มหาวิทยาลัยราชภัฏนครปฐม
Nakhon Pathom Rajabhat University

Topic 1
Introduction and concepts of Digital Technology and Nursing Information

Natthaya Cherngchalard Chooprom (RN, MNS)

Faculty of Nursing, NPRU

Learning objectives

1. Define nursing informatics (NI) and key terminology

2. Explore NI metastructures, concepts and tools

Important questions to answer after class

👩‍⚕️ What is Nursing Informatics (NI) Definition?

👩‍⚕️ Please list three driving forces that influenced the development of a skilled nursing workforce for 2022 and beyond.

👩‍⚕️ Please give two examples of basic guiding principles of NI that all nurses need to know.

👩‍⚕️ What are the competencies related to NI?

👩‍⚕️ Discuss in your group: **Areas in clinical practice where he or she will apply NI**.

What do you see from these pictures?

Credit: https://www.hfocus.org/sites/default/files/picture_cover/20-8-2559_10-25-18_0.jpg

Why healthcare or nurse isn't Like Any Others ?

Life–or–Death

Fragmented, poorly-coordinated systems

Difficult to automate human decisions

Large, ever-growing & changing body of knowledge

High volume <<<>>> Low resources <<<>>> Little time

Why do we need ICT & Informatic in Healthcare?

1: Because information is everywhere in healthcare

2: Because healthcare is error-prone and technology can help

3: Because access to high-quality patient information improves care

4: Because healthcare at all levels is fragmented & in need of process improvement

Medical Informatics

Health Informatics

Nursing Informatics

Credit:
https://www.thebangkokinsight.com/news/
business/67594/

Credit: https://obs.line-scdn.net

Discuss:
Why nurses need to develop NI skills?

What is Nursing Informatics Definition?
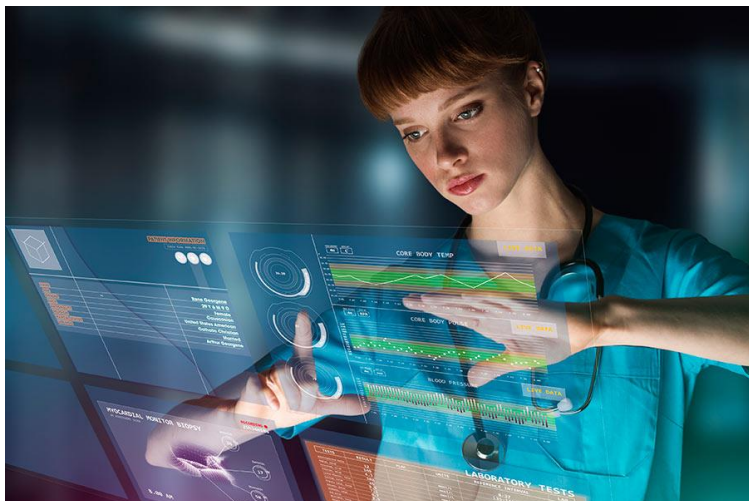
Nursing informatics is the specialty that integrates **nursing science**, **computer science**, **and information science** in identifying, collecting, processing, and managing data and information to support nursing practice, administration, education, research, and expansion of nursing knowledge. (ANA,1994)

"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, 2015)
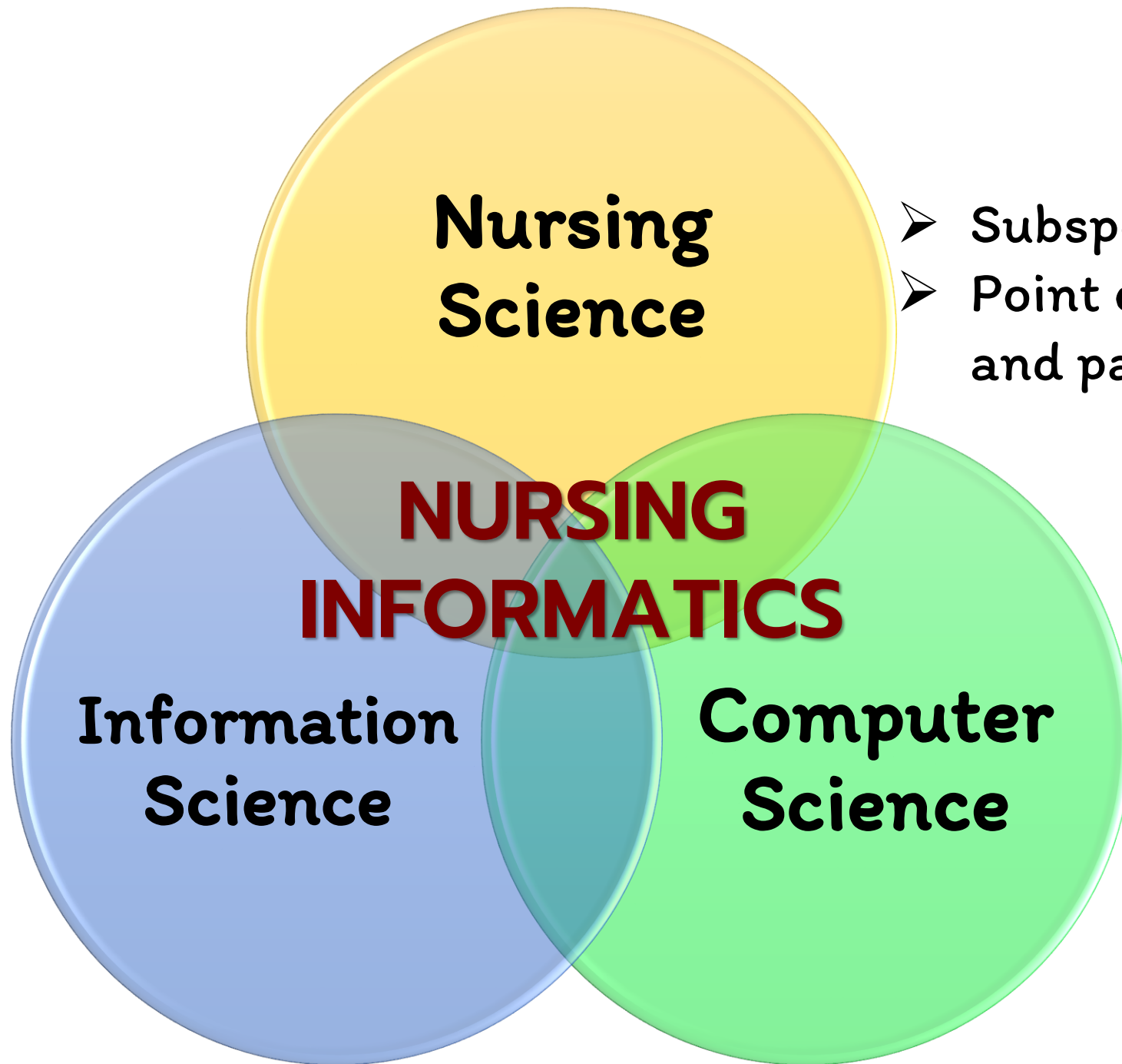
ICT

- **Information and**
- **Communication**
- **Technology**

Health ➡️ **Goal**

Information ➡️ **Value**

Technology ➡️ **Add Tools**

Credit:
https://scontent.fkdt2-1.fna.fbcdn.net/v/t1.64
35-9/=622A58A2

Nursing Science

Information Science

Computer Science

NURSING INFORMATICS

Components of ICT

The term information and communications technology (ICT) is generally accepted to mean all technologies that, combined, allow people and organizations to interact in the digital world.

CLOUD COMPUTING

SOFTWARE

INTERNET ACCESS

HARDWARE

DATA

TRANSACTIONS

COMMUNICATIONS TECHNOLOGY

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ราชภัฏนครปฐม
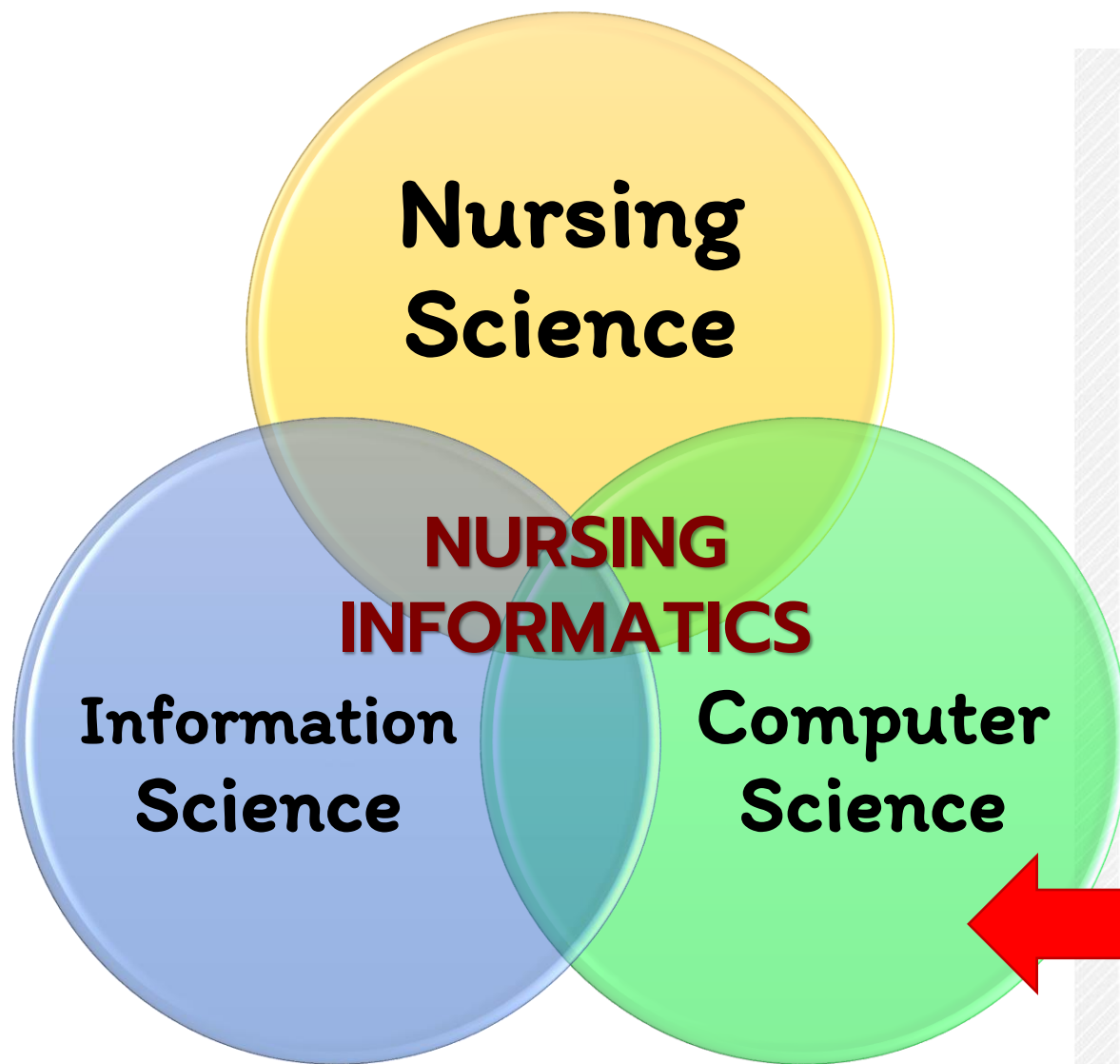
Advantages	Disadvantages
One nurse can interact with patients remotely.	Dehumanization of healthcare delivery.
One nurse can manage a larger caseload through remote monitoring.	Reduction of "traditional" services may not be acceptable to all.
Improved information sharing.	Challenge of controlling virtual information.
Reduced cross-infection and other patient 'costs'.	Formulaic approach may constrain practice and inhibit professional judgment.
Less travel time and other health care costs.	Significant investment will be needed to ensure all practitioners are "masters" of ICT.
Doctors and nurses can hold joint remote consultations with the patient and their family.	Patient expectations may be unattainable / unmet.
Timely enhancements of patient self-care.	Reinforcement of the "digital" divide.
Virtual titration of medication and virtual prescription changes.	Compatibility issues across different ICT systems.
Efficient signposting to other services to maximize health resources.	Failure of ICT at any time will undermine healthcare system.

The Impact of Information and Communication Technology on Doctors' and Registered Nurses' Working Conditions and Clinical Work – A Cross-Sectional Study in a Norwegian Hospital

Jörg W Kirchhoff [1]
Abigail Marks [2]
Ann Karin Helgesen [1]
Kirsti Lauvli Andersen [1]
Hilde Marie Andreassen [1]
Vigdis Abrahamsen Grøndahl [1]

[1] Faculty of Health, Welfare and Organisation, Østfold University College, Halden, Norway; [2] Author Affiliations Newcastle University Business School, Newcastle University, Newcastle Upon Tyne, UK

Purpose: Previous studies indicate that the introduction of information and communication technology (ICT) in health care organizations impairs health care professional's working conditions and diminishes job discretion. Most of these studies, however, were designed to explore the influence of ICT exclusively on a single group of health care professionals and thereby did not consider the influence of the same technology on other groups of health care professionals. The aim of this article is to explore the influence of a fully integrated ICT system on both doctors and registered nurses within the same working environment: a high-tech hospital.

Methods: This is a cross-sectional study conducted in a high-tech Norwegian hospital. Data were collected in 2016. In total, 264 registered nurses and 172 doctors responded to a questionnaire on their working conditions and experiences with ICT in clinical work. Descriptive statistics compare means, cross-tables, Chi-square and bivariate correlation

Core Areas of Nursing Informatics

- Standards to support evidence-based practice, research, and education

- Data and communication standards

- Research

- Information presentation and retrieval to support safe patient centered care

- ICT to address inter-professional workflow needs across care

- Development, design, and implementation of ICT

- Healthcare policy to advance the public's health

Credit: AMIA Nursing Informatics Working Group

Examples of using NI & ICT in nursing

Assessment

- Remote signposting including contact with health care professionals or other agencies
- Telephone triage
- Telemonitoring
- Internet self-assessment
- Portable mHealth
- Mobile apps for clinical monitoring

Service organisation

- Electronic health records / electronic patient records (EHR/EPR)
- Care pathway management
- Care system governance (audits etc)
- Professional clinical networks (discussion boards etc.)
- e- CPD for professionals.

Health promotion

- Telephone, text, email intervention / prompts
- Health portals delivering personalized health promotion
- Webcasts and podcasts interventions

Clinical Intervention

- Remote consultations (may include MDT)
- Remote titration of therapy including prescriptions where needed
- Remote psychological therapies eg motivational interviewing, CBT
- Remote carer support

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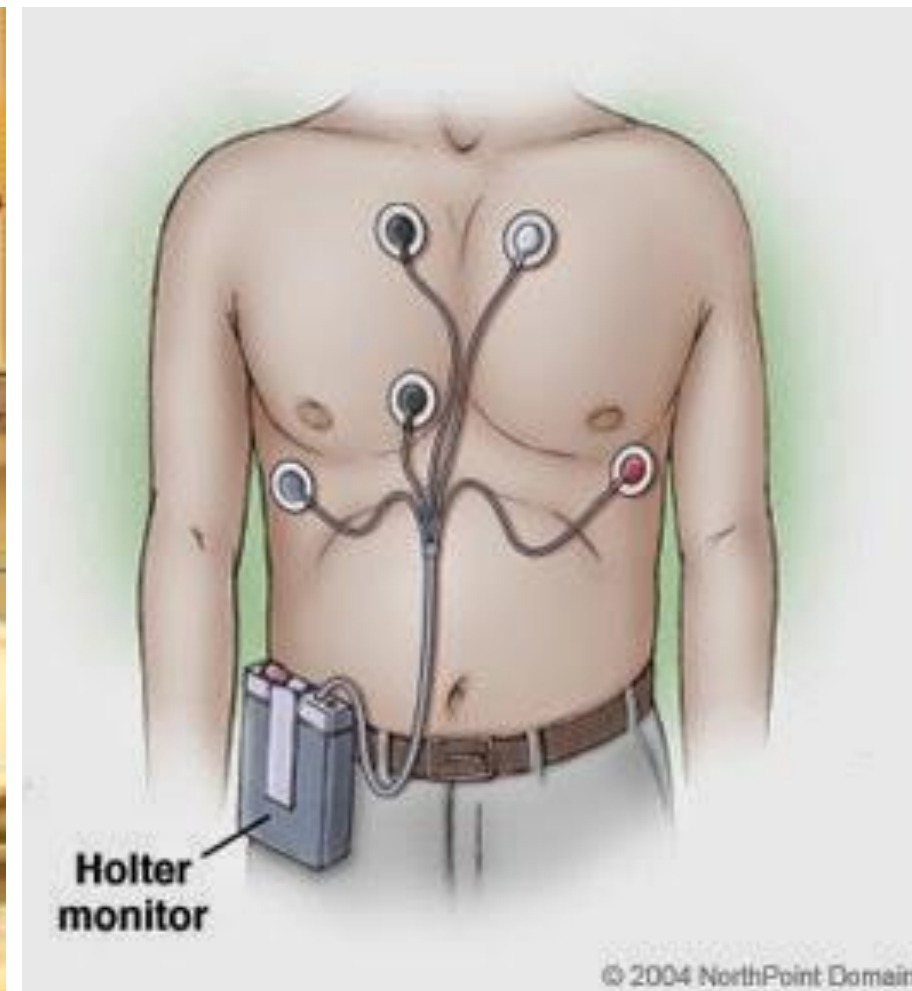
Benefits of Digital Technology and Nursing Information

🩹 Access to information

🩹 Communication within health care

🩹 Quality of nursing practice, management, education and research

🩹 Cost effectiveness and efficiency in health care

🩹 Improve the health of society

Driving Forces and the Evolution of Nursing Informatics

Florence Nightingale pioneered the use of applied statistics to develop policy and developed novel ways of displaying them.

1950s Computers were used in the health care for automation of the financial and accounting functions.

1960s Some health care institutions begin to include patient care applications in their computer systems (Saba, Johnson, & Simpson, 1994).

1965s Work begins on Systematized Nomenclature of Pathology (SNOP) by the American College of Pathology to systematize the language of pathology.

Driving Forces and the Evolution of Nursing Informatics

1969 An ambulatory care system, Computer Stored Ambulatory Record (COSTAR) system is developed. Patient care data was computerized to meet providers' medical, financial, and administrative needs

1970s Development of the PRoblem Oriented Medical Information System. It was the first attempt to provide a total, integrated system that included all aspects of health care including patient treatment.

1986 ANA House of Delegates adopts a resolution identifying the need for nurses to use information systems to collect essential data for clinical practice, management of nursing care and nursing resources, education, administration, and research

1990 required information on nursing Become part of the Hospital Information System (HIS)

1992 ANA establishes nursing informatics as a nursing specialty
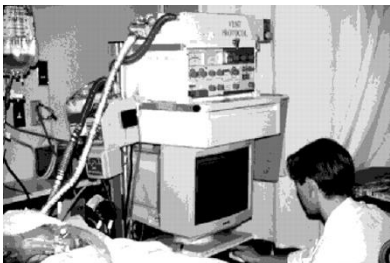
Driving Forces and the Evolution of Nursing Informatics

2005 Health Information Technology Standards Panel (HITSP) is established. They are responsible for designating standards that will be used in the structure and transmission of healthcare information, standards that will affect how nursing and others document care, including the nursing and other healthcare terminologies that will be acceptable

2008, both the American Association of Colleges of Nursing (AACN) and the National League of Nursing (NLN) emphasized that knowledge and skills in information management and patient care technology (informatics) are critical components in nursing education and accreditation.

The nursing workforce of 2020 will primarily be technology based, requiring high-tech informatics skills.

Evolution of Nursing Informatics in Thailand 🇹🇭

1987-1991, used technology to develop health information work by providing a small computer (Micro computer) using a LAN (Local Area Network) system in the hospital

1991 The International Council of Nurses (ICN) pushes for the development of a nursing record system.

1998-2001 The development of a nursing database program by the Nursing Association of Thailand and the Office of Nursing, Ministry of Public Health

2003 Public Health Information System Policy Ministry of Health Assign offices and locations Public health services at all levels developed to have a database in operational level

Scope and roles of informatic nurses

Nursing Informatic Roles

- Informatic education for nurses
- Executive Nursing Informatics roles
- Strong nursing presence informatics team
- Champion data quality & interoperability
- Information system governance
- Standards of practice
- Nurse informaticians engaged in strategy
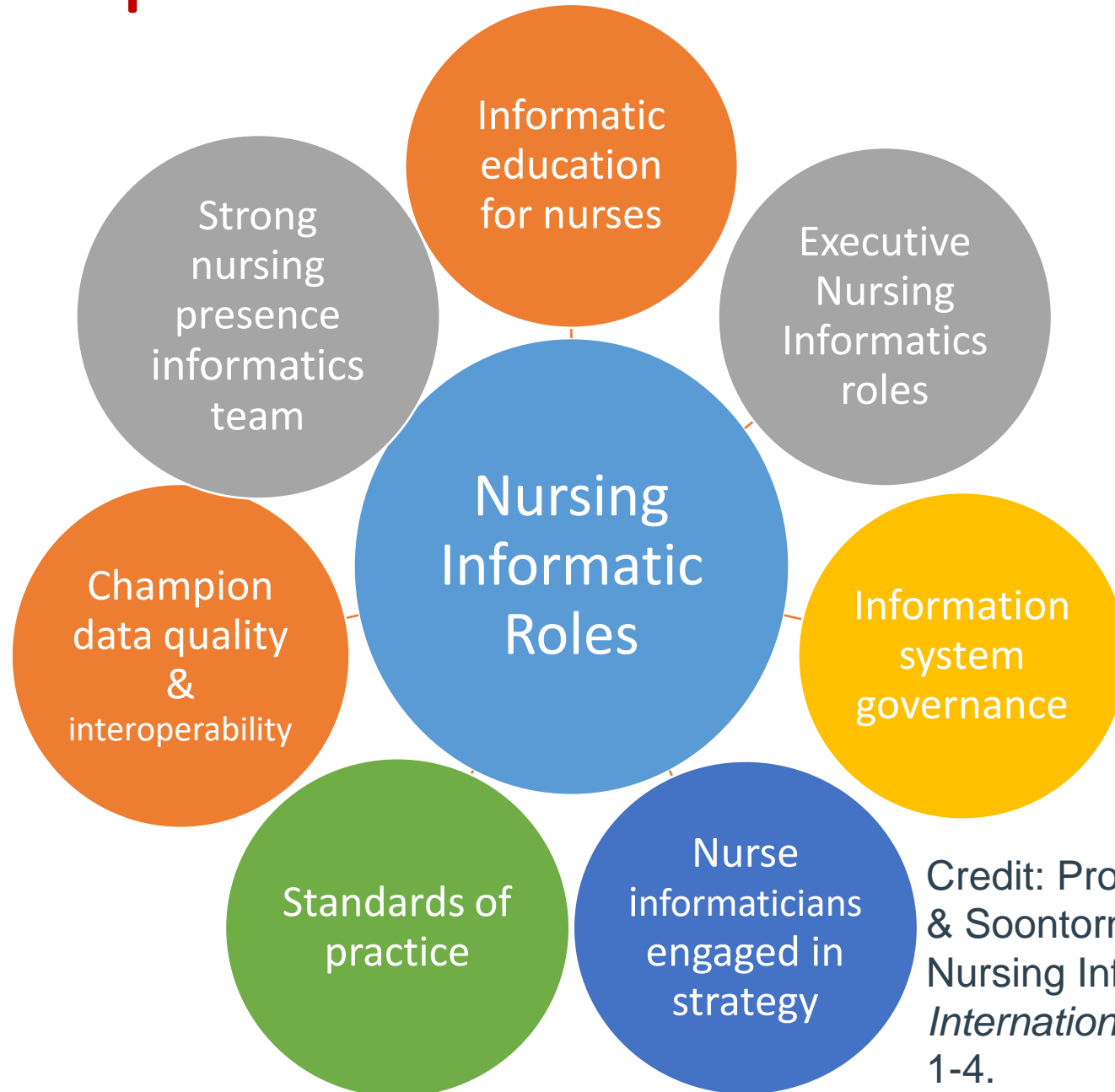
Credit: Pronsawatchai, P., Auefuea, S., Nartthanarung, A., & Soontornpipit, P. (2018). Promoting the New Role of Nursing Informatics Professional in Thailand. *2018 International Electrical Engineering Congress (iEECON)*, 1-4.

Basic competencies need <> Nursing

Information Science

Nursing Science

Information Structure and Processing

Nursing and Quality Improvement

Nursing Informatics - Knowledge of:

Technology

Communication and Learning

Computer Science

Cognitive Science
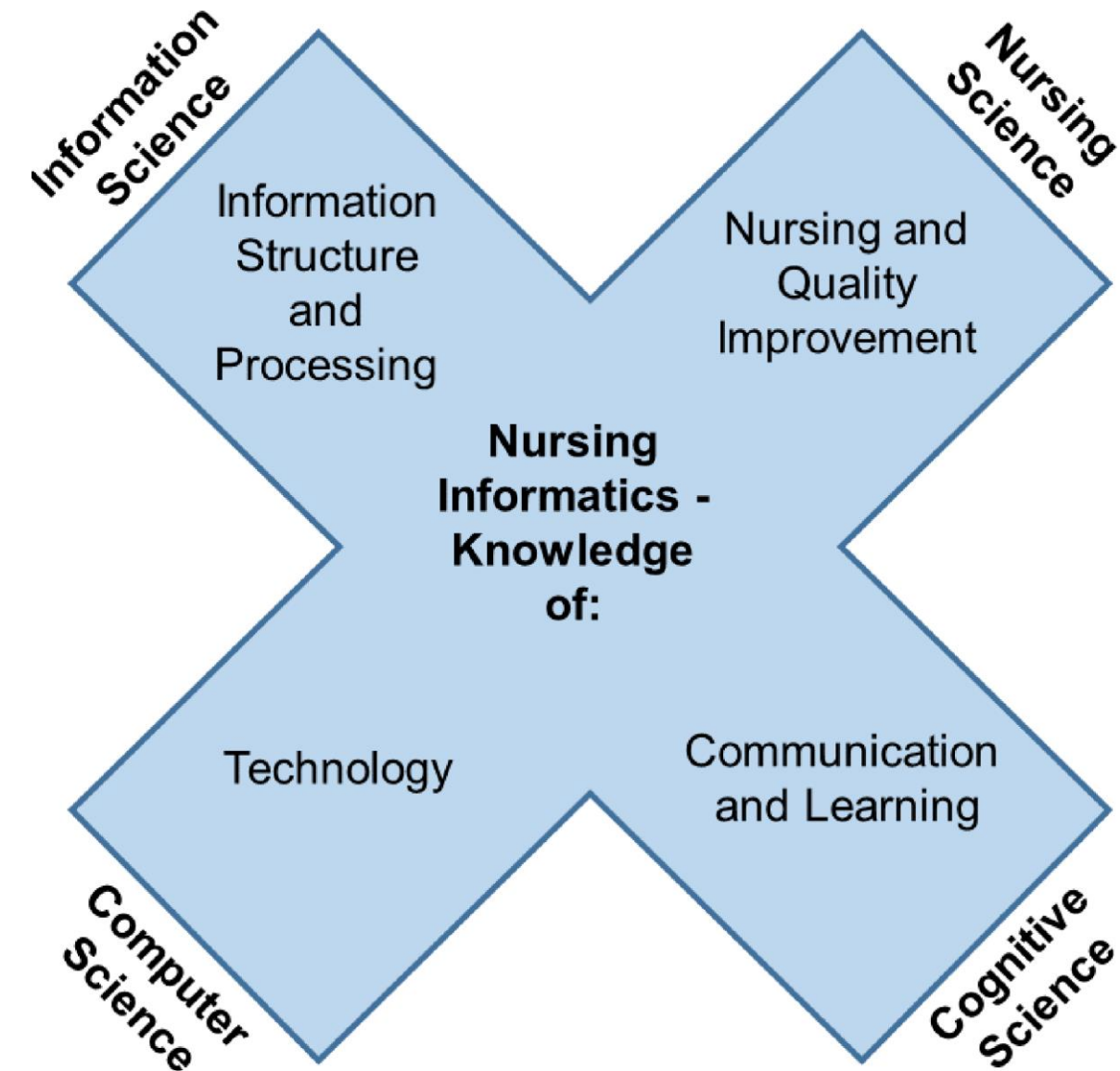
- 🖥 EBP & Research
- 🖥 Computer literacy
- 🖥 Skill of using clinical systems
- 🖥 Create healthcare policies through data collection
- 🖥 Use of telehealth in community health
- 🖥 Use of medical devices in all clinical practice areas
- 🖥 Facilitate communication with other interdisciplinary teams

Milner, J.J. (2016). A Concept Analysis of Nursing Informatics.

STANDARDS OF PRACTICE FOR NURSING INFORMATICS levels required for BSN nurses

Standard 1: Assessment	The NI collects comprehensive data, information, and emerging evidence pertinent to the situation. Competency example: Uses workflow analysis to examine current practice, workflow, and the potential impact of an informatics solution on that workflow.
Standard 2: Diagnosis, problems, and issues identification	The NI analyzes assessment data to identify diagnoses, problems, issues, and opportunities for improvement. Competency example: Validates the diagnoses, problems, needs, issues, and opportunities for improvement with the healthcare consumer—this links standards 1 and 2.
Standard 3: Outcomes identification	The NI identifies expected outcomes for a plan individualized to the healthcare consumer. Competency example: Documents expected outcome as measurable goals.

STANDARDS OF PRACTICE FOR NURSING INFORMATICS **levels** required for BSN nurses

Standard 4: Planning	The NI develops a plan that prescribes strategies, alternatives, and recommendations to attain expected outcomes. Competency example: Develops the plan in collaboration with the healthcare consumer and key stakeholders.
Standard 5: Implementation	The NI implements the plan. Competency example: Uses specific evidence-based actions and processes to resolve diagnoses, problems, or issues to achieve outcomes. The informatics nurse (a) coordinates planned activities, (b) employs informatics solutions, and (c) provides consultation to influence the identified plan.
Standard 6: Evaluation	The NI evaluates progress toward attainment of outcomes. Competency example: Conducts a systematic evaluation of outcomes.

Summary

- Digital Technology and Nursing Information skills are provided recommendations to meet the needs of the 2020 and 2030 workforce today

- To meet this growing need for new skill, the nurses to achieve higher levels of education; the need for education in NI as well as lists of competencies offered by many national nursing organizations were described.

Important questions to answer after class

✅ What is Nursing Informatics (NI) Definition?

✅ Please list three driving forces that influenced the development of a skilled nursing workforce for 2022 and beyond.

✅ Please give two examples of basic guiding principles of NI that all nurses need to know.

✅ What are the competencies related to NI?

👩‍⚕️ Discuss in your group: **Areas in clinical practice where he or she will apply NI**.

Homework

You have been asked to explain why information and technology (nursing informatics) skills are essential for the practice of safe patient care.

How would you respond?

Thank You

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