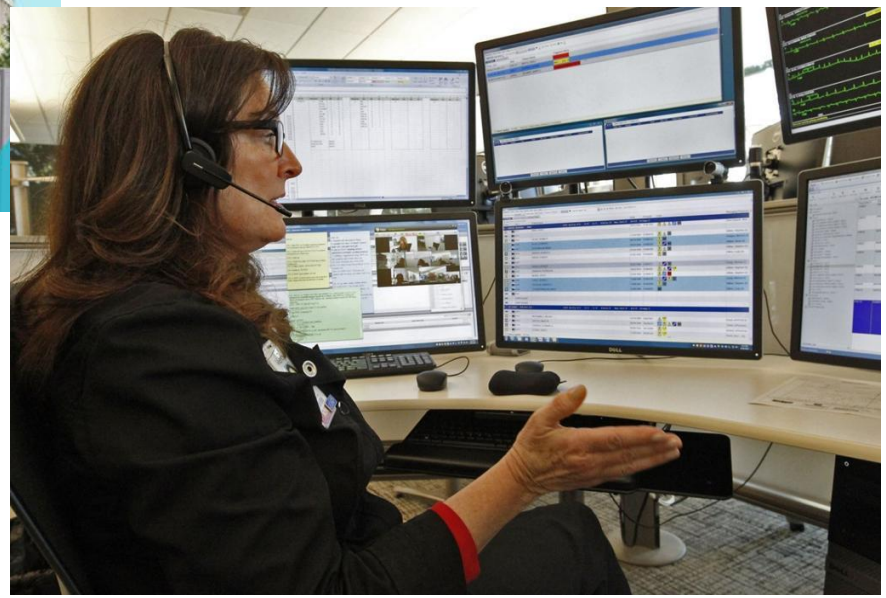
MERCY VIRTUAL – DELIVERING CARE WHEREVER



A US Hospital with No Patients

Mercy Virtual – St. Louis, MO





https://youtu.be/XH1PvCtqIqc

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WHO PLANS, ANALYZES, DEVELOPS, IMPLEMENTS, EVALUATES?

Competent Nurses, Competent Informatics Nurse Specialists, Skilled Nurse Informatics Researchers and Transformational Leaders

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COMPETENCIES

- American Association of Colleges of Nursing (AACN)
  - Re-Envisioned Essentials (10 Domains)
  - https://www.aacnnursing.org/Education-Resources/AACN-Essentials
- American Medical Informatics Association (AMIA)
  - Advanced Health Informatics Competencies
  - https://www.amia.org/sites/default/files/AMIA-Health-Informatics-Core-Competencies-for-CAHIIM.PDF
- Public Health Forum
  - Population Health Forum
  - http://www.phf.org/resourcestools/Documents/Population_Health_Competencies_2019Mar.pdf

EDUCATING AND HIRING COMPETENT HEALTH CARE PROFESSIONALS

- Competency Expectations of Students and Graduates
- Competency Development of Students and Graduates
- Curriculum Alignment
- Assessment of Competency
- Certification of Professionals
- Accreditation of Programs
- Mentoring the New Professional
- Hiring Expectations of Employers
- Continuous Professional Development

COMPETENCY EXPECTATIONS

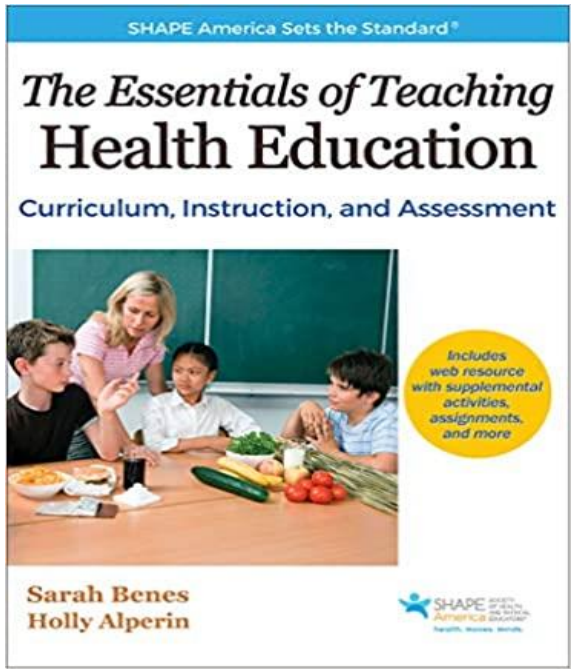
- Shaped by:
  - Societal demand
  - Public Policy
  - Practice Needs
    - Policy
    - Regulation
    - Payment/Finance

  Schools are charged with producing new professionals that can meet the need.

  Are we doing this?

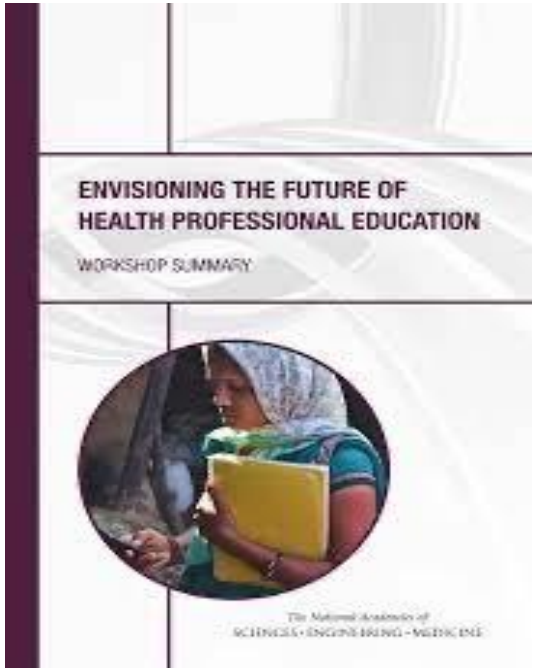
  In academic nursing, we were told ”No” by practice partners and this admonition became a driving force in the AACN Re-Envisioned Essentials.

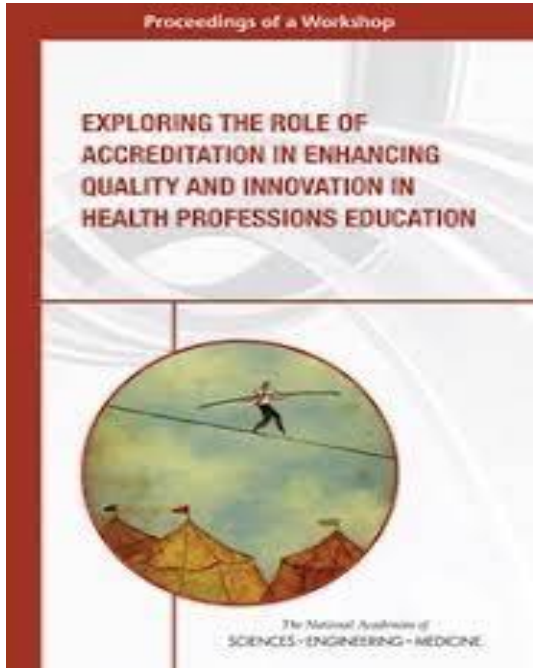
THE CYCLE



Practice Needs

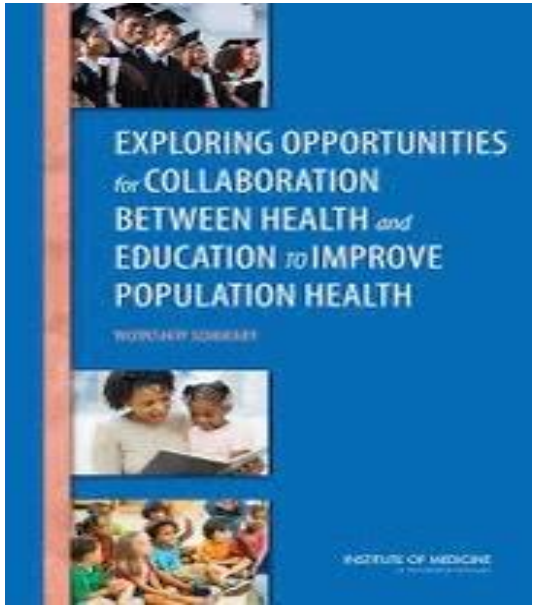
Competency Development





Curriculum Development

Accreditation/Certification/ Licensure



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AACN RE-ENVISIONED ESSENTIALS

- Foundational Elements – The Essentials: Core Competencies for Professional Nursing Education
  - Nursing is a discipline
  - Advancing the discipline of nursing
  - The value of a liberal education
  - Competency based education
- 21st Century Nursing Education
  - Diversity, Equity, Inclusion
  - Four spheres of care
  - Informatics and Technology
  - Engagement and Experience
  - Academic Practice Partnerships
  - Career Long Learning

AACN COMPETENCY DOMAINS

- Knowledge for Nursing Practice
- Person Centered Care
- Population Health
- Scholarship for Nursing Practice
- Quality and Safety
- Interprofessional Partnerships
- Systems Based Care
- Information and Healthcare Technology
- Professionalism
- Personal, Professional, and Leadership Development

THE NEED – ALL PRACTICING NURSES

1. HIMSS TIGER EU/US INTERNATIONAL WORK PROJECT SURVEY 2017 IDENTIFIED MAJOR GAPS (https://www.himss.org/tiger-initiative-international-competency-synthesis-project)
    - ✓ Lack of knowledge and skills in providers
    - ✓ Lack of knowledge and skills in faculty and facility educators
    - ✓ Lack of availability of training
    - ✓ Poor quality of training available
2. Practice partners voice concerns to AACN Task Force Re-Envisioned Essentials (https://www.aacnnursing.org/About-AACN/AACN-Governance/Committees-and-Task-Forces/Essentials)
3. National Academy of Medicine (2021) Future of Nursing: Leading Change Advancing Health (https://www.nap.edu/download/12956)
4. Self Assessments of Students (Choi & Zucker, 2013; Hussey et al, 2015; Godsey, 2015; Rahman, 2015; Shaffer & Bakken, 2015)

THE FUTURE OF NURSING 2020 TO 2030

- The Future of Nursing 2020-2030:Charting a Path to Achieve Health Equity

A Consensus Study from the National Academies of Sciences, Engineering and Medicine

1. Builds on 2011 foundational work.
2. Charts the path for the nursing profession to help our nation create a culture of health, reduce health disparities, and improve the health and well-being of the U.S. population in the 21st century.

https://nam.edu/publications/the-future-of-nursing-2020-2030/

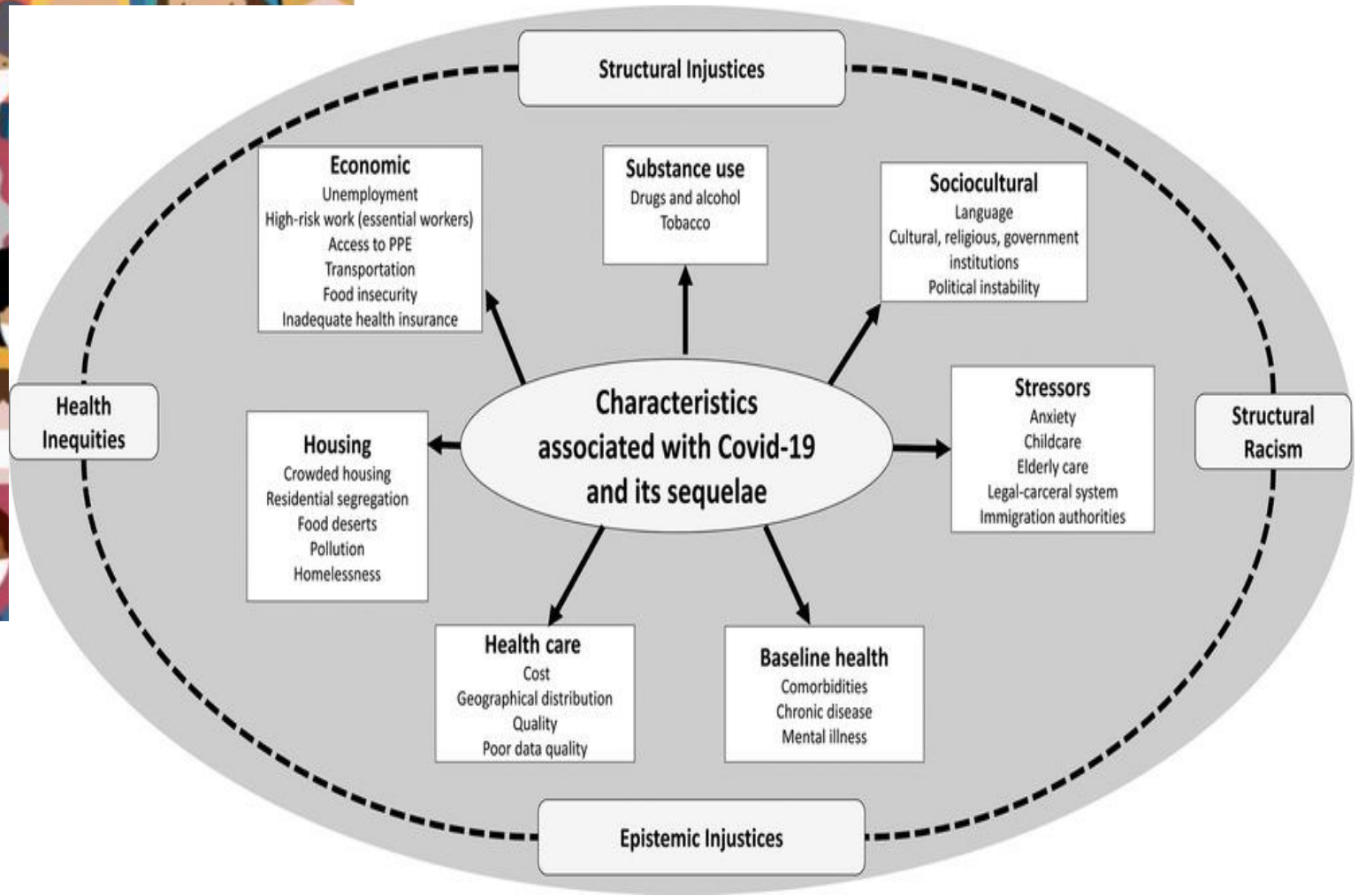
https://youtu.be/miqhzx0Qr9M

Released May 11, 2021

THE FUTURE OF NURSING 2020 TO 2030

1. The Future of Nursing Leading Change, Advancing Health (2021)
   - ✓Transforming Practice
   - ✓Transforming Education
   - ✓Transforming Leadership
   - ✓Meeting the Need for Better Data on the Health Care Workforce

THE NEED



Berger, De Jesus, Assoumou & Greenhalg, 2021

THE FUTURE OF NURSING 2020-2030

Statement of Task

The Robert Wood Johnson Foundation asked the National Academy of Medicine to chart a path for the nursing profession to create a culture of health, reduce health disparities, and improve the health and well-being of the nation by preparing an evidence-based and nonpartisan report to examine…

- The role of nurses in improving the health of individuals, families, and communities by addressing SDOH
- System facilitators and barriers to improving health and achieving a workforce that is diverse
- The training and competency-development skills needed to prepare nurses
- The role of the nursing profession in assuring voices of individuals, families, and communities are incorporated into design and operations of clinical and community health systems
- The importance of nurse well-being and resilience in ensuring the delivery of high-quality care and improving community health
- The role of nurses in response to emergencies due to natural & man-made disasters and the impact on health equity

THE FUTURE OF NURSING 2020-2030

The Challenge

Compared to other developed countries, the United States has the highest poverty rate, the greatest income inequality, and some of the poorest health outcomes. The COVID-19 pandemic did not create health inequities. But it has brought into stark relief that much of what affects our health is driven by many factors outside of medical care.

Factors like our race and ethnicity, income level, sexual orientation, and the conditions where we live predict whether we will suffer from preventable, costly medical conditions, live shorter lives, and have a fair and just opportunity to be as healthy as possible.

NATIONAL ACADEMY OF MEDICINE

The National Academies of
SCIENCES • ENGINEERING • MEDICINE

The Future of Nursing 2020–2030: Charting a Path to Achieve Health Equity

The Committee's Vision

THE FUTURE OF NURSING 2020-2030

THE FUTURE OF NURSING 2020-2030

NATIONAL ACADEMY OF MEDICINE

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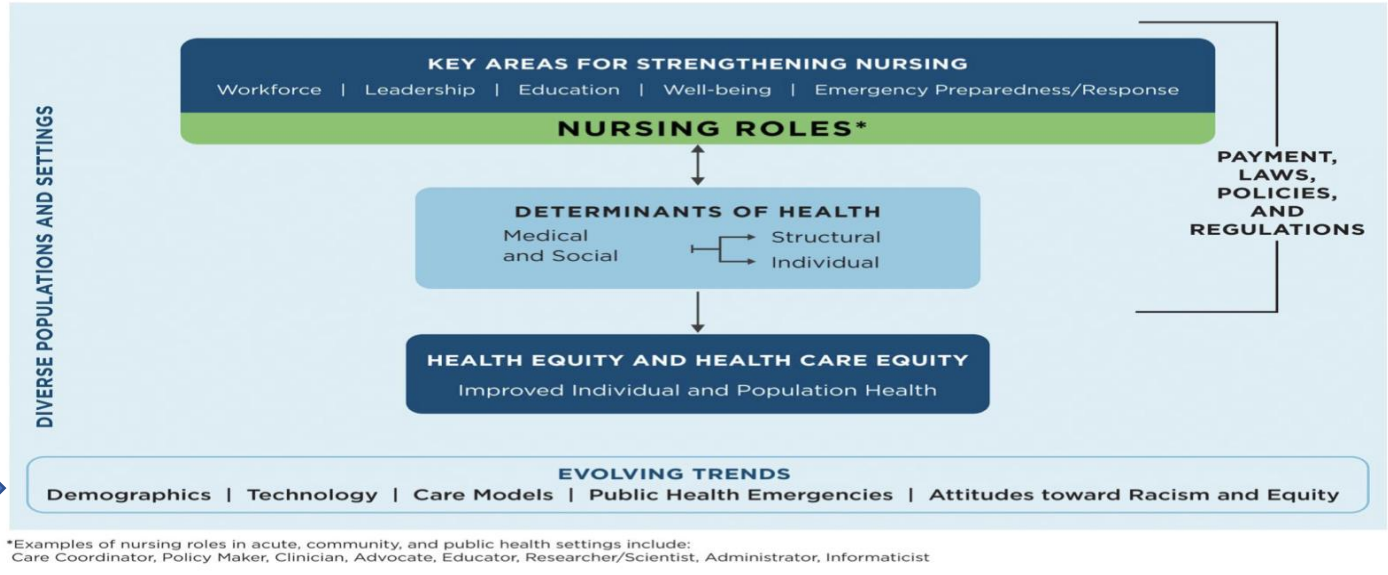
The Future of Nursing 2020–2030: Charting a Path to Achieve Health Equity

NURSE'S ROLE IN ADDRESSING HEALTH EQUITY AND HEALTH CARE EQUITY



*Examples of nursing roles in acute, community, and public health settings include:
Care Coordinator, Policy Maker, Clinician, Advocate, Educator, Researcher/Scientist, Administrator, Informaticist

NATIONAL ACADEMY OF MEDICINE

The National Academies of

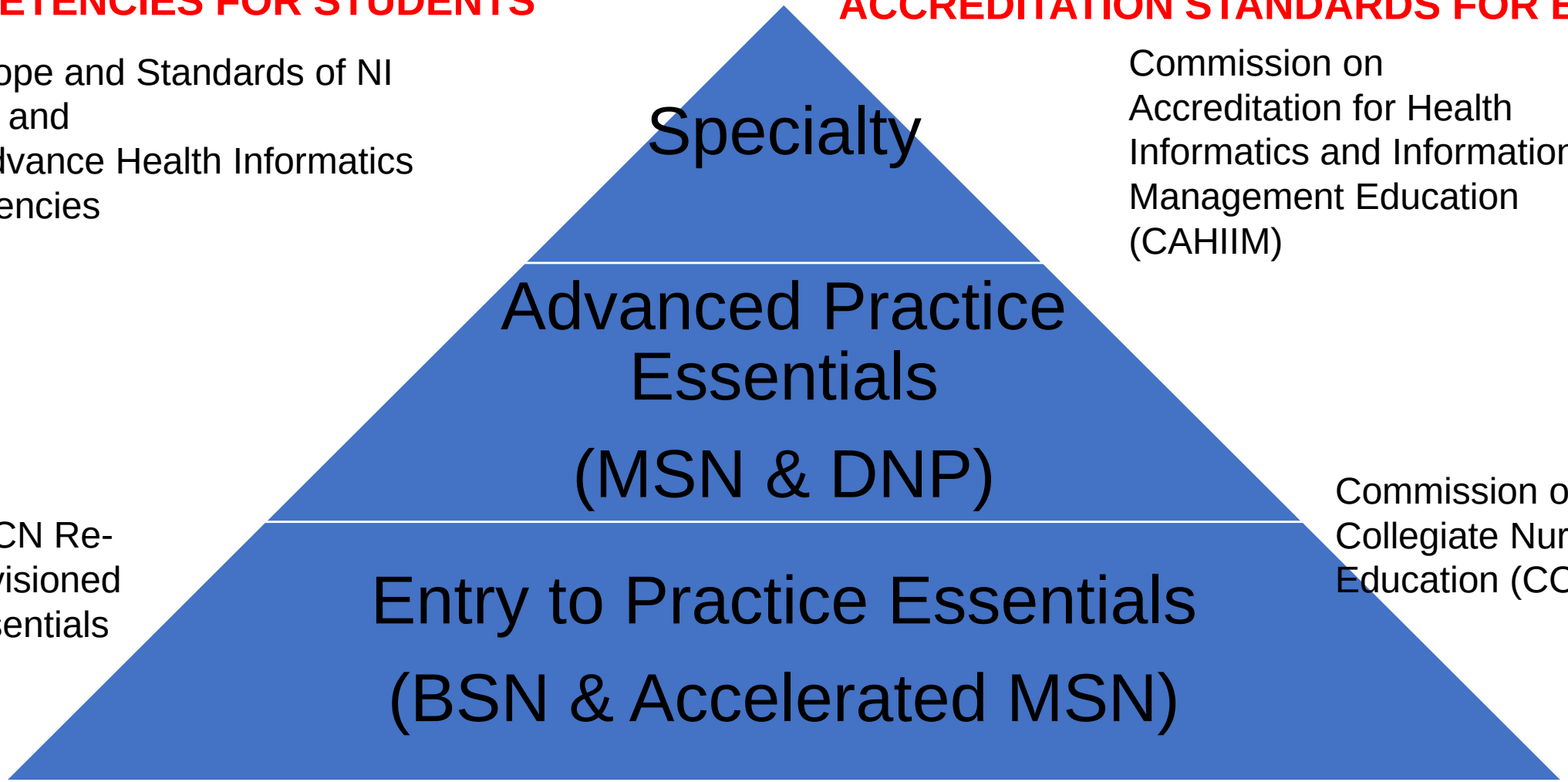
RELATIONSHIPS – COMPETENCIES, STANDARDS, ACCREDITATION, CERTIFICATION

COMPETENCIES FOR STUDENTS

ANA Scope and Standards of NI Practice and
AMIA Advance Health Informatics Competencies

ACCREDITATION STANDARDS FOR EDUCATION

Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM)



AACN Re-Envisioned Essentials

Commission on Collegiate Nursing Education (CCNE)

RELATIONSHIPS – COMPETENCIES, STANDARDS, ACCREDITATION, CERTIFICATION

LICENSING, CERTIFICATIONS

ANA Scope and Standards of NI Practice and AMIA Advance Health Informatics Competencies

Commission on Accreditation for Health Informatics and Information Management Education (CAHIIM)

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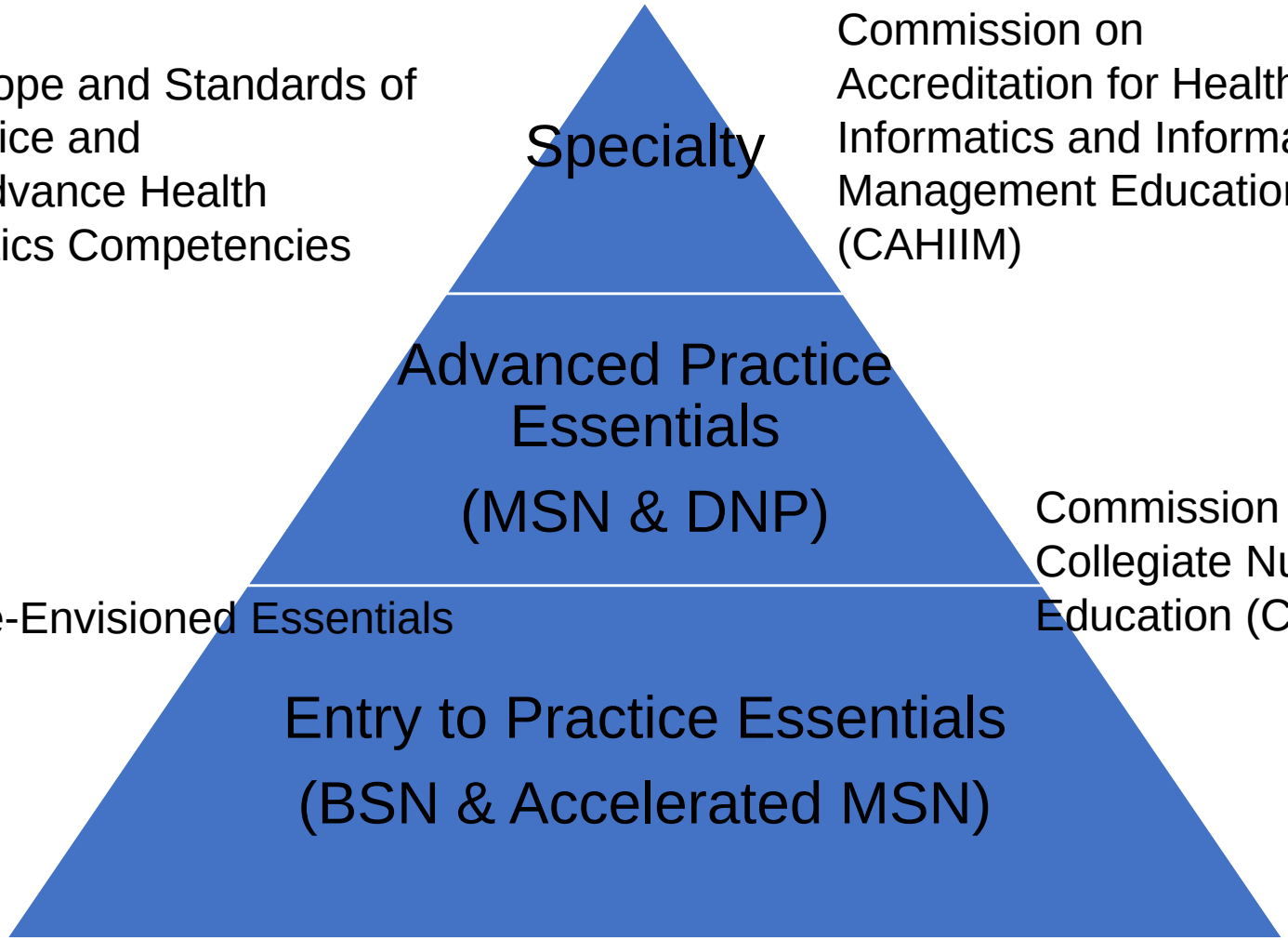

AACN Re-Envisioned Essentials

Commission on Collegiate Nursing Education (CCNE)

NCLEX for Entry to Practice
Advanced Practice
Licensures and Certificates

THE ESSENTIALS ARE FOR ALL NURSES

THE RE-ENVISIONED NURSING ESSENTIALS

- American Association of Colleges of Nursing (AACN)
  - Nursing Education for the 21st century must:
    - Diversity, Equity and Inclusion
    - Four Spheres of Care
      - Disease Prevention/Health Promotion
      - Chronic Disease Management
      - Regenerative or Restorative Care
      - Hospice, Palliative, and End of Life Care
    - Systems Base Practice
    - Informatics and Technology
    - Engagement and Experience
    - Academic/Practice Partnerships
    - Career Long Learning

Figure 2: Four Spheres of Care

THE RE-ENVISIONED NURSING ESSENTIALS

- Ten Domains
  - Knowledge for Nursing Practice
  - Person Centered Care
  - Population Health
  - Scholarship for Nursing Practice
  - Quality and Safety
  - Interprofessional Partnerships
  - Systems Based Care
  - Information and Healthcare Technology
  - Professionalism
  - Personal, Professional and Leadership Development

https://www.aacnnursing.org/Portals/42/AcademicNursing/pdf/Essentials-2021.pdf

THE RE-ENVISIONED NURSING ESSENTIALS

- Concepts for Nursing Practice (integrated within the Essentials)
  - Clinical Judgement (refers to the process by which nurses make decisions based on knowledge, critical thinking, and clinical ways/patterns of knowing?
  - Communication
  - Compassionate Care
  - Diversity, Equity, and Inclusion
  - Ethics
  - Evidence-Based Practice
  - Heath Policy
  - Social Determinants of Health

https://www.aacnnursing.org/Portals/42/AcademicNursing/pdf/Essentials-2021.pdf

THE RE-ENVISIONED NURSING ESSENTIALS

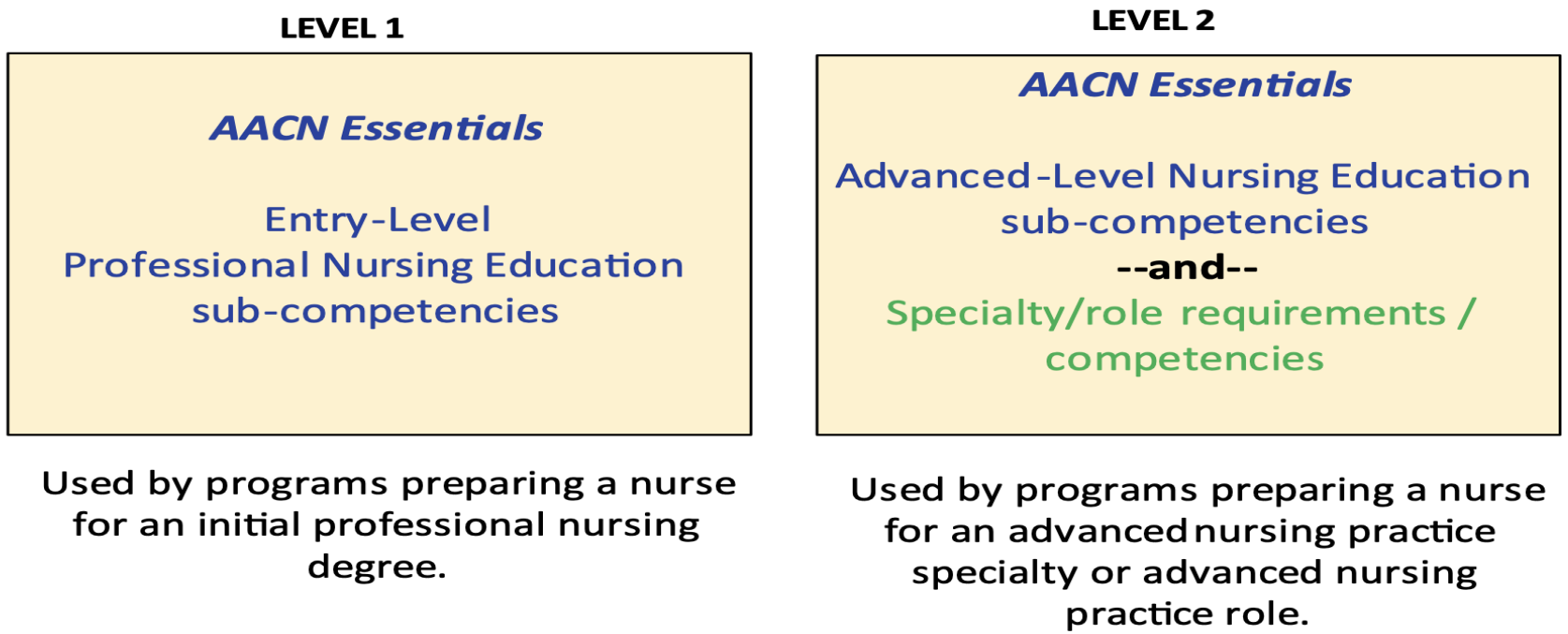

Figure 1: Model for Nursing Education

THE RE-ENVISIONED NURSING ESSENTIALS

- The Essentials – 2021
- **Domain 8: Informatics and Healthcare Technologies**
- **Descriptor:** Information and communication technologies and informatics processes are used to provide care, gather data, form information to drive decision making, and support professionals as they expand knowledge and wisdom for practice. Informatics processes and technologies are used to manage and improve the delivery of safe, high-quality, and efficient healthcare services in accordance with best practice and professional and regulatory standards.
- **Contextual Statement:** Healthcare professionals interact with patients, families, communities, and populations in technology-rich environments. Nurses, as essential members of the healthcare team, use information and communication technologies and informatics tools in their direct and indirect care roles. The technologies, the locations in which they are used, the users interacting with the technology, the communication occurring, and the work being done all impact the data collected, information formed, decisions made, and the knowledge generated. Additionally, the utilization of information and communication technologies in healthcare settings changes how people, processes, and policies interact. Using these tools in the provision of care has both short- and long-term consequences for the quality of care, efficiency of communications, and connections between team members, patients, and consumers. It is essential that nurses at all levels understand their role and the value of their input in health information technology analysis, planning, implementation, and evaluation. With the prevalence of patient-focused health information technologies, all nurses have a responsibility to advocate for equitable access and assist patients and consumers to optimally use these tools to engage in care, improve health, and manage health conditions.

DOMAIN 8 – COMPETENCIES/SUBCOMPETENCIES

Entry-Level Professional Nursing Education	Advanced-Level Nursing Education
8.1 Describe the various information and communication technology tools used in the care of patients, communities, and populations.	
8.1a Identify the variety of information and communication technologies used in care settings.	**8.1g Identify best evidence and practices for the application of information and communication technologies to supportcare.**
8.1b Identify the basic concepts of electronic health, mobile health, and telehealth systems for enabling patient care.	**8.1h Evaluate the unintended consequences of information and communication technologies on care processes, communications, and information flow across care settings.**
8.1c Effectively use electronic communication tools.	**8.1i Propose a plan to influence the selection and implementation of new information and communication technologies.**
8.1d Describe the appropriate use of multimedia applications in health care.	**8.1j Explore the fiscal impact of information and communication technologies on health care.**
8.1e Demonstrate best practice use of social networking applications.	**8.1k Identify the impact of information and communication technologies on workflow processes and healthcare outcomes.**
8.1f Explain the importance of nursing engagement in the planning and selection of healthcare technologies.	

DOMAIN 8 – COMPETENCIES/SUBCOMPETENCIES

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

8.2a Enter accurate data when chronicling care.

8.2b Explain how data entered on one patient impacts public and population health data.

8.2c Use appropriate data when planning care.

8.2d Demonstrate the appropriate use of health informationliteracy assessments and improvement strategies.

8.2e Describe the importance of standardized nursing data toreflect the unique contribution of nursing practice.

8.2f Generate information and knowledge from healthinformation technology databases.

8.2g Evaluate the use of communication technology toimprove consumer health information literacy.

8.2h Use standardized data to evaluate decision-making and outcomes across all systems levels.

8.2i Clarify how the collection of standardized data advances the practice, understanding, and value of nursing and supports care.

8.2j Interpret primary and secondary data and otherinformation to support care.

DOMAIN 8 – COMPETENCIES/SUBCOMPETENCIES

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

8.3a Demonstrate appropriate use of information and communication technologies.

8.3b Evaluate how decision support tools impact clinical judgment and safe patient care.

8.3c Use information and communication technology in a manner that supports the nurse-patient relationship.

8.3d Examine how emerging technologies influence healthcare delivery and clinical decision making.

8.3e Identify impact of information and communication technology on quality and safety of care.

8.3f Identify the importance of reporting system processes andfunctional issues (error messages, mis-directions, device malfunctions, etc.) according to organizational policies and procedures.

8.3g Evaluate the use of information and communication technology to address needs, gaps, and inefficiencies in care.

8.3h Formulate a plan to influence decision-making processesfor selecting, implementing, and evaluating support tools.

8.3i Appraise the role of information and communicationtechnologies in engaging the patient and supporting the nurse-patient relationship.

8.3j Evaluate the potential uses and impact of emerging technologies in health care.

8.3k Pose strategies to reduce inequities in digital access todata and information.

DOMAIN 8 – COMPETENCIES/SUBCOMPETENCIES

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

8.4a Explain the role of communication technology in enhancing clinical information flows.

8.4b Describe how information and communication technology tools support patient and team communications.

8.4c Identify the basic concepts of electronic health, mobile health, and telehealth systems in enabling patient care.

8.4d Explain the impact of health information exchange, interoperability, and integration on health care.

8.4e Assess best practices for the use of advanced information and communication technologies to supportpatient and team communications.

8.4f Employ electronic health, mobile health, and telehealth systems to enable quality, ethical, and efficient patient care.

8.4g Evaluate the impact of health information exchange, interoperability, and integration to support patient-centered care.

DOMAIN 8 – COMPETENCIES/SUBCOMPETENCIES

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

8.5a Identify common risks associated with using information and communication technology.

8.5b Demonstrate ethical use of social networking applications.

8.5c Comply with legal and regulatory requirements while usingcommunication and information technologies.

8.5d Educate patients on their rights to access, review, and correct personal data and medical records.

8.5e Discuss how clinical judgment and critical thinking must prevail in the presence of information and communication technologies.

8.5g Apply risk mitigation and security strategies to reduce misuse of information and communication technology.

8.5h Assess potential ethical and legal issues associated with the use of information and communication technology.

8.5i Recommend strategies to protect health information when using communication and information technology.

8.5j Promote patient engagement with their personal health data.

8.5k Advocate for policies and regulations that support the appropriate use of technologies impacting health care.

INTERNAL AND EXTERNAL SHAPE THE SPECIALTIES

EXAMPLE OF A DRIVER

SDOH AND HEALTH EQUITY

1. Social determinants of health (SDOH) are the nonmedical factors that influence health. They are the conditions in which people are born, grow, work, live, and age along with the wider set of forces and systems shaping the conditions of daily life. (WHO, 2021)

2. SDOH factors have an important influence on health inequality. (WHO, 2021)

3. Assessing, addressing, and evaluating the impact of managing SDOH directly impacts health inequity

EXAMPLES: SDOH THAT IMPACT EQUITY

- Income and social protection
- Education
- Unemployment and job insecurity
- Working life conditions
- Food insecurity
- Housing, basic amenities and the environment
- Early childhood development
- Social inclusion and non-discrimination
- Structural conflict
- Access to affordable health services of decent quality.

(WHO, 2021)

POLICY DRIVERS

- Medical care is estimated to account for only 10-20% of modifiable contributors to health outcomes. (Hood, Gennuso. Swain & Catlin, 2016)
- The National Academy of Medicine offers that the US spends a higher percentage of GDP on medical care than other developed countries. Many developed countries spend more on social services than the US. (Magnan, 2017)
- US outcomes are among the lowest for developed countries, including significant inequities. Addressing the more upstream SDOH will improve health outcomes, reduce inequities, and lower costs. (Magnan, 2017)

POLICIES

- SDOH and health inequity is influenced by policies, systems, and environments.
  - Data and Information Standardization and Use
    - Interoperability Standards Advisory (ISA) a resource under the Office of the National Coordinator coordinates, identifies, assesses recognized interoperability standards and implementation specifications.
    - 21st Century Cures Act driving interoperability, information blocking, Health IT Certification
  - Value based payment models pushing payment for outcomes
    - Alternative payment models
    - Accountable Care Organizations
    - Patient Centered Medical Homes
    - Medicare Shared Savings

THE ESSENTIALS IMPACT THE SPECIALTIES

THE NEED – INFORMATICS NURSES

Informatics Specialty COMPETENCIES

1. American Nurses Association Scope and Standards of Nursing Informatics Practice (third revision)

2. American Medical Informatics Association Advanced Health Informatics Competencies. (https://www.amia.org/amia-health-informatics-certification)

    Accreditation of heath informatics graduate programs by CAHIIM comes from AMIA AHIC competencies and that is at the master's level.

ANA SCOPE AND STANDARDS OF NURSING INFORMATICS PRACTICE, 3RD ED

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NURSING INFORMATICS AS A SPECIALTY

- **Revised Definition of Nursing Informatics**
- *Nursing informatics* is the specialty that supports nurses, patients, healthcare consumers, and other stakeholders in their decision-making to achieve desired outcomes through the identification, management, and communication of data, information, knowledge, and wisdom via the use of information structures, processes, and technologies.
  - American Nurses Association (2021)

NURSING INFORMATICS AS A SPECIALTY

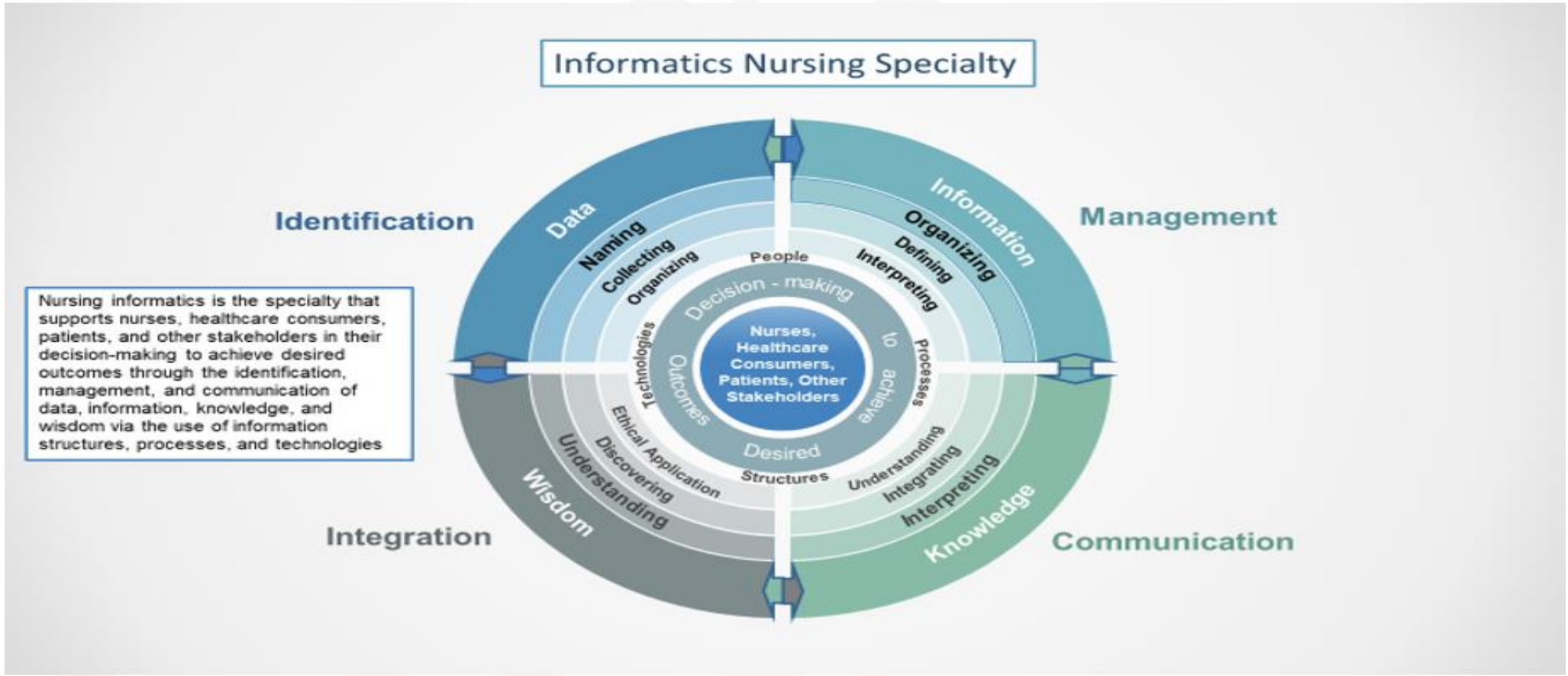


Figure 1. Informatics Nursing Specialty Components and Relationships

NURSING INFORMATICS AS A SPECIALTY

- **A long history**
  - First graduate program in nursing informatics established in 1988 at University of Maryland School of Nursing followed by University of Utah
  - ANA recognizes nursing informatics as a specialty in 1992
  - First certification program for nursing informatics established in 1992 for the US.
  - First ANA Scope and Standards of Nursing Informatics Practice in1995

WHY NURSING INFORMATICS?

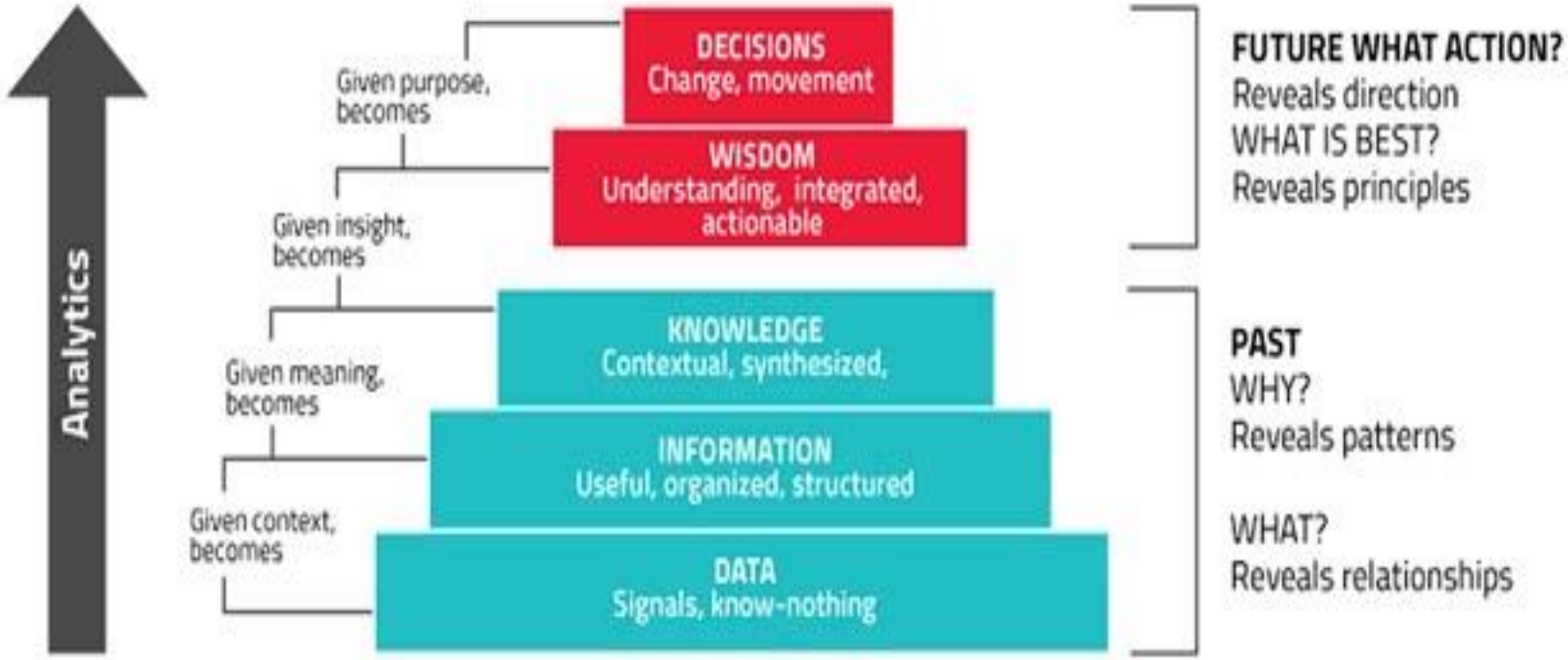
- Health informatics is a broad multidisciplinary field encompassing everything from data analysis in health insurance to IT in medical practice management.
- Health informatics graduate students can come from any health profession or no health profession.
- Nursing informatics is part of clinical informatics, a subspecialty of health informatics
- Nursing informatics is a subdiscipline of informatics that deals exclusively nursing care and operations data. Nurse informaticists are clinicians first and information managers second.

IMPORTANCE OF NURSING INFORMATICS

- Nurses are most often the biggest workforce in healthcare.
- Nurse use technology 24 hours a day 7 days a week.
- Nursing care make a difference to patient, population, and community health.
- Nurse informaticians understand:
  - Optimized clinical workflows for this workforce
  - Achievement of operational efficiencies
  - The complex communication needs
  - The need to provide quality care

NURSING INFORMATICS AS A SPECIALTY

- Guided by DIKW model



NURSING INFORMATICS VALUE

- Unique combination of nursing and informatics profession and practice in a rapidly evolving landscape
- Expert understanding of nursing and health care delivery and operations
- Data, information, knowledge management for individuals, groups, communities, and populations
- Executive informatics leadership during accelerated digital age
- Health policy influence
- Integration of sociotechnical approaches with science of quality and safety
- Learning across the spectrum of healthcare systems

PRACTICE AREAS FOR NURSE INFORMATICIANS

- Management, Administration, and Leadership
- Clinical Informatics
- Data Management and Analytics
- Patient Safety and Quality
- Research and Evaluation
- Compliance and Integrity Management
- Coordination, Consultation, Facilitation, and Integration

HIMSS 2020 NURSING INFORMATICS WORKFORCE SURVEY

- Nurse Informaticists have a key role in healthcare
- Driving force behind development, implementation, optimization of digital systems.
- 68% of the 1359 respondents work for a hospital or health system.
- 53% work at a Magnet designated hospitals.
- 41% work in a HIMSS EMRAN Stage 6/7 facility
- 6% work in an ambulatory setting.
- 66% hold graduate degrees.
    - https://www.himss.org/resources/himss-nursing-informatics-workforce-survey

INTERNATIONAL NURSING INFORMATICS ORGANIZATIONS

Australia Nursing Informatics Australia (NIA) https://digitalhealth.org.au/communities-of-practice/nursing-and-midwifery/
Canada Canadian Nursing Informatics Association (CNIA) https://cnia.ca/
England https://www.himss-uk.org/himss-nursing-midwifery-informatics-england-network
Ireland Health Informatics Society of Ireland - Nurses & Midwives Group http://www.hisinm.ie/
Korea Nursing Informatics Special Interest Group of Korean Society of Medical Informatics http://www.kosmi.org
New Zealand Nursing Informatics New Zealand Incorporated (NINZ) http://www.hinz.org.nz/
Singapore Singapore Nurses Association – Nursing Informatics Chapter https://www.sna.org.sg/nursing-informatics-chapter/
Taiwan Taiwan Nursing Informatics Assocation http://www.ni.org.tw
U.S.A Alliance for Nursing Informatics (ANI) www.allianceni.org
Nursing Informatics work group of Healthcare Information and Management Systems (HIMSS) https://www.himss.org/membership-participation/nursing-informatics-community
HIMSS International Council of Nurses https://www.himss.org/icn
Nursing Informatics Working Group of the American Medical Informatics Association (AMIA) https://www.amia.org/programs/working-groups/nursing-informatics
American Nursing Informatics Association (ANIA) https://www.ania.org/
The Nursing Informatics Special Interest Group of the International Medical Informatics Association (IMIA) https://imia-medinfo.org/wp/sig-ni-nursing-informatics/

HIMSS INTERNATIONAL AND INTERPROFESSIONAL INFORMATICS COMPETENCY WORK

UAB SCHOOL OF NURSING
The University of Alabama at Birmingham

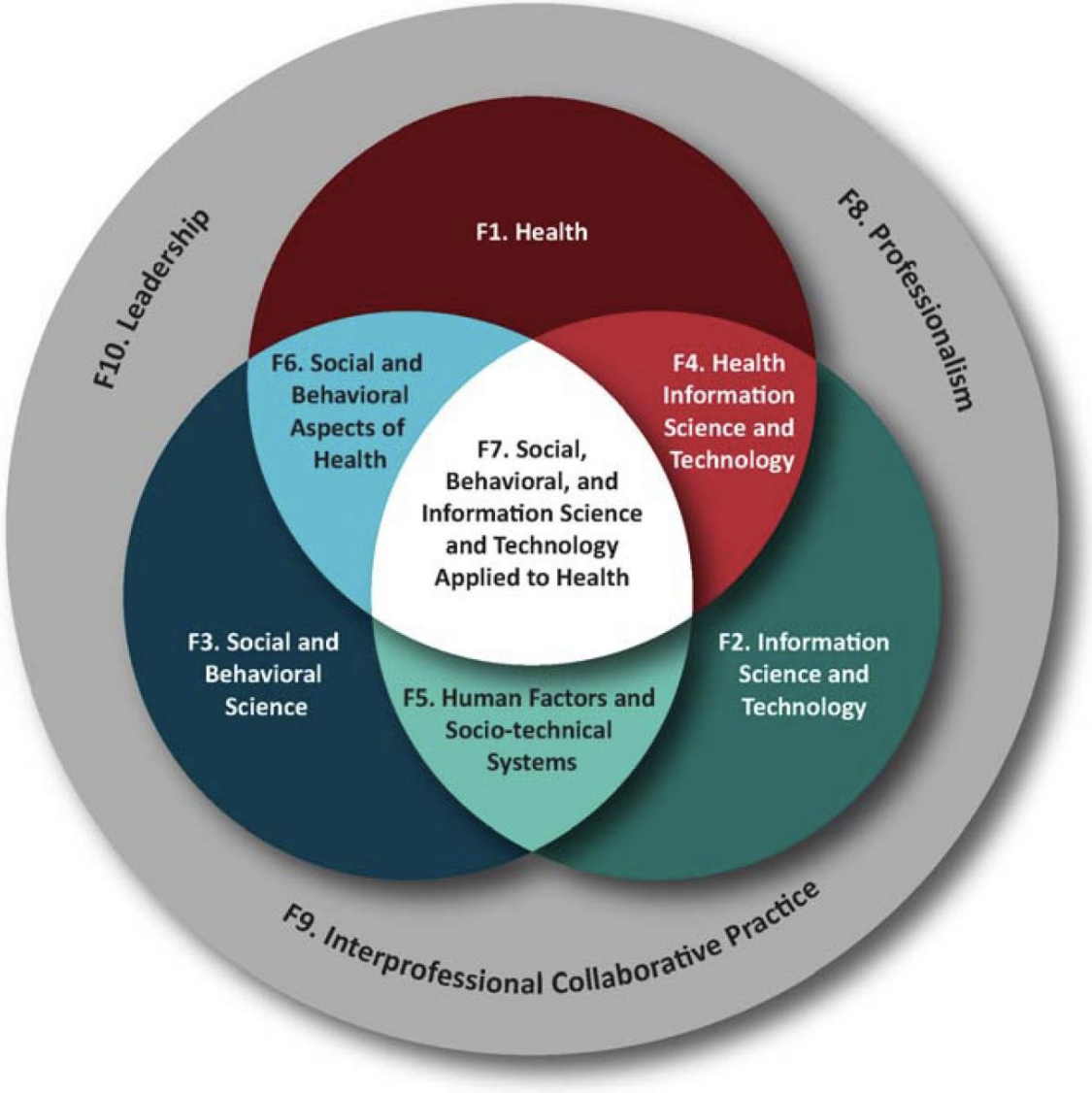
HIMSS TIGER INTERNATIONAL WORK

- 2016 EU US eHealth Work Project
- 2019 HIMSS TIGER International Task Force
- 2020 HIMSS EU Beyo9nd Recognition
- Farzandipour, Mohammadian, Akbari, Safari, & Jabali. (2020). Self Assessment of Nursing Informatics Competencies in Hospitals. OnLine Journal in Nursing Informatics

AMIA AHIC

UAB SCHOOL OF NURSING
The University of Alabama at Birmingham

AMIA DOMAIN MODEL FOR INFORMATICS



EACH AHIC DOMAIN

- Incorporates a statement on
  - Knowledge
  - Skills
  - Attitudes/Abilities

AMIA AHIC COMPETENCIES

- F1 Health
  - Describe the history, goals, methods (including data and information used and produced), and current challenges of the major health science fields. These include biology, genomics, clinical and translational science, healthcare delivery, personal health, and population health.
- F2 Information Science and Technology
  - Identify the applicable information science and technology concepts, methods, and tools, which may be dependent upon the application area of the training program, to solve health informatics problems. These include the concepts, methods, and tools related to managing data, information, and knowledge, the basic information and computer science terms and concepts, the principles of information security, as well as the methods of assessing users' information needs
- F3 Social and Behavioral Science
  - Identify the effects of social, behavioral, legal, psychological, management, cognitive, and economic theories, methods, and models applicable to health informatics from multiple levels including individual, social group, and society.

AMIA AHIC COMPETENCIES

- F4 Health Information Science and Technology
  - Identify possible biomedical and health information science and technology methods and tools for solving a specific biomedical and health information problem. Core health information technology tools may be dependent upon the application area of the training program.
- F5 Human Factors and SocioTechnical Systems
  - Draw on socio-technical knowledge regarding the social behavioral sciences and human factors engineering to apply to the design and implementation of information systems and technology
- F6 Social and Behavioral Aspects of Health
  - Identify theories or models that explain and modify patient or population behaviors related to health and health outcomes.

AMIA AHIC COMPETENCIES

- F7 Social, Behavioral, and Information Science and Technology Applied to Health
  - Identify and integrate the theories, models, and tools from social, business, human factors, behavioral, and information sciences and technologies for designing, implementing, and evaluating health informatics solutions. Theories, models, and tools may be dependent upon the application area of the training program.
- F8 Professionalism
  - Define and discuss ethical principles and the informatician's responsibility to the profession, their employers, and ultimately to the stakeholders of the informatics solutions they create and maintain.

- Interprofessional Collaborative Practice
  - Define and discuss the scope of practice and roles of different health professionals and stakeholders including patients, as well as the principles of team science and team dynamics to solve complex health and health information problems. Apply team building skills and principles.
- Leadership
  - Articulate the methods, concepts, tools, and characteristics of leading and leadership. Employ leadership and followership methods, concepts, and tools to motivate others toward accomplishing a health informatics vision.

ISSUES FOR INFORMATICS

- Professional development for the current workforce.
- Professional development for the faculty.
- Expert consult on assisting with curriculum change.
- Appropriate clinical experiences.
- Healthcare systems who will hire those with the competency.
- Designated roles for competent nurses in both population health and informatics.
- Programs that allow the competent nurse to practice to the full extent of their training and skill set.

WHAT IS MAGNET STATUS FOR HOSPITALS?

- Magnet Status is granted by the American Nurses Credentialing Corporation (ANCC).
- Provided to hospitals with:
  - High levels of nursing care
  - Excellent patient outcomes
  - A positive practice environment for nurses
  - High job satisfaction and low nurse turnover
  - Nursing involvement in data collection, EBP, and engagement
    - About Magnet ANCC https://www.nursingworld.org/organizational-programs/magnet/about-magnet/
    - About Magnet International https://www.nursingworld.org/organizational-programs/magnet/international/

WHAT IS HIMSS EMRAM?

- EMRAM – Electronic Medical Record Adoption Model
  - https://www.himssanalytics.org/emram
  - As of November 2020, only 6 organizations worldwide achieved the highest level 7 https://www.healthcarefinancenews.com/news/himss-stage-7-explained-only-five-organizations-worldwide-have-achieved-status

STAGE	HIMSS Analytics® EMRAM EMR Adoption Model Cumulative Capabilities
7	Complete EMR; External HIE; Data Analytics, Governance, Disaster Recovery, Privacy and Security
6	Technology Enabled Medication, Blood Products, and Human Milk Administration; Risk Reporting; Full CDS
5	Physician documentation using structured templates; Intrusion/Device Protection
4	CPOE with CDS; Nursing and Allied Health Documentation; Basic Business Continuity
3	Nursing and Allied Health Documentation; eMAR; Role-Based Security
2	CDR; Internal Interoperability: Basic Security
1	Ancillaries - Laboratory, Pharmacy, and Radiology/Cardiology information systems; PACS; Digital non-DICOM image management
0	All three ancillaries not installed

RESOURCES TO ASSIST

- Bold Action Taken to Transform Nursing Education and Strengthen the Nation's Healthcare Workforce
  - https://www.aacnnursing.org/News-Information/Press-Releases/View/ArticleId/24807/AACN-Approves-New-Essentials
- HIMSS TIGER and the Informatics Educator Resources Network
  - https://www.himss.org/resources/education-competency-recommendations-global-health-informatics
  - https://www.himss.org/tiger-virtual-learning-environment

RESOURCES TO ASSIST

- Nursing Knowledge Big Data Science
  - https://www.nursing.umn.edu/2021-nursing-knowledge-big-data-science-conference