Introduction to Nursing (OER): Chapter 6

Healthcare Systems, Organizations, and Informatics

> *"Healthcare is one of the most complex industries in our world" (Institute for Healthcare Improvement, p. i, 2017).*

In this chapter, students will learn:

- how healthcare systems and organizations influence nursing practice
- that modern informatics influence and support nursing practice

In relation to healthcare organizations, the National League for Nursing (NLN, p. 16-17, 2010) defines context and environment as a social system within which members work toward goals and is a product of policies, procedures, rewards, leadership, and human resources. Nurses participate in organizational decision making that impacts patient care in four areas of responsibility: Environmental health and safety (infection control, culture of safety), system functionality (information entry and retrieval, workflow management), healthy work environments (culture of civility and respect), and organizational mindset (professional empowerment with authority to act). These responsibilities require strong nursing leadership with participation commitments from all professional nurses within the organization. This chapter addresses environments where nurses provide a variety of healthcare services and the information technology that supports the delivery of safe, quality care.

Healthcare Systems and Organizations

Healthcare Systems and Organizations

The dynamic environment where patient care is delivered impacts a nurse's ability to provide safe, quality care. Historically, nurses and other healthcare workers had minimal oversight with few regulations and limited knowledge to guide effective care (Nightingale, 1860). In modern healthcare, however, knowledge and technology are expanding rapidly which causes continuous

evolution in standards of care and healthcare policy. Numerous public and private agencies now regulate every aspect of care. Recent changes in payment for health services has dramatically influenced the prioritization and delivery of care. Patient preferences are now at the center of every decision which adds another dimension. These unprecedented changes create adaptations in healthcare at global, national, state, and local levels. This section introduces components of the complex context in which nurses provide care.

Definitions and scope

Several definitions of healthcare systems and organizations are available in the literature. The Agency for Healthcare Quality and Research (AHRQ, p. 1, n.d) uses this definition of healthcare systems to facilitate meaningful data collection: “an organization that includes at least one hospital and at least one group of physicians that provides comprehensive care (including primary and specialty care) who are connected with each other and with the hospital through common ownership or joint management” and these affiliations can include community-based physicians not associated with a group. This definition purposefully excludes many other healthcare organizations. For purposes of this text, healthcare systems will be addressed within the discussion of organizations – a perspective that grounds the myriad bits of data in a meaningful way – as most nurses would use the information. Keller (2017) found that people, purpose, structure, and environment are common factors in the definitions of an organization. Therefore, in this text, **a healthcare organization** is defined as any global, national, state, or local group of people with a stated purpose to provide healthcare in a structured way at any level, in any location, to any population. This definition allows the authors to address a wide range of public and private healthcare services at all levels of care and is informed by current knowledge (Keller, 2017; Potter, Perry, Stockert, and Hall, 2017).

The scope of healthcare systems and organizations is massive and varied and depends on the social contract between the group and the population served. For example, the World Health Organization supports a wide range of healthcare services around the world in a variety of settings (immunizations). In the U.S., federal agencies provide services to special groups such as military personnel and ensure healthcare for vulnerable and underserved populations in regions where access is limited (Native Americans). States also provide services that fill gaps in healthcare delivery (Medicaid). Local agencies partner with the public and private sector to offer free or low-cost healthcare to persons with limited access (free clinics, health fairs). In the private sector, non-profit and for-profit organizations offer healthcare based on stated purpose, structural capacity, and workforce availability.

To simplify the complex nature of healthcare delivery, this text introduces systems and organizations within several categories and then discusses regulatory issues that address quality and safety. But first, common attributes, criteria, and context are discussed.

Attributes, criteria, and context in healthcare

Healthcare systems and organizations provide services based on a stated mission or purpose within a structure that supports the efforts of healthcare professionals to improve patient health (Keller, 2017). Therefore, these groups can be understood through an examination of three attributes: Service domains (mission, purpose, and setting), structure, and external factors.

Healthcare service domains, missions, and settings

Healthcare services can be delivered along a continuum of care within five domains: Population-based, clinical preventative, and primary, secondary, and tertiary healthcare (Afrose, 2016). **Population health** focuses on the prevention, trends, and treatment of diseases within large groups of people. The goal is to protect health and prevent disease in as many persons as possible through education campaigns and public policy initiatives such as nation-wide smoking cessation and cancer screening. **Clinical preventative** care focuses on prevention education and treatment to sustain an individual’s health through interaction with a primary care provider who cares for the person over time. The trusting relationship and continuity of care create an environment where healthy lifestyles are promoted and supported, and early detection of disease promotes quick recovery. In primary, secondary, and tertiary preventative care, patients are provided services across a continuum (Afrose, 2016).

Primary prevention emphasizes health promotion and protection against illness such as immunizations and the “Back to Sleep”

campaign that reduces the incidence of sudden infant death syndrome. **Secondary prevention** focuses on early detection and prompt treatment such as cancer screenings and annual exams. **Tertiary prevention** minimizes disability caused by disease or injury and restores health through rehabilitation and recovery services. Tertiary prevention includes acute care (rapid stabilization of deteriorating conditions), **continuing care** (long-term care, assisted living, skilled nursing), and **palliative or end-of-life care.** Care coordination through this maze of healthcare systems and organizations is a crucial component of safe, quality care (AHRQ, 2017). The RAND Corporation researchers examined care coordination and found it to be challenging and an evolving specialty. Many nurses work as “nurse navigators” or discharge planners (https://www.rand.org/topics/health-care-delivery-approaches.html).

The image below emphasizes the call to prioritize preventive healthcare for all persons in every population.

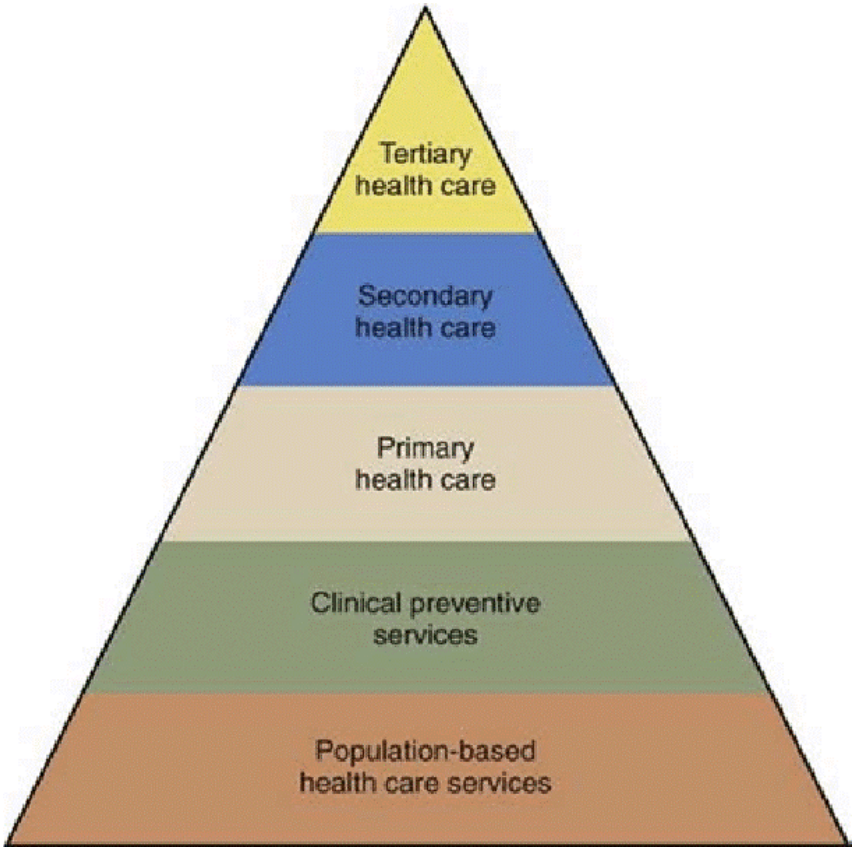


Image source: U.S. Public Health Service. (2000). The Core Functions Project. Washington, DC: Office of Disease Prevention and Health Promotion. (From Afrose, T. (2017 January). Doi: 10.11648/j.jfms.2017.0303.11)

Mental/behavioral health services are also provided within domains that move along a continuum of care. The image below demonstrates how the ability for self-care is a main indicator of health for these conditions.

Healthcare service missions

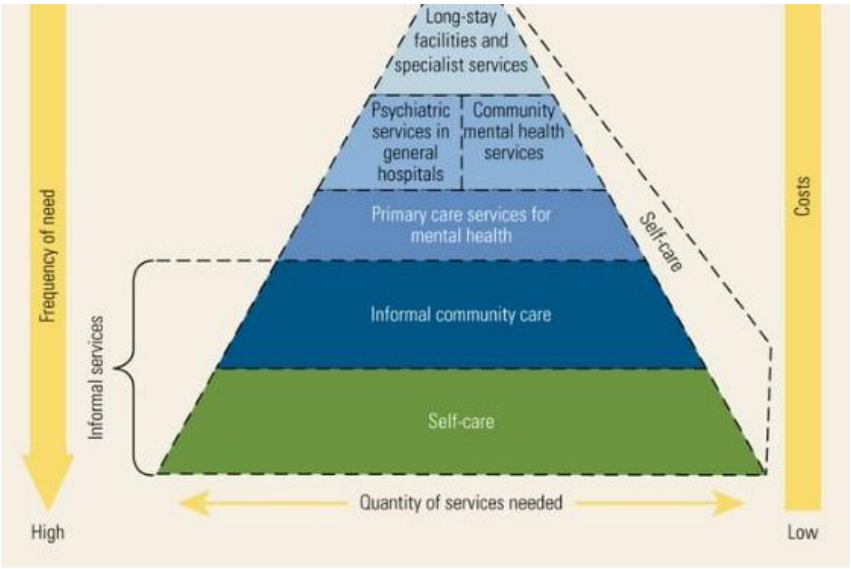
Health service domains are addressed through various global, national, state, and local efforts depending on the mission (purpose) of the system or organization. The mission statement focuses on resources and actions toward a service goal. Some organizations have global missions to meet healthcare needs for large populations while other groups focus on a specific service for a unique group of people such as local homeless shelter health clinics.

To simplify the complexity of service missions, this text introduces systems and organizations within two major “ownership” categories: Public and private. **Public healthcare organizations** are “owned” by the citizens of the government which funds the organization with tax dollars (i.e., county hospital, public health department, or Veterans Health Administration). **Private healthcare organizations** are usually owned by investor-stockholders, sole-proprietors, altruistic organizations, or a combination of these business arrangements (Mancini, 2015).

Public sector missions and settings

In the public sector institutions provide healthcare under the authority, supervision, or "ownership" of a government agency or board (Mancini, 2015). These groups have specific missions to meet the healthcare needs of citizens within a geographical area (global, national, state, and local).

Image source: Patel, V., Chisholm, D., Dua, T., et al. (Eds). (2016, March 14). Mental, Neurological, and Substance Use Disorders:



Disease Control Priorities (3rd ed.). Washington, DC: The International Bank for Reconstruction and Development. Doi: 10.1596/978-1-4648-0426-7_ch11 Retrieved from https://www.ncbi.nlm.nih.gov/books/NBK361934/figure/ part3.ch11.sec2.fig1/

Global public health organizations

Any discussion of healthcare systems must start with global healthcare due to the ability of diseases to spread rapidly from country-to-country. Nurses who work in global healthcare settings keep Americans healthy by prevention, early detection, and treatment of disease around the world because disease knows no boundaries (CDC, n.d.).

The World Health Organization (WHO). The WHO is the United Nations agency that coordinates healthcare efforts around the world. The organization gathers and analyzes global health information to inform health policy and provides clinical services, education, and consultation to governments to improve health outcomes. Major aims are to strengthen healthcare delivery, standardize treatment, promote standards of living, and support and conduct research. The organization's mission statement is, "Promote health. Keep the world safe. Serve the vulnerable" (WHO, p. 3, 2019). For more information on how nurses care for global populations, go to https://www.who.int/about/who-we-are.

The Centers for Disease Control and Prevention (CDC). The CDC receives funding from the U.S. Health and Human Services department to save lives and protect Americans from threats to health that originate within the U.S. and foreign countries. The agency conducts research, provides health information, and prevents, detects, and responds to health threats around the world (CDC, n.d.). Since diseases know no boundaries, the CDC provides critical health security protection services through collaboration with the WHO and other partners. For example, the Ebola outbreak in Africa resulted in disease spread in the U.S. The CDC responded quickly to prevent further infections. The President's Emergency Plan for AIDS Relief (PEPFAR) of 2003 successfully addressed the HIV/AIDS crisis through expanded treatment and organizational infrastructure in low resource regions. Additionally, immunization programs strive to protect Americans from preventable diseases through education and administration of vaccines. For more information on the ways in which nurses work within the CDC, go to https://www.cdc.gov/globalhealth/index.html.

National public healthcare organizations

In the U.S., most healthcare is provided by private organizations with various missions and structures. However, certain populations, geographical regions, and health conditions are not addressed by the current structure. Therefore, federal agencies provide missing services in underserved communities for special populations and unexpected events such as natural disasters. Five of these agencies are highlighted here.

Public Health Service Corps (PHSCC). The U.S. PHSCC is a team of highly qualified public health professionals who serve under the direction of the Surgeon General (https://usphs.gov/). More than 6,500 clinicians fill essential public health

service roles within U.S. government agencies. The PHSCC is a uniformed service corps that protects, promotes and advances health and safety in the U.S. through:

- Rapid and effective response to public health needs
- Leadership and excellence in public health practices
- Advancement of public health science

The corps is the largest public health program in the world and over 200 years old. Commissioned corps officers provide health care to underserved and vulnerable populations and are involved in disease control and prevention, biomedical research, food and drug regulation, mental health services, and response to natural and man-made disasters. For profiles of PHSCC nurses go to: https://usphs.gov/profession/nurse/bios.aspx.

Veterans Health Administration (VHA). The VHA is the largest integrated healthcare system in the U.S. with 1,250 healthcare facilities including medical centers and outpatient clinics with a variety of services (https://www.va.gov/health/). Over nine million U.S. veterans receive healthcare through this agency. For information on VHA nursing careers go to https://www.vacareers.va.gov/Careers/Nursing.

Health Centers Supported by Health Resources and Services Administration (HRSA). The HRSA Health Center Program supports the delivery of comprehensive, culturally competent, patient-centered primary healthcare services for vulnerable populations (https://bphc.hrsa.gov/about/healthcenterprogram/index.html). These centers integrate a wide range of services in areas where economic, geographic, or cultural barriers limit access to healthcare. These centers focus on the delivery of care to low-income families, persons who are homeless, agricultural workers, public housing residents, and U.S. veterans. Over 27 million persons rely on HRSA-funded health centers for affordable primary healthcare. Approximately 1,400 centers operate 12,000 sites in all 50 states, Washington D.C., Puerto Rico, Virgin Islands, and Pacific Basin. For locations go to https://bphc.hrsa.gov/uds/datacenter.aspx?q=d.

National Health Service Corps (NHSC). The NHSC supports primary healthcare providers who are dedicated to working in locations with limited access regardless of the ability to pay (https://nhsc.hrsa.gov/). Many of the HRSA Health Centers discussed above employ providers from this workforce. Over eleven million people in urban, rural, and frontier regions receive medical, dental, and behavioral healthcare from the Corps. Providers are recruited while in school or after graduation with an offer of scholarships or student loan repayment programs. To learn about eligibility for scholarships or student loan repayment programs, go to https://nhsc.hrsa.gov/scholarships/overview.html and https://nhsc.hrsa.gov/loan-repayment/index.html.

Indian Health Services (IHS). The IHS provides culturally appropriate comprehensive healthcare to American Indian and Alaska Native people (https://www.ihs.gov/). The IHS was established in 1787 to provide quality healthcare to recognized tribes and is based on Article 1, Section 8 of the U.S. Constitution. Over two million American Indians and Alaska Natives from 573 tribes in 37 states receive healthcare through this agency.

Federal Bureau of Prisons (BOP) Health System. The clinicians who work for the federal BOP provide essential medical, dental, and mental health services to inmates in 122 institutions. Six federal medical centers are accredited by The Joint Commission, and ambulatory care services are credentialed by the Accreditation Association for Ambulatory Healthcare. The BOP clinical practice guidelines and pharmacy formulary are consistent with standard practice (https://www.bop.gov/resources/health_care_mngmt.jsp). BOP clinicians provide a full range of services to promote, maintain, and restore health and are also responsible for maintaining security within the institutions. For more information regarding healthcare in the Federal Bureau of Prisons, go to https://www.bop.gov/inmates/custody_and_care/medical_care.jsp.

State public healthcare agencies

Each state and territory in the U.S. determine how best to allocate healthcare funding within the geographical area. Departments of Public Health (DPH) provide an array of services based on decisions made by state policymakers through a mix of federal and

of Public Health (DPH) provide an array of services based on decisions made by state policymakers through a mix of federal and state funding. Some states provide comprehensive services for a broad range of conditions to large populations while other states offer limited healthcare for selected conditions and groups of people. For links to the DPH in each state, go to https://www.ehdp.com/links/us-shas.htm.

Departments of behavioral (mental) health are led by commissioners appointed by governors of each state or territory. These departments have different missions, depending on health policy and funding in each region. The U.S. Substance Use and Mental Health Services Administration (SAMHSA) provides Community Mental Health Services Block Grants to support behavioral/mental healthcare to vulnerable populations. The funds are dispersed through a variety of service providers, hospitals, crisis stabilization units, and outpatient clinics. The U.S. Department of Health and Human Services (HHS) developed criteria for certification and monitoring of Certified Community Behavioral Health Clinics (CCBHC) which helps states deliver quality care. The criteria are rigorous; however, formats to deliver services are flexible so that states can fill service gaps rather than duplicate services (SAMHSA, n.d.). For a list of commissioners who oversee these departments, go to https://www.samhsa.gov/sites/default/files/grants/mhbg_state_mental_health_commissioners_06182018-508c.pdf.

State corrections facilities healthcare

The U.S. has a fast-growing prison population due to the war on drugs, mandatory minimum sentencing laws, and the “three strikes” law (Andrews, 2017). As the inmate population grows, so does the need for healthcare services. In some states, inmates share costs through co-pays taken from commissary accounts. Other state systems are privatized, meaning that healthcare companies outside the prison workforce provide healthcare. For more information on corrections healthcare, go to https://publicpolicy.wharton.upenn.edu/live/news/1736-the-current-state-of-public-and-private-prison/for-students/blog/news.php.

Local public healthcare organizations and partnerships

Healthcare services provided by local government agencies (counties, cities, towns, neighborhoods) are often supported by public-private partnerships to address the specific needs of persons living in the area. Examples of these collaborative efforts include migrant healthcare camps and free health clinics, fairs, and screenings. Some partnerships provide ongoing services while others offer annual events. County health departments often partner with local churches, hospitals, health providers, and medical supply companies to offer free or low-cost services. The type of health screening or care is usually determined by available resources, the needs of the community, and current health education campaigns. Health fairs and screenings can reach many persons who have limited access to healthcare; however, when a condition is discovered, the follow-up process can be a challenge (uniteforsight.org, n.d.). Vulnerable persons might not have transportation or adequate finances, and rural settings often lack services at secondary and tertiary levels of care.

Private sector missions and settings

As stated previously, health service domains are addressed through various global, national, state, and local efforts by public and private organizations. Private healthcare organizations are usually owned by investor-stockholders, sole-proprietors, altruistic organizations, or a combination of these business arrangements (Mancini, 2015). Therefore, the mission statement of each group varies, and to sustain the ability to meet the mission, sound business practices are used to continually adapt to the ever-changing healthcare environment (Keller, p. 514-15, 2017; Trepanier, p. 218, 2015).

At the global level, privately funded nongovernmental organizations (NGOs) are crucial partners who work with government-funded public systems to improve health outcomes. These groups offer clinical services, education, and consultation for populations with limited access to healthcare. For a list of NGOs that provide healthcare services around the world, go to https://www.fic.nih.gov/Global/Pages/NGOs.aspx.

In the U.S., private healthcare organizations provide services in several settings: Acute care hospitals, specialty hospitals, long-term care homes (nursing and assisted living), rehabilitation centers, ambulatory care clinics (outpatient), hospices, pain

management centers, retail clinics, urgent care, diagnostic imaging centers, community healthcare clinics, correctional facilities, school health clinics, physician or nurse-owned primary care offices, physical therapy companies, and home healthcare agencies and the medical equipment and pharmaceutical vendors who provide support to patient in their homes. To better understand how various groups remain viable in today's healthcare market, organizational structures are discussed next.

Organizational structures

Historically, healthcare was provided by private nonprofit charitable organizations that offered limited services based on mission statements and funding from donations. Modern systems operate as businesses that plan budgets, acquire funding, generate revenue, and use human and material resources carefully to meet the organizational mission (Gapenski, 2013). To remain viable and sustain services over time, private healthcare organizations use sound business structures to provide quality care with good health outcomes that stay within planned budgets. Structure also influences quality, safety, and healthcare outcomes (Gapenski, 2013; Mancini, 2015). The following discussion addresses various business structures that influence the private healthcare sector: Ownership, tax status, healthcare financing, teaching status, and workforce culture.

Today's private healthcare organizations have numerous business models from which to choose. For example, organizations can be categorized by **ownership**: Investors-stockholders, sole-proprietors, or charitable groups such as a religious organization. The owners write mission statements and business plans that determine which services to deliver and what resources are needed (human, financial, and material).

In addition to ownership, two forms of t**ax status** are available in the U.S.: corporations that provide healthcare for-profit and those that provide healthcare as a charitable establishment (Mancini, 2015). **For-profit organizations** are sometimes referred to as proprietary or investor-owned entities. These groups provide services based on market demand in order to make a profit and are answerable to stakeholders who expect financial rewards. For example, publicly-traded multi-hospital systems and nursing home chains would share profits through dividends to stockholders. **Non-profit organizations** provide healthcare based on a charitable goal to provide care regardless of a patient's ability to pay. These groups are answerable to voluntary boards and are exempt from corporate income tax if certain criteria are met. Non-profit groups must use excess revenue for needs within the organization or add additional services. For example, a Shriner's hospital would use excess funds to replace outdated equipment, add additional services for children, or update a residence for parents who do not live in the area.

Healthcare financing - how society pays for healthcare – is a complex and politically charged issue (Gapenski, p. 5, 2013). Private healthcare organizations make structural decisions regarding **reimbursement strategies** from three major funding sources: Federal government, private insurance companies, and individuals (Trepanier, p. 214, 2015). Payment agreements with each funding source determine whether payment will be sent for services rendered – or denied. Federal funding covers healthcare for veterans, Indian health services and funds flowing through the **Centers for Medicare and Medicaid Services (CMS).**

CMS is the largest payor source for healthcare in the U.S. This federal agency works through professional standards review organizations (PSRO) to review quality, quantity, and cost to eliminate overuse, thus reducing healthcare costs while overseeing the quality of care. **Medicare** covers portions of healthcare for persons age 65 years and older and some younger adults with disabilities. **Medicaid** is a state program that pays for portions of healthcare for low-income, blind, and disabled Americans and many children. **The State Children's Health Insurance Program (SCHIP)** covers healthcare for low-income children who do not qualify for Medicaid. Medicaid and SCHIP use a combination of federal and state tax dollars. All three agencies require adherence to rigorous criteria and deny payment for service if standards are not met. The complexities set by funding sources cause healthcare systems to spend enormous amounts of time, money, and human resources on accounting, billing, collection, and appeals processes (Gapenski, 2013). Medicare and Medicaid use flat-fee payments based on diseases and conditions present at the time of hospital admission or provider appointment. So, if the organization can provide care at a lower cost, a profit is made, but if the cost of care is higher than expected, no additional reimbursement is sent. For more information on CMS, go to https://www.cms.gov/Medicare/Medicare.

Private insurance is the second-largest funding source for healthcare in the US and is a topic of social and political debate. In the past, healthcare services were paid on a fee-for-service basis, such as payments for dry cleaning or car repair. Healthcare costs continued to rise, however, so reform strategies were developed to lower costs through managed care organizations (MCO), networks, and other competitive structures. Many healthcare organizations negotiate within these entities for pre-determined reimbursement rates or flat-fee agreements comparable to Medicare and Medicaid price structures (Trepanier, 2015). **Preferred Provider Organizations (PPO)** are large networks of physicians, laboratories, and hospitals that give patients the freedom to choose within the network and co-pays are customary. **Health maintenance organizations (HMO)** negotiate prices for pre-determined reimbursement rates from payor sources and coverage is limited to services provided within that HMO. Both types of agreement can include denial of payment when errors occur, or patients need readmission too soon after discharge. Recent healthcare reform initiatives are undergoing substantial changes. The Patient Protective Affordable Care Act (PPACA) of 2010 called for the establishment of **Accountable Care Organizations (ACO**) that provide evidence-based primary care, meet quality standards, report required data, and foster, not hinder competition. These organizations were also designed to help patients navigate the healthcare system.

Healthcare organizations must be good stewards of resources because the financial health of an organization ensures that adequate materials and equipment are available, facilities are well-maintained, aging equipment is replaced, and quality staff is retained. Nurses are involved in cost containment at the point of care where supplies are scanned properly, delivery of care is safe and efficient, hospital-acquired conditions are prevented, and patient satisfaction is safeguarded. Since Medicare will not pay for treatment related to preventable infections, injuries, and mistakes, nurses are crucial partners in the financial health of the organization. Nurse leaders guide the organization to make sound financial decisions that support high-quality patient care and work environments where excellent care is consistently delivered (Patton, Zalon, and Ludwich, 2015).

Teaching status is a category that refers to academic center affiliation with healthcare institutions. Since clinical education typically increases the cost of care, government reimbursement structures are increased somewhat but rarely cover the actual cost (Mancini, 2015). Organizations make strategic decisions on whether to participate in clinical education based on mission, structure, and workforce needs.

Work culture influences the quality and safety of healthcare delivery and patient outcomes and includes behaviors and interactions of interdisciplinary healthcare teams. Healthcare workforce shortages, new knowledge, and healthcare reform efforts continue to challenge workers at every level of the organization. Change is inevitable so workgroups must learn to be flexible and adept at implementing new evidence and quality improvement processes. The constant change is a stress that can negatively impact work cultures (Donohue and Crenshaw, 2015). Workforce violence is increasing and efforts to promote workplace civility are increasing (Wilkinson, 2015). Strong nursing leadership from a coaching perspective can support staff self-care efforts, promote optimal performance, and enhance communication (Twedell, 2015).

External factors

Modern healthcare systems and organizations are greatly influenced by external factors such as health policy, legislation, healthcare finance reform, professional practice standards, accreditation processes, and the explosion of new knowledge and technology. These factors are intertwined so that changes in one area affect decisions and actions in other areas. For example, discoveries in genetics, pharmaceuticals, and safety science caused healthcare systems and individual practitioners to adjust priorities and clinical practice. As already discussed, changes in healthcare finance shifted priorities for the delivery of care. Additionally, population changes, market conditions, and the patient-centered consumer focus influence organizational service missions and business decisions.

To help decision-makers remain current on trends, the US Office of Disease Prevention and Health Promotion (ODPHP) gathers, stores, and makes accessible all health data collected from healthcare organizations. The ODPHP oversees the Healthy People initiative and updates national health goals every 10 years based on evidence gathered in the previous decade. These goals drive U.S. health policy and challenge organizations to meet evolving demands. For more information in this guiding document, go to https://www.healthypeople.gov/.

Accreditation agencies

Independent agencies certify that healthcare organizations meet quality and safety standards. The process is voluntary and paid for by organizations that need the designation for reimbursement from Medicare, Medicaid, and many private insurance companies. For example, many insurance companies require **pre-authorization** for healthcare or reimbursement will be denied even though services were rendered. Criteria often require that healthcare systems obtain accreditation by an organization that certifies quality and safety.

The Joint Commission (TJC) is one of several agencies that provide accreditation to healthcare systems and organizations. This group envisions that "All people always experience the safest, highest quality, best-value health care across all settings" and the mission states the organization strives "To continuously improve health care for the public, in collaboration with other stakeholders, by evaluating health care organizations and inspiring them to excel in providing safe and effective care of the highest quality and value" (https://www.jointcommission.org/).

The Commission on Accreditation of Rehabilitation Facilities (CARF) is an independent nonprofit organization that advances the quality of services and health outcomes within rehabilitation centers. CARF provides accreditation to facilities that meet rigorous standards for the care of persons needing physical or behavioral health rehabilitation and recovery services. The organization provides consultation on evidence-based practices that enhance lives. For more information on CARF, go to http://www.carf.org/home/.

The Accreditation Association for Ambulatory Healthcare (AAAHC) offers services that "encourage and assist ambulatory health care organizations to provide the highest achievable level of care for recipients in the most efficient and economically sound manner" (https://www.aaahc.org/about/history/). The AAHC uses peer-based assessment, consultation, and education to guide organizations through accreditation processes.

Professional organizations and institutes

Professional organizations set standards and guide policy-making for healthcare systems and organizations. **The Institute of Medicine (IOM)** has for decades offered evidence-based leadership through numerous evidence-based reports calling for the transformation of healthcare in the U.S. (IOM, 1991, 1999, 2000, 2004, 2011). A quote from The Future of Nursing: Leading Change, Advancing Health states, "The United States has the opportunity to transform its health care system to provide seamless, affordable, quality care that is accessible to all, patient-centered, and evidence-based and leads to improved health outcomes. Achieving this transformation will require remodeling many aspects of the health care system" (IOM, p. 1, 2011).

The American Medical Association (AMA) works with policymakers, legislators, and funding sources to streamline payment processes so that future payment models are financially sound, sustainable, and aligned across payer systems (Friedberg, 2018).

The American Nurses Association (ANA) is the leading professional nurse organization that works with policymakers and legislative bodies on many issues to improve healthcare. As the largest segment of the U.S. healthcare workforce, nurses are influential partners within healthcare systems. Three initiatives are highlighted here: ANA principles of healthcare system transformation, Magnet Recognition Program, and Nurses Bill of Rights.

The ANA (2016) considers **four principles** to be essential for health system transformation:

- Ensure universal access to a standard package of essential healthcare services for all persons including mental health services
- Optimize well-coordinated, cost-effective community-based primary care, preventive services, and innovative, technology-driven hospital-based services that are focused on the patient.
- Encourage economical use of healthcare service while supporting those who do not have the means to share in costs through payment systems that reward quality care and appropriate use of resources.
- Ensure a sufficient supply of a well-educated, skilled workforce dedicated to providing high-quality healthcare

- Ensure a sufficient supply of a well-educated, skilled workforce dedicated to providing high-quality healthcare services who are well-distributed

The ANA Magnet Recognition Program recognizes organizations that support nurses' efforts to provide high-quality safe care. The program encourages nursing excellence, education and development, and greater autonomy at the bedside. The designation process is rigorous, but patients and organizations benefit because high-quality care is delivered by nurses who experience less turnover and burnout (https://www.nursingworld.org/organizational-programs/magnet/).

ANA also promotes healthy work environments with the **Nurse's Bill of Rights**. As stated on the website, "Just as health care workers have a duty of care to their patients, employers have a fundamental duty of care to their employees – to create a healthy work environment for them" (Retrieved from https://www.nursingworld.org/practice-policy/work-environment).

- Nurses have the right to practice in a manner that fulfills their obligations to society and to those who receive nursing care.
- Nurses have the right to practice in environments that allow them to act in accordance with professional standards and legally authorized scopes of practice.
- Nurses have the right to a work environment that supports and facilitates ethical practice, in accordance with the Code of Ethics for Nurses with Interpretive Statements.
- Nurses have the right to freely and openly advocate for themselves and their patients, without fear of retribution. Nurses have the right to fair compensation for their work, consistent with their knowledge, experience, and professional responsibilities.
- Nurses have the right to a work environment that is safe for themselves and for their patients.
- Nurses have the right to negotiate the conditions of their employment, either as individuals or collectively, in all practice settings.

Retrieved from https://www.nursingworld.org/practice-policy/work-environment/health-safety/bill-of-rights-faqs/.

Many other factors affect healthcare systems and organizations such as workforce shortages, new knowledge, and healthcare reform. Change is inevitable so work groups must be skillful at implementing new evidence and quality improvement processes for best outcomes.

Exemplars

- Hospitals
- Nursing homes
- Assisted living facilities

Hospitals focus on the stabilization of acute conditions such as motor vehicle accidents or heart attacks. Patients are provided specialized care for as short a time as possible before being discharged to home, a rehabilitation center, or a long-term care facility. These organizations have specific missions to care for selected populations with certain conditions. For example, a large urban hospital might serve as a regional referral center for smaller rural hospitals that have fewer resources. Depending on the mission and structure, hospitals choose whether to participate in the clinical education of nurses, physicians, and other healthcare students. Workforce requirements depend on the type and level of care offered. Reimbursement strategies are negotiated with the government and/or private sources. **Specialty hospitals** provide long-term care under different regulations and reimbursement agreements.

Nursing homes are long-term care facilities for disabled, frail, and/or elderly persons who require skilled care that must be supervised by professional registered nurses (RN). An RN must always be on-site to ensure high quality, safe care. Nursing care is often delegated to licensed practical/vocational nurses or certified nursing assistants.

Assisted living facilities provide residential support for persons who can no longer live safely at home, but who do not require

Assisted living facilities provide residential support for persons who can no longer live safely at home, but who do not require skilled nursing care. Depending on state regulations, assisted living facilities employ licensed practical nurses to oversee services provided by unlicensed care personnel.

Homecare and hospice agencies

Homecare agencies provide a wide range of services for homebound persons. Skilled nursing and physical, occupational, or speech therapy are among the services required to qualify for homecare reimbursed by Medicare. Sometimes, ancillary staff such as certified nursing assistants compliment the skilled services and ensure that patients can remain safely at home.

Hospice care can be delivered at home or in facilities for patients who are expected to die within six months. Comprehensive services include skilled nursing, certified nursing assistants, sitters, respite care, pastoral care, and social service. Interdisciplinary teams meet frequently to plan palliative care for patients and supportive care for their caregivers. Bereavement care after the patient's death is offered for at least 12 months.

Global and local faith-based organizations

Nongovernmental organizations (NGOs) cover a wide variety of healthcare domains throughout the world. Mission statements are written by boards of directors with a desire to provide specific service to a focused population. Organizational structures vary, as described earlier, and many groups work with government-funded public programs to improve healthcare outcomes. For more information on NGOs, go to https://www.fic.nih.gov/Global/Pages/NGOs.aspx.

Informatics

Informatics

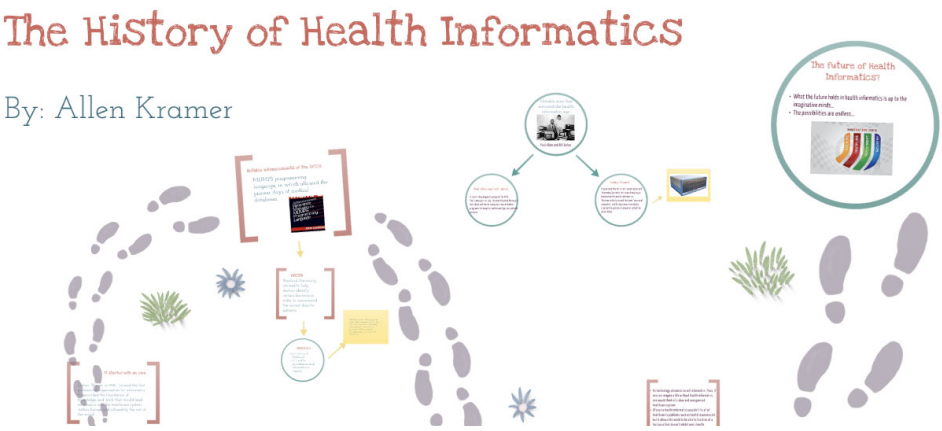
The only way for health IT to achieve its full potential is when it unobtrusively supports individuals as they strive to reach their full potential for health (ONCHIT, p. 5. 2015).

Health Informatics (HI) as defined by the U.S. National Library of Medicine is “the study of design, development, adoption, and application of information technology-based innovations in healthcare services, delivery, management and planning” (https://www.himss.org/health-informatics-defined). HI is essential to providing safe effective, efficient and quality care.

Health information technology (HIT) is rapidly advancing, so nurses must be prepared with essential skills. This nursing discipline allows the analysis and safe storage of health-related data so that information is disseminated through information and communication technology (Skiba and Connors, p. 453, 2017). All nurses are automatically integrated into the field of informatics since they have the most frequent communication with patients and interact with electronic medical records (EMR) constantly. Therefore, education and training are required to strengthen informatics skills at all levels of HIT.

Image source: Prezi

History

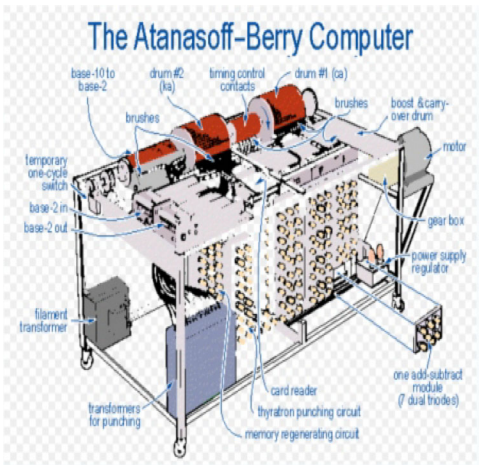


The history of HIT indicates that informatics has been utilized as far back as 100 BC (www.himss.org/health-informatics-defined). Florence Nightingale used statistical algorithms to investigate healthcare finance practices and to demonstrate that good sanitation prevented infection

(Nightingale, p. 176, 1863). The images below depict the early mechanism to process information.

The image below provides an engaging sketch of the myriad steps toward the development of modern HI. The full presentation linked above provides an interesting history of the evolution of this profession.

The Antikythera **mechanism**



The first modern computer built between 1939-1942

The Abacus – the first computer

Images source: www.himss.org/health-informatics-defined

The Institute of Medicine (IOM) has consistently urged the use of health Information technology to ensure safe, quality care. In To ERR is Human: Building a Safer Health System the IOM (2000) recommended utilization of HIT to reduce errors and increase patient safety. In Crossing the Quality Chasm: A New Health System for the 21st Century the IOM (2001) reported that health care systems needed major reforms.

The American Recovery and Reinvestment Act of 2009 authorized the Centers for Medicare and Medicaid Services (CMS) to provide incentives for providers and organizations to become “meaningful users” of electronic health records. The legislation included measures to modernize the U.S. electronic infrastructure, preserve and improve affordable health care, and protect those in greatest need (https://www.fcc.gov/general/american-recovery-and-reinvestment-act-2009). The cost of developing the required electronic documentation and reporting systems were cost-prohibitive. Therefore, the Healthcare Connect Fund supported broadband service expansion for healthcare providers and communities (https://www.fcc.gov/general/healthcare-connect-fund-frequently-asked-questions#Q1).

The Federal Health IT Strategic Plan of 2015-2020 made recommendations on how the government should apply effective use of IT to support high-quality care, lower costs, and engage individuals for a healthy population (Office of the National Coordinator for Health Information Technology [ONCHIT], p.5, 2015). The mission of this organization is to "improve the health and well-being of individuals and communities through the use of technology and health information that is accessible when and where it matters most” (ONCHIT, p.7, 2015). For more information on this strategic plan, go to https://www.healthit.gov/sites/default/files/9-5-federalhealthitstratplanfinal_0.pdf.

Definitions and scope

Informatics includes multiple definitions related to the varying areas of healthcare Skiba and Connors, (p. 453, 2017) defined components of health informatics:

- Technology is the process of utilizing tools and machines to solve problems by some type of human activity.
- Health Information Technology (HIT) is the umbrella framework that includes comprehensive management of health information and its exchange.
- Informatics is the science that combines information and computer sciences to study the process, management, and retrieval of data.

Health Information is a dynamic and evolving discipline based on the sciences of medicine, computers, and cognition (McGinnis, 2002). HIT and informatics interact to create powerful tools used by consumers, patients, families, caregivers, and health care providers. Examples include:

- EHR (Electronic Health Record) - the individual, official, digital health record that can be shared by providers
- EMR (Electronic Medical record) - the electronic medical record of an individual patient within a facility
- HIE (Health Information Exchange) - supports data sharing through data warehouses and communication networks
- Mobile devices - items used to give health information like a Fitbit or Pulse Oximeter

Attributes, criteria, and context in healthcare

Information Technology staff play an increasingly important role in healthcare safety by ensuring that HIT is secure, and information is used safely (Skiba and Connors, 20017.). Experts consider HIT key to improving efficiency and quality of health care (Chaudhry et al., 2006). In 2010 the U.S. Congress enacted the Health Information Technology Economic and Clinical Health (HITECH) Act which dedicated $27 billion to eligible providers who demonstrated “meaningful use” of HIT (Rudin, 2014). Multiple studies have been conducted on the importance of HIT where increased use leads to more focus on preventive care. Results identified three major influences on quality (Chaudhry, et al., 2006):

- Increased adherence to guidelines-based care
- Enhanced surveillance and monitoring
- Decreased medication errors For more information on the use of HITECH go to https://www.hhs.gov/hipaa/for-professionals/index.html.

HIT includes hardware, software, data standards, and terminology, policy and procedures, privacy and security, and workforce organizational skills (Sewell, p. 22, 2016). These components are necessary to manage massive amounts of data while supporting patient care. The complexity of HIT demands that all nurses, regardless of where they work, have informatics skills. The information below offers a better understanding of HIT components:

- **Hardware and software** - The operating systems and applications function as “the brains” of the computer (Sewell, p. 22, 2016). Applications work with specific operating systems and four major operating systems for personal computers: Microsoft Windows OS; Mac OSX; Linux; and Google Chrome OS.
- **Terminology** - Since multiple systems are available, terminology should be standardized to make data sharing easier.
- ·**Policies** - The responsibility for developing the federal policy infrastructure lies with the Office of the National Coordinator for Health Information Technology (ONCHIT, 2015). Healthcare systems and organizations develop institutional policies and procedures to guide the use of HIT.
- **Privacy and security** - In 2013 the Health Insurance Portability and Accountability Act (HIPAA) rules were modified to encourage new technology. The original law passed in 1996 addressed several areas: Simplification of claims, standards for the transmission of information, and security of healthcare information. Sewell (p. 315, 2015) addresses the impact of HIT on patients' access to medical records and concerns the public has for the security of those electronic records. One HIPAA rule requires that every facility designate a specific person to oversee data security since HIPAA allows for any computer to import or transmit data. HIPAA also requires national identification numbers for providers, health plans, and employers. The rule applies to nurses and nursing students. For example, privacy should be ensured during patient interviews and care so that conversations are not overheard. Computers should be password protected, situated away from the view of other patients or visitors, and log off should occur whenever a clinician leaves the area.

- **Peopleware and organizational skills** – HIT use is not limited to direct access of information. HIT includes human factors that affect the security and integrity of all health data. The key components to the successful implementation of HIT include several factors:
    - Productivity – efficiency and effectiveness
    - Teamwork – collaboration for best outcomes
    - Group dynamics – the interplay and communication of team members
    - Project dynamics – the art and science of quality improved
    - Organizing factors – system-wide structures and processes to support HIT
    - Human interface design – simplicity, knowledge, feedback, forgiveness of errors, and appeal
    - Human-machine interaction – user friendly issues and ease of use
- **Informatics workforce** – This specialty has exploded and yet no consolidated set of competencies is available, but several professional organizations address the issue:
    - American Nurses Association (ANA, 2014) defined the scope and standards of an informatics nurse and informatics nurse specialist. “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” (https://www.nursingworld.org/nurses-books/nursing-informatics-scope-and-standards-of-practice-2nd-ed/). The second edition of the ANA’s (2014) scope and standards of practice for nursing informatics set expected competency levels, certification requirements, and continuing education for informatics nurse specialists. Certified informatics nurse specialists serve as liaisons to address computer troubleshooting such as login issues, system failures, coordination of implementation updates, and planning for future changes. Competencies include clinical experience, critical thinking, and skills in computer fluency, information literacy, business correspondence, interpersonal communication, workflow leadership, and project management (Sewell, 2016). These experts effectively lead interdisciplinary teams to create practical solutions for nurses and other professionals at the point of care. The book also outlines standards of practice and competencies that all nurses need in every practice environment.
    - Technology and Information Guiding Education Reform (TIGER) is an initiative to outline the need for nurses and students to learn informatics competencies through formal curriculum and life-long learning. A competency framework was developed in 2009. O’Connor, Hubner, Shaw, Blake, and Ball, (2017) state that all nurses need information knowledge and skills to practice and students need immediate access while in the clinical setting. Some facilities allow students to utilize smart devices to access information to care for patients.

The nurse informatics specialty blends nursing science with analytical sciences to identify, define, manage, and communicate data, information, and knowledge into practice. For information on the professional organization for nurses go to https://www.ania.org/.

Image source: HIMSS.org

The major domains of health Informatics according to the American Medical Informatics Association (AMIA): Clinical information and research, translational bioinformatics, public health, and consumer health (https://www.amia.org/about-amia/science-informatics).

Clinical Informatics is the application of informatics and information technology to deliver, track, and manage healthcare services. This domain includes clinical decision support, diagnostic reports, documentation of care plans, assessments, and patient status, and provider order entry and processing. Information is shared with all members of the healthcare team. This domain is also called applied clinical informatics and operational informatics.

Clinical Research Informatics is the use of informatics to discover and manage new knowledge with access to information on

Clinical Research Informatics is the use of informatics to discover and manage new knowledge with access to information on clinical trials without disclosing patient identifiers. This domain supports the availability of clinical information for research and quality improvement efforts.

Translational Bioinformatics involves the storage, analysis, and interpretation of methods to optimize massive amounts of data into proactive, predictive, preventive, and participatory health. This domain includes research on new techniques that integrate biological and clinical data and support the evolution of clinical informatics methods. These efforts result in the dissemination of new knowledge to biomedical scientists, clinicians, and patients.

Public Health Informatics applies information, computer science, and technology to Public Health Science for improvement in the health of defined populations. Public health clinicians use the information for rapid outbreak response, bio-surveillance, disease prevention, health promotion, and electronic lab reporting. This domain uses population informatics to address health concern for large populations and is broad enough to inform decisions related to the environment, work and living places.

Consumer Health Informatics is focused on consumer perspectives and preferences. This domain includes patient-focused informatics, health literacy, and consumer education, and empowers consumers to manage their own health. User-friendly designs strive to provide access to a wide range of computer skills.

Why is informatics needed? Consumers demanded more access to personal healthcare information. To meet those demands, nurses must be trained to serve as information advocates with knowledge and skills in communication, teamwork, and accurate documentation. The computer skills should be developed from simple to complex.

Exemplars

Computerized documentation

A 50-year-old male was being worked up for headaches. His physician suspected a brain tumor, so a biopsy was performed. The report was mislabeled as benign; however, the tumor was fast-growing cancer. Additionally, the pathology report was initially entered into the wrong electronic health record. When the surgeon called for the report, the benign diagnosis was sent. The patient was relieved. Three weeks later, when the headaches continued, the surgeon asked the pathologist to re-evaluate the specimen. The labeling error was discovered, and treatment was immediately initiated. However, due to these delays, the tumor had progressed, and a terminal diagnosis was given. This tragedy could have been prevented through informatics practices that ensure diagnostic reports are scanned into the correct medical records.

Personal health records

Pam was a 74-year-old patient with several chronic physical conditions that warranted numerous appointments with specialists from five disciplines in a large healthcare organization. She had trouble keeping up with all the appointments and was confused about some of the health education. She also did not follow recommended treatment due to a lack of understanding regarding expectations. Her providers were disappointed in her progress, so they urged her to create a patient portal account provided by the organization. Pam's grandson helped her create the account and showed her how to use it to keep up with appointments and enter information on current medications. Through this user-friendly system, she looked up diagnostic reports, provider notes, and sent notes to her healthcare team. She was also able to look up patient education materials to help her understand her health status.

Barcode medication administration

A nurse rushes to give medications on time in a busy unit. Her hospital uses an electronic system to alert nurses to potential medication errors. She fails to notice a reminder to not crush an extended-release medication. Extended-release drugs are designed to slowly absorb. She crushes the medication and administers it by mouth in applesauce because the patient was unable to swallow the large capsule. An hour later, the patient's heart rate slowed, and he died because the medicine was absorbed too fast.

Medication administration is a complex multi-step process and errors can occur at any step. Alerts within the electronic

Medication administration is a complex multi-step process and errors can occur at any step. Alerts within the electronic medication administration system should always be addressed to prevent injury or death. Nurses administer most medications and technological advances can reduce errors.

Summary

Summary

In this chapter, students learned about:

- healthcare systems
- informatics

Key Terms

- Agency for Healthcare Research and Quality (AHRQ)
- Care coordination
- Clinical preventative care
- Electronic Health Record (EHR)
- Electronic Medical Record (EMR)
- Health Informatics (HI)
- Health Information Exchange (HIE)
- Health Information Technology (HIT)
- Healthcare organizations
- Healthcare systems
- Health promotion
- HITECH
- Magnet Recognition Program
- Nurse's Bill of Rights
- Organizational ownership
- Organizational tax status
- Palliative care
- Population health
- Primary healthcare
- Secondary healthcare
- Technology
- Tertiary healthcare
- TIGER Initiative
- Work culture

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