

Kentucky PLTW Biomedical Science

# Medical Interventions

**Foundation Standard 1:**  
**Academic Foundation:**  
**Understand human anatomy, physiology, common diseases and disorders, and medical math principles.** MI1

**1.1.2 Identify basic structures and describe functions of human body systems.** MI112

**1.1.2 a** Skeletal MI112A

- A** Structures of the skeletal system MI112AA
  - i Distinguish between axial and appendicular skeletons MI112AAI
  - ii Describe long bone anatomy MI112AAII
  - iii Identify joint types and movement MI112AAIII
  - iv Name and classify all bones (206) MI112AAIV
- B** Functions of the skeletal system MI112AB
  - i Structure and support MI112ABI
  - ii Muscle attachment and movement MI112ABII
  - iii Mineral storage MI112ABIII
  - iv Hematopoiesis MI112ABIV

**1.1.2 b** Muscular MI112B

- A** Structures of the muscular system MI112BA
  - i Identify types of muscle tissue MI112BAI
  - ii Identify major muscle groups of neck, shoulder, chest, abdomen, back, arms, and legs MI112BAII
- B** Functions of the muscular system MI112BB
  - i Body movement MI112BBI
  - ii Posture MI112BBII
  - iii Protection MI112BBIII

**1.1.2 c** Integumentary MI112C

- A** Structures of the integumentary system MI112CA
  - i Identify integumentary components MI112CAI
  - ii Label the layers of skin MI112CAII
- B** Functions of the integumentary system MI112CB
  - i Vitamin D production MI112CBI
  - ii Sensory organ MI112CBII
  - iii Infection protection MI112CBIII
  - iv Temperature regulation MI112CBIV
  - v UV light protection MI112CBV

**1.1.2 d** Cardiovascular MI112D

- A** Structures of the cardiovascular system MI112DA
  - i Identify cardiovascular organs MI112DAI

- ii Label the parts of the heart [MI112DAII](#)
      - iii Distinguish blood components [MI112DAIII](#)
    - B Functions of the cardiovascular system [MI112DB](#)
      - i Blood flow through the heart and body [MI112DBI](#)
      - ii Transports nutrients, waste, antibodies, hormones, and gases [MI112DBII](#)
      - iii Cardiac conduction system [MI112DBIII](#)
  - 1.1.2 e Lymphatic / Immune [MI112E](#)
    - A Structures of the lymphatic system [MI112EA](#)
      - i Identify lymphatic organs [MI112EAI](#)
    - B Functions of the lymphatic system [MI112EB](#)
      - i Provide protection against disease [MI112EBI](#)
      - ii Movement of lymph fluid [MI112EBII](#)
  - 1.1.2 f Respiratory [MI112F](#)
    - A Structures of the respiratory system [MI112FA](#)
      - i Identify respiratory organs [MI112FAI](#)
    - B Functions of the respiratory system [MI112FB](#)
      - i Gas exchange [MI112FBI](#)
  - 1.1.2 g Nervous System [MI112G](#)
    - A Structures of the nervous system [MI112GA](#)
      - i Identify organs of the nervous system [MI112GAI](#)
      - ii Identify structures of the special sense organs [MI112GAI](#)
    - B Functions of the nervous system [MI112GB](#)
      - i Sensation [MI112GBI](#)
      - ii Movement [MI112GBII](#)
      - iii Processing [MI112GBIII](#)
  - 1.1.2 h Endocrine [MI112H](#)
    - A Structures of the endocrine system [MI112HA](#)
      - i Identify endocrine glands [MI112HAI](#)
    - B Functions of the endocrine system [MI112HB](#)
      - i Production of hormones [MI112HBI](#)
      - ii Regulation of body processes [MI112HBII](#)
      - iii Controls metabolism [MI112HBIII](#)
      - iv Regulates growth, development, and maturation [MI112HBIV](#)
  - 1.1.2 i Digestive [MI112I](#)

- A Structures of the digestive system MI112IA
  - i Identify digestive organs in sequence MI112IAI
  - ii Differentiate between alimentary and accessory organs MI112IAII
- B Functions of the digestive system MI112IB
  - i Chemical and mechanical digestion MI112IBI
  - ii Absorption of nutrients MI112IBII
  - iii Excretion of waste MI112IBIII

1.1.2 j Urinary MI112J

- A Structures of the urinary system MI112JA
  - i Identify urinary organs MI112JAI
  - ii Identify gross and microscopic anatomy of the kidney MI112JAI
- B Functions of the urinary system MI112JB
  - i Process of urine formation MI112JBI
  - ii Urine composition MI112JBII
  - iii Homeostatic balance MI112JBIII

1.1.2 k Reproductive MI112K

- A Structures of the reproductive system MI112KA
  - i Identify female reproductive organs MI112KAI
  - ii Identify male reproductive organs MI112KAII
- B Functions of the reproductive system MI112KB
  - i Formation of gametes MI112KBI
  - ii Production of hormones MI112KBII

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**1.2.1 Describe etiology, pathology, diagnosis, treatment, and prevention of common diseases and disorders, including, but not limited to the following:** MI121

- A Arthritis MI121A
- B Asthma MI121B
- C Cancer MI121C
- D Cataracts MI121D
- E Concussion/Traumatic Brain Injury (TBI) MI121E
- F Cystic fibrosis MI121F
- G Diabetes mellitus MI121G
- H Dementia MI121H
- I Gastric ulcer MI121I
- J Hepatitis MI121J
- K Hypertension MI121K
- L Melanoma MI121L
- M Muscular Dystrophy MI121M
- N Myocardial Infarction MI121N
- O Sexually Transmitted Infection (STI) MI121O
- P Stroke/Cardiovascular Accident (CVA) MI121P
- Q Tuberculosis MI121Q
- R Urinary Tract Infection (UTI) MI121R

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**1.2.2 Describe biomedical therapies as they relate to the prevention, pathology, and treatment of disease.** MI122

- A Gene testing MI122A
- B Gene therapy MI122B
- C Cloning MI122C
- D Stem cell research MI122D

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**1.3.1 Demonstrate competency using basic math skills and mathematical conversions as they relate to healthcare. MI131**

**1.3.1 a Metric system MI131A**

- A Kilo- MI131AA
- B Centi- MI131AB
- C Deci- MI131AC
- D Milli- MI131AD
- E Micro- MI131AE

**1.3.1 b Mathematical MI131B**

- A Average MI131BA
- B Ratios MI131BB
- C Fractions MI131BC
- D Percentages MI131BD
- E Addition/Subtraction MI131BE
- F Multiplication/Division MI131BF

**1.3.1 c Conversions MI131C**

- A Height (inches/meters) MI131CA
- B Weight/mass (pounds/grams) MI131CB
- C Length (inches/meters) MI131CC
- D Volume (ml/cc) MI131CD
- E Temperature (F/C) MI131CE
- F Household measurements (Tbsp/tsp/cup/oz) MI131CF

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**1.3.2 Demonstrate the ability to analyze diagrams, charts, graphs, and tables to interpret healthcare results. MI132**

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**Identify basic levels of organization of the human body MI111A**

- A Chemical MI111AA**

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  - B Cellular MI111AB**

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  - C Tissue MI111AC**

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  - D Organs MI111AD**

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  - E Systems MI111AE**

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  - F Organism MI111AF**
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**Foundation Standard 2: Communications**  
**Demonstrate methods of delivering and obtaining information, while communicating effectively.** MI2

**2.1.1 Model verbal and nonverbal therapeutic communication.** MI211

- A Active listening MI211A
  - B Silence MI211B
  - C Summarizing MI211C
  - D Reflecting MI211D
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**2.1.2 Identify common barriers to communication.** MI212

**2.1.2 a Physical disabilities** MI212A

- A Aphasia MI212AA
- B Hearing loss MI212AB
- C Impaired vision MI212AC
- D Developmental level MI212AD

**2.1.2 b Psychological barriers** MI212B

- A Attitudes MI212BA
  - B Bias MI212BB
  - C Prejudice MI212BC
  - D Stereotyping MI212BD
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**2.1.3 Distinguish between subjective and objective information.** MI213

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**2.1.5 Modify communication to meet the needs of the patient/client and be appropriate to the situation.** MI215

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**2.2.1 Use common roots, prefixes, and suffixes to communicate information.** MI221

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**2.3.1 Use proper elements of written and electronic communication (spelling, grammar, and formatting).** MI231

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**Foundation Standard 4: Employability Skills**  
**Use employability skills to enhance employment opportunities and job satisfaction.** MI4

**4.2.1 Apply employability skills in healthcare.** MI421

- A Chain of command MI421A
- B Communication Skills MI421B
- C Decision making MI421C
- D Flexible MI421D
- E Organization MI421E
- F Problem Solving MI421F
- G Scope of practice MI421G
- H Time Management MI421H
- I Work Ethic MI421I

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**4.3.1 Research levels of education, credentialing requirements, and employment trends in health professions.** MI431

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**4.3.2 Distinguish differences among careers within a health science pathway.** MI432

- A Biotechnology research and development MI432A
  - B Diagnostic services MI432B
  - C Health informatics MI432C
  - D Support services MI432D
  - E Therapeutic services MI432E
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**Foundation Standard 6: Ethics Understand accepted ethical practices with respect to cultural, social, and ethnic differences within the healthcare environment.** MI6

**6.1.1 Differentiate between ethical and legal issues impacting healthcare.** MI611

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**6.1.2 Identify ethical issues and their implications related to healthcare.** MI612

- A Ethics committee MI612A
  - B Euthanasia MI612B
  - C In vitro fertilization MI612C
  - D Organ donation MI612D
  - E Scope of practice MI612E
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**6.2.1 Discuss religious and cultural values as they impact healthcare.** MI621

- A Ethnicity MI621A
  - B Gender MI621B
  - C Race MI621C
  - D Religion MI621D
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**Foundation Standard 7:  
Safety Practices Identify  
existing and potential  
hazards to clients,  
coworkers, and self.  
Employ safe work  
practices and follow  
health and safety  
policies and procedures  
to prevent injury and  
illness. MI7**

**7.1.1 Explain principles of infection transmission. MI711**

**7.1.1 a Identify classifications of pathogens MI711A**

- A Bacteria MI711AA
- B Fungi MI711AB
- C Parasites MI711AC
- D Protozoa MI711AD
- E Viruses MI711AE

**7.1.1 b Describe characteristics of microorganisms MI711B**

- A Aerobic MI711BA
- B Anaerobic MI711BB
- C Non-pathogenic MI711BC
- D Pathogenic MI711BD

**7.1.1 c Recognize chain of infection MI711C**

**7.1.1 d Describe mode of transmission MI711D**

- A Common vehicle (air, food, water) MI711DA
- B Direct MI711DB
- C Healthcare-associated infections (nosocomial) MI711DC
- D Indirect MI711DD
- E Opportunistic MI711DE
- F Vectors MI711DF

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**7.1.2 Differentiate methods of controlling the spread and growth of pathogens.** MI712

7.1.2 a Asepsis MI712A

- A Sanitization MI712AA
- B Antisepsis MI712AB
- C Disinfection MI712AC
- D Sterile technique MI712AD
- E Sterilization MI712AE

7.1.2 b Standard precautions MI712B

- A Handwashing MI712BA
- B Gloving MI712BB
- C Personal Protective Equipment (PPE) MI712BC
- D Environmental cleaning MI712BD

7.1.2 c Isolation precautions MI712C

- A Transmission-based contact MI712CA

7.1.2 d Bloodborne pathogen precautions MI712D

7.1.2 e Vaccinations MI712E

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**7.2.2 Demonstrate principles of body mechanics during patient care.** MI722

- A Ambulating MI722A
- B Lifting MI722B
- C Positioning MI722C

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**7.2.3 Demonstrate and apply the use of personal protective equipment (PPE).** MI723

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**7.4.1 Observe all safety standards related to the occupational exposure to hazardous chemicals standard (safety data sheets [SDS]).** MI741

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**7.4.2 Comply with safety signs, symbols, and labels.** MI742

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**Foundation Standard 8: Teamwork** Identify roles and responsibilities of individual members as part of the healthcare team. MI8

**8.1.1 Evaluate roles and responsibilities of healthcare team members.** MI811

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**8.1.2 Identify characteristics of effective teams.** MI812

- A Defined roles MI812A
- B Common purpose MI812B
- C Effective communication MI812C
- D Effective leadership MI812D
- E Measurable processes and outcomes MI812E
- F Mutual respect MI812F
- G Shared goals MI812G

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**8.2.1 Recognize methods for building positive team relationships.** MI821

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**8.2.2 Analyze attributes and attitudes of an effective leader.** MI822

8.2.2 a Characteristics MI822A

- A Focused and driven MI822AA
- B Interpersonal skills MI822AB
- C Motivates and inspires MI822AC
- D Organized and balanced MI822AD

8.2.2 b Types MI822B

- A Autocratic MI822BA
- B Democratic MI822BB
- C Laissez faire MI822BC

8.2.2 c Roles MI822C

- A Communicates vision MI822CA
- B Leads change MI822CB
- C Manages accountability MI822CC

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**8.2.3 Apply effective techniques for managing team conflict.** MI823

- A Communicate assertively MI823A
  - B Set clear expectations MI823B
  - C Gather the facts MI823C
  - D Mediate disputes MI823D
  - E Negotiate resolutions MI823E
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**Foundation Standard 9: Health Maintenance Practices Differentiate between wellness and disease. Promote disease prevention and model healthy behaviors.** MI9

**9.1.1 Promote behaviors of health and wellness.** MI911

- A Exercise MI911A
  - B Nutrition MI911B
  - C Relationships MI911C
  - D Sleep habits MI911D
  - E Stress management MI911E
  - F Weight control MI911F
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**9.1.3 Describe strategies for prevention of disease.** MI913

- A Community health education outreach programs MI913A
  - B Immunizations MI913B
  - C Medical, dental, and mental health screenings MI913C
  - D Routine physical exams MI913D
  - E Stress management MI913E
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**9.1.4 Investigate complementary and alternative health practices as they relate to wellness and disease prevention.** MI914

- A Acupuncture MI914A
  - B Eastern medicine MI914B
  - C Holistic medicine MI914C
  - D Homeopathy MI914D
  - E Manipulative therapies MI914E
  - F Natural therapies MI914F
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**Foundation Standard 10: Technical Skills Apply and demonstrate technical skills and knowledge common to health career specialties.** MI10

**10.1.1 Demonstrate procedures for measuring and recording vital signs including the normal ranges.** MI1011

- A Blood pressure MI1011A
- B Temperature MI1011B
- C Oxygen saturation MI1011C
- D Pain MI1011D
- E Pulse MI1011E
- F Respirations MI1011F