



May 2019 Comparison with the 2015 National Health Science Standards

The National Health Science Standards (NHSS) have been updated and essentially have the same strong focus as the 2015 standards. 2019 changes are outlined below and summarized in the following areas:

Formatting

- *Items that were included in parentheses are now itemized by bullets beginning with 2015 Standard 1.12. This is the primary reason the 2019 NHSS number of pages increased from seven pages to twelve pages.*
- *Numbering – The standards objectives number outlines have been enhanced for easy reference.*

Additions

*(All new 2019 changes will be in **bold italics**)*

- *New standard objectives*
- *New standard objective verbs*
- *Standard 11 renamed Information Technology in Healthcare*
- *Enhanced clarification in ways of additional standard details and other standard items that became more concise*

Deletions

- *2015 Standard objective 1.18 h. Special senses (structures and functions of the eye, ear, nose and tongue, identify senses for sight, hearing, smell, taste, touch)*
- *2015 Standard objective 1.22 Discuss research related to emerging diseases and disorders (such as autism, VRSA, PTSD, Listeria, seasonal flu)*
- *2015 Standard objective 2.15 Practice speaking and active listening skills*
- *2015 Standard objective 11.2 Privacy and Confidentiality of Health Informatics*
- *2015 Standard objective 11.3 Basic Computer Skills*

Foundation Standard 1: Academic Foundation

Understand human anatomy, physiology, common diseases and disorders, and medical math principles.

1.1 Human Anatomy and Physiology

1.1.1 Describe the organization of the human body and directional terms.

a. Identify Levels of Organization

- Chemical
- Cellular
- Tissue
- Organ
- System
- Organism

b. ***Demonstrate anatomical position***

c. Identify body planes

- Sagittal

- Midsagittal
 - Coronal / Frontal
 - Transverse / Horizontal
- d. Use directional terms
- Anterior / Posterior
 - Medial / Lateral
 - Proximal / Distal
 - Superficial / Deep
 - Superior / Inferior
 - Ventral / Dorsal
- e. Identify body cavities
- Abdominal
 - Cranial
 - Dorsal
 - Pelvic
 - Spinal
 - Thoracic
- f. Identify the components of the abdominal quadrants
- Right upper
 - Right lower
 - Left upper
 - Left lower
- 1.1.2 **Identify** basic structures and describe functions of human body systems.
- a. Skeletal
- Structures of the skeletal system
 - **Distinguish** between axial and appendicular skeletons
 - **Describe long** bone anatomy
 - Identify joint types and movement
 - **Name and classify all bones (206)**
 - Functions of the skeletal system
 - **Structure and support**
 - **Muscle attachment and movement**
 - **Mineral storage**
 - **Hematopoiesis**
- b. Muscular
- Structures of the muscular system
 - Identify types of muscle tissue
 - Identify major muscle groups of neck, shoulder, chest, abdomen, back, arms, and legs
 - Functions of the muscular system
 - **Body movement**
 - **Posture**
 - **Protection**
- c. Integumentary
- Structures of the integumentary system
 - **Identify integumentary components**
 - **Label the layers of skin**
 - Functions of the integumentary system
 - **Vitamin D production**

- *Sensory organ*
 - *Infection protection*
 - *Temperature regulation*
 - *UV light protection*
- d. Cardiovascular
- Structures of the cardiovascular system
 - *Identify cardiovascular organs*
 - *Label the parts of the heart*
 - *Distinguish blood components*
 - Functions of the cardiovascular system
 - *Blood flow through the heart and body*
 - *Transports nutrients, waste, antibodies, hormones, and gases*
 - Cardiac conduction system
- e. Lymphatic / Immune
- Structures of the lymphatic system
 - *Identify lymphatic organs*
 - Functions of the lymphatic system
 - *Provide protection against disease*
 - Movement of lymph fluid
- f. Respiratory
- Structures of the respiratory system
 - Identify respiratory organs
 - Functions of the respiratory system
 - Gas exchange
- g. Nervous
- Structures of the nervous system
 - *Identify organs of the nervous system*
 - *Identify structures of the special sense organs*
 - Functions of the nervous system
 - *Sensation*
 - *Movement*
 - *Processing*
- h. Endocrine
- Structures of the endocrine system
 - Identify endocrine glands
 - Functions of the endocrine system
 - Production of hormones
 - Regulation of body processes
 - Controls metabolism
 - Regulates growth, development, and maturation
- i. Digestive
- Structures of the digestive system
 - Identify digestive organs in sequence
 - Differentiate between alimentary and accessory organs
 - Functions of the digestive system
 - Chemical and mechanical digestion
 - *Absorption of nutrients*
 - *Excretion of waste*

- j. Urinary
 - Structures of the urinary system
 - Identify urinary organs
 - Identify gross and microscopic anatomy of the kidney
 - Functions of the urinary system
 - Process of urine formation
 - Urine composition
 - Homeostatic balance
- k. Reproductive
 - Structures of the reproductive system
 - Identify female reproductive organs
 - Identify male reproductive organs
 - Functions of the reproductive system
 - Formation of gametes
 - Production of hormones

1.2 Diseases and Disorders

1.2.1 Describe etiology, pathology, diagnosis, treatment, and prevention of common diseases and disorders, including, but not limited to the following:

- Arthritis
- *Asthma*
- Cancer
- *Cataracts*
- *Concussion / Traumatic Brain Injury (TBI)*
- *Cystic fibrosis*
- Diabetes mellitus
- Dementia
- Gastric ulcer
- Hepatitis
- Hypertension
- *Melanoma*
- *Muscular Dystrophy*
- *Myocardial Infarction*
- *Sexually Transmitted Infection (STI)*
- Stroke / Cardiovascular Accident (CVA)
- Tuberculosis
- *Urinary Tract Infection (UTI)*

1.2.2 Describe biomedical therapies as they relate to the prevention, pathology, and treatment of disease.

- Gene testing
- Gene therapy
- Cloning
- Stem cell research

1.3 Medical Mathematics

1.3.1 Demonstrate competency using basic math skills and mathematical conversions as they relate to healthcare.

- a. Metric system
 - Kilo-
 - Centi-
 - *Deci-*

- Milli-
 - **Micro-**
- b. Mathematical
- Average
 - Ratios
 - Fractions
 - Percentages
 - Addition / Subtraction
 - Multiplication / Division
- c. Conversions
- Height (inches/meters)
 - Weight/mass (pounds/grams)
 - Length (inches/meters)
 - Volume (ml/cc)
 - Temperature (F/C)
 - Household measurements (Tbsp/tsp/cup/oz)
- 1.3.2 Demonstrate the ability to analyze diagrams, charts, graphs, and tables to interpret healthcare results.
- 1.3.3 Demonstrate use of the 24-hour clock/military time.

Foundation Standard 2: Communications

Demonstrate methods of delivering and obtaining information, while communicating effectively.

2.1 Concepts of Effective Communication

2.1.1 Model verbal and nonverbal therapeutic communication.

- **Active listening**
- **Silence**
- **Summarizing**
- **Reflecting**

2.1.2 Identify common barriers to communication.

a. Physical disabilities

- Aphasia
- Hearing loss
- Impaired vision
- **Developmental level**

b. Psychological barriers

- Attitudes
- Bias
- Prejudice
- Stereotyping

2.1.3 **Distinguish** between subjective and objective information.

2.1.4 Interpret elements of communication using sender-message-receiver feedback model.

2.1.5 Modify communication to meet the needs of the patient/client and be appropriate to the situation.

2.1.6 **Describe appropriate interactions with patients throughout various stages of psychosocial development.**

2.2 Medical Terminology

2.2.1 Use common roots, prefixes, and suffixes to communicate information.

2.2.2 Interpret common medical abbreviations to communicate information.

2.3 Written Communication Skills

- 2.3.1 Use proper elements of written and electronic communication (spelling, grammar, and formatting).
- 2.3.2 Prepare examples of technical and informative writing.
- 2.3.3 *Demonstrate appropriate use of digital communication in a work environment, such as email, text, and social media.*

Foundation Standard 3: Systems

Identify how key systems affect services performed and quality of care.

3.1 Healthcare Delivery Systems

- 3.1.1 *Differentiate* healthcare delivery systems and healthcare related agencies.
 - a. Types of practice settings
 - Acute care
 - Ambulatory care
 - Behavioral and mental health services
 - Home care
 - Long-term care
 - Medical and dental practices
 - b. Specialty medical and dental practices
 - *Cosmetic surgery*
 - *Pulmonology*
 - *Surgical*
 - *Orthodontics*
 - c. Government
 - Veterans Administration (VA)
 - Centers for Disease Control and Prevention (CDC)
 - Food and Drug Administration (FDA)
 - Occupational Safety and Health Administration (OSHA)
 - Public Health Service (PHS)
 - d. Related organizations
 - American Cancer Society
 - American Heart Association (AHA)
 - American Red Cross (ARC)
 - March of Dimes
 - World Health Organization (WHO)
- 3.1.2 *Examine* the healthcare consumer's rights and responsibilities within the healthcare system.
 - Self-advocacy
 - Compliance
 - Patient's Bill of Rights
- 3.1.3 *Analyze* the impact of emerging issues on healthcare delivery systems.
 - Addictions
 - Bioethics
 - Epidemiology
 - Socioeconomics
 - Technology
- 3.1.4 *Analyze* healthcare economics and related terms.
 - a. The history and role of health insurance and employer/employee benefits;
 - b. *Fundamental terms related to health insurance*

- *Claim*
 - *Coinsurance*
 - *Co-payment*
 - *Fraud*
 - *HIPAA*
 - *Premium*
- c. Types of insurance plans
- Private health insurance plans
 - Managed Care
 - Health Maintenance Organization (HMO)
 - Independent Practice Association (IPA)
 - Preferred Provider Organization (PPO)
 - Government programs
 - Affordable Care Act (ACA)
 - Medicaid
 - Medicare
 - Tricare
 - Workers' Compensation

Foundation Standard 4: Employability Skills (formatting changes only)

Use employability skills to enhance employment opportunities and job satisfaction.

4.2 Employability Skills (items more concise)

4.2.1 Apply employability skills in healthcare.

- Chain of command
- Communication Skills
- Decision making
- Flexible
- Organization
- Problem Solving
- Scope of practice
- Time Management
- Work Ethic

Foundation Standard 5: Legal Responsibilities

Describe legal responsibilities, limitations, and implications on healthcare worker actions.

5.1 Legal Responsibilities and Implications

5.1.1 Analyze legal responsibilities and implications of criminal and civil law.

- Abuse
- Assault
- Battery
- Invasion of privacy
- Libel
- Malpractice
- Negligence
- Slander

5.2 Legal Practices

- 5.2.1 Apply standards for the safety, privacy and confidentiality of health information.
 - HIPAA
 - Privileged communication
- 5.2.2 Describe advance directives.
- 5.2.3 Summarize the essential characteristics of a patient's basic rights within a healthcare setting.
- 5.2.4 *Differentiate* informed and implied consent.
- 5.2.5 Explain laws governing harassment.
- 5.2.6 Describe the concept of scope of practice.
- 5.2.7 *Utilize procedures for reporting activities and behaviors that affect the health, safety, and welfare of others (incident report).* (previously located in 2015 6.13)

Foundation Standard 6: Ethics *(formatting changes only)*

Understand accepted ethical practices with respect to cultural, social, and ethnic differences within the healthcare environment.

Foundation Standard 7: Safety Practices

Identify existing and potential hazards to clients, co-workers, and self. Employ safe work practices and follow health and safety policies and procedures to prevent injury and illness.

7.1 Infection Control

- 7.1.1 Explain principles of infection transmission.
 - a. Identify classifications of pathogens
 - Bacteria
 - Fungi
 - Parasites
 - Protozoa
 - Viruses
 - b. Describe characteristics of microorganisms
 - Aerobic
 - Anaerobic
 - Non-pathogenic
 - Pathogenic
 - c. Recognize chain of infection
 - d. Describe mode of transmission
 - Common vehicle (air, food, water)
 - Direct
 - Healthcare-associated infections (nosocomial)
 - Indirect
 - Opportunistic
 - Vectors
- 7.1.2 Differentiate methods of controlling the spread and growth of pathogens.
 - a. Asepsis
 - Sanitization
 - Antisepsis
 - Disinfection
 - Sterile technique
 - Sterilization

- b. Standard precautions
 - *Handwashing*
 - *Gloving*
 - *Personal Protective Equipment (PPE)*
 - Environmental cleaning
- c. Isolation precautions
 - Transmission-based contact
- d. Bloodborne pathogen precautions
- e. Vaccinations

7.2 Personal Safety

- 7.2.1 Apply personal safety procedures based on Occupational Safety and Health Administration (OSHA) and Centers for Disease Control (CDC) regulations.
- 7.2.2 Demonstrate principles of body mechanics during patient care.
 - *Ambulating*
 - *Lifting*
 - *Positioning*
- 7.2.3 *Demonstrate and apply the use of personal protective equipment (PPE).*

7.3 Environmental Safety

- 7.3.1 Apply safety techniques in the work environment.
 - Ergonomics
 - Safe operation of equipment
 - Patient/client/employee safety measures

7.4 Common Safety Hazards

- 7.4.1 Observe all safety standards related to the occupational exposure to hazardous chemicals standard (safety data sheets [SDS]).
- 7.4.2 Comply with safety signs, symbols, and labels.

7.5 Emergency Procedures and Protocols

- 7.5.1 Practice fire safety in a healthcare setting.
- 7.5.2 Apply principles of basic emergency response in natural disasters and other emergencies (safe location, contact emergency personnel, follow facility protocols).

Foundation Standard 8: Teamwork *(formatting changes with one new addition)*

Identify roles and responsibilities of individual members as part of the healthcare team.

8.1 Healthcare Teams

- 8.1.1 Evaluate roles and responsibilities of healthcare team members.
- 8.1.2 Identify characteristics of effective teams.
 - Defined roles
 - Common purpose
 - Effective communication
 - Effective leadership
 - Measurable processes and outcomes
 - Mutual respect
 - Shared goals

- 8.2.4 *Evaluate why teamwork is an important part of healthcare and how it improves patient care.*

Foundation Standard 9: Health Maintenance Practices

Differentiate between wellness and disease. Promote disease prevention and model healthy behaviors.

9.1 Healthy Behaviors

9.1.1 Promote behaviors of health and wellness.

- Exercise
- Nutrition
- Relationships
- Sleep habits
- Stress management
- Weight control

9.1.2 *Examine various aspects of behavioral health.*

- *Anxiety*
- *Depression*
- *Substance abuse*
- *Suicide*

9.1.3 Describe strategies for prevention of disease.

- Community health education outreach programs
- Immunizations
- Medical, dental, and mental health screenings
- Routine physical exams
- Stress management

9.1.4 Investigate complementary and alternative health practices as they relate to wellness and disease prevention.

- *Acupuncture*
- Eastern medicine
- Holistic medicine
- Homeopathy
- Manipulative therapies
- Natural therapies

9.2 Healthcare Across the Lifespan

9.2.1 *Discuss physical, mental, social and behavioral development and its impact on healthcare.*

Foundation Standard 10: Technical Skills*

Apply and demonstrate technical skills and knowledge common to health career specialties.

10.1 Technical Skills

10.1.1 *Demonstrate* procedures for measuring and recording vital signs including the normal ranges.

- Blood pressure
- Temperature
- *Oxygen saturation*
- Pain
- Pulse
- Respirations

10.1.2 Obtain training or certification in

- Automated external defibrillator (AED)
- Cardiopulmonary resuscitation (CPR)
- First aid

- Foreign body airway obstruction (FBAO)

**Additional technical skills may be included in a program of study based on career specialties.*

Foundation Standard 11: Information Technology in Healthcare

Apply information technology practices common across health professions.

11.1 Key Principles, components and practices of Health Information Systems

- 11.1.1 Identify components of an electronic health record (EHR) and/or electronic medical record (EMR).
 - Diagnostic tests
 - History and physical
 - Medications
 - Patient demographics
 - Progress notes
 - Treatment Plan
- 11.1.2 Explore different types of health data collection tools.
 - Medical wearable devices
 - Patient monitoring equipment
 - Phone application
 - Telemedicine/telehealth
- 11.1.3 Create electronic documentation that reflects timeliness, completeness, and accuracy.
- 11.1.4 Adhere to information systems policies, procedures, and regulations as required by national, state, and local entities.