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CCNB-U. de Moncton
Cégep de Chicoutimi
Cégep de l'Outaouais
Cégep de Sherbrooke
Cégep de Sainte-Foy
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Collège Ellis
College of the North Atlantic
Collège de Rosemont
Conestoga College
Fanshawe College
Michener Institute
New Brunswick Comm. College
Northern Alberta Institute T.
QEII / Dalhousie
Southern Alberta Institute T.
Thompson Rivers University
University of Manitoba
Vanier College

Companion Document

CANADIAN SOCIETY OF RESPIRATORY THERAPISTS
SOCIÉTÉ CANADIENNE DES THÉRAPEUTES RESPIRATOIRES

2011 Respiratory Therapy – National Competency Profile
In collaboration with the Canadian Advisory Council for Education in Respiratory Therapy and the educational programs

Canada

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Foreign Credential Recognition Program,
Human Resources and Skills Development Canada

Introduction & Acknowledgments

The Canadian Society of Respiratory Therapists (CSRT) and the Canadian Council for Education in Respiratory Therapy (CACERT) collaborated for the development of this document.

The Canadian Society of Respiratory Therapists (CSRT) is the national professional association representing over 2500 respiratory therapists across Canada. The CSRT is also the credentialing body for non-regulated jurisdictions and administers the accreditation process through the Council on Accreditation of Respiratory Therapy Education (CoARTE). Located in Ottawa, the CSRT promotes exemplary standards of practice, conduct and performance in the provision of respiratory care.

CACERT is an independent body of representatives from each educational program of respiratory therapy. CACERT has a mandate to represent the interests of the respiratory therapy academic community. CACERT facilitates communication and collaboration across the RT academic community; fosters sharing of information and best practices in education of respiratory therapy students; provides a forum for discussion of issues related to education of respiratory therapy students; supports the development of specialty programming within the profession of respiratory therapy.

The CSRT and CACERT worked in close collaboration with the National Alliance of Respiratory Therapy Regulatory Bodies (NARTRB), the Canadian Board for Respiratory Care (CBRC) and the Council on Accreditation of Respiratory Therapy Education (CoARTE). A representative from each of these key stakeholder groups participated in the Steering Committee and in the planning, execution and evaluation of the project.

The participation of educators from each education program across Canada was instrumental in the development of the national curriculum guide 'Companion Document' and the competency evaluation templates. The quality of this document reflects their insight into the professional requirements in respiratory therapy and their passion for the provision of quality education.

As a result, educators in respiratory therapy programs across Canada will use the same standards and process for the education and evaluation of Canada and internationally educated health professionals integrating into the respiratory therapy profession through the Canadian education system.

Acknowledgment: This project was funded by the Government of Canada's Foreign Credential Recognition Program, Human Resources and Skills Development Canada. The opinions and interpretations in this publication are those of the authors, and do not necessarily reflect those of the Government of Canada.

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2011 Respiratory Therapy National Competency Profile Companion Document

Foundation knowledge

The following section of the '2011 Respiratory Therapy National Competency Profile Companion Document' ***contains eight distinct cognitive domains expressed as core-competencies (CC)****. The sum of these core-competencies represents' the* ***foundation knowledge*** *necessary to develop the domains (competencies) and the elements outlined in the 2011 Respiratory Therapy National Competency Profile. In addition to the core-competencies and their elements, a set of 'performance criteria' specific to each element is provided. Henceforth, the foundation knowledge must be considered as essential knowledge by the educational programs with respect to development of their program curriculum, as utilized for the training of future respiratory therapists.*

The **cognitive core-competencies** are:

Anatomy & Physiology

Presentation guide

CC = Statement of the competence for a core competence
E = Elements of the competence for a specific statement of competence
P = Performance criteria for competency; associated with a specific element of the competence

Core Competence CC.1

Explain the anatomical structure and physiology of the human body with emphasis on the pulmonary and cardiovascular systems and other functionally related systems

E.1 Explain the overall organization and function of the human body

P1.1 Explain the chemical processes needed for the function of human physiology
P1.2 Explain the cellular mechanism as a fundamental and essential unit
P1.3 Distinguish between the functions of the principal human tissues

E.2 Describe the stages of prenatal development

P2.1 Describe the stages of pregnancy and delivery
P2.2 Describe the events of embryonic and fetal development
P2.3 Describe the newborn's adaptation to extrauterine life

E.3 Explain the function of the skin, bones and muscles

P3.1 Describe the integumentary system
P3.2 Explain the structure and function of the bones
P3.3 Explain the structure and function of the muscles
P3.4 Identify the changes and consequences of aging on the bones and muscles

E.4 Explain the fundamental function of the nervous system: its regulation and integration of the physiological processes

P4.1 Describe the structure and physiology of the nervous tissue
P4.2 Explain the function of the central nervous system
P4.3 Explain the function of the peripheral nervous system and the reflex activity
P4.4 Explain the function of the autonomic nervous system
P4.5 Identify the changes and consequences of aging on the nervous system

E.5 Explain homeostasis and the role of each contributing system

P5.1 Describe the composition and characteristics of venous and arterial blood
P5.2 Explain the functions of the lymphatic system
P5.3 Explain the functions of the immune system
P5.4 Explain the overall function of digestive system
P5.5 Explain the metabolism and function of the liver
P5.6 Explain the thermoregulatory mechanism with emphasis on the newborn

E.6 Explain the function of the urinary system

P6.1 Describe the anatomy of the kidney
P6.2 Explain the mechanism of urine formation
P6.3 Explain the functions of the urinary system in relation to the maintenance of homeostasis

E.7 Explain fluid equilibrium, electrolytes and acid-base balance

P7.1 Explain the regulation of water balance
P7.2 Explain the regulation of electrolytes: sodium, potassium, calcium, magnesium and anions
P7.3 Explain acid-base balance: chemical buffer systems, respiratory regulation and renal mechanisms

E.8 Describe the endocrine system

P8.1 Identify and locate the major endocrine organs
P8.2 Describe the functional role of the major endocrine organs: pituitary, thyroid, parathyroid, adrenal, pineal and thymus glands

E.9 Describe the anatomy and function of the pulmonary system

P9.1 Describe and locate each component of the pulmonary system
P9.2 Describe the role of each component of the pulmonary system
P9.3 Describe the relationship between the pulmonary system and the other systems
P9.4 Describe the changes to the pulmonary system throughout the course of life

E.10 Explain the functional principles of pulmonary ventilation

P10.1 Explain the principles of physics in relation to pulmonary ventilation
P10.2 Explain the functionality of inhalation and exhalation during one breath cycle
P10.3 Explain the function of external respiration
P10.4 Distinguish between lung volumes and lung capacities

E.11 Explain the neurological control of breathing and respiratory compensation

P11.1 Explain the regulation of breathing
P11.2 Distinguish between types of respiratory patterns
P11.3 Compare the reflect actions triggered by blood and pulmonary receptors with other factors which influence respiratory frequency and amplitude
P11.4 Compare the various mechanisms known to contribute to respiratory compensation

E.12 Explain the functional physiology of blood

P12.1 Compare the biochemical profile of venous and arterial blood
P12.2 Describe the composition of plasma and its components
P12.3 Explain the mechanism of blood coagulation
P12.4 Explain the principle of blood transfusion and restoration of blood volume
P12.5 Compare and contrast the flow and function of the pulmonary circulation versus the systemic circulation

E.13 Explain the principles associated with gas exchanges

P13.1 Compare the composition of atmospheric gases, alveolar gases and blood gases
P13.2 Explain gas exchange between blood, the lungs and the tissues
P13.3 Explain how gases are transported in the blood
P13.4 Distinguish between various anatomical and physiological factors known to affect gas exchange

E.14 Explain the functional physiology of the cardiovascular system

P14.1 Explain summarily the anatomy and function of the heart as an integral part of the cardiovascular system
P14.2 Explain the electromechanical physiology pertaining to each functional phase of a cardiac cycle
P14.3 Explain the physiology of blood circulation during one complete cardiac cycle
P14.4 Identify the changes and consequences of aging on the cardiovascular system

E.15 Explain the electrophysiology of the heart

P15.1 Explain summarily the neuro-chemical control of the cardiovascular system
P15.2 Explain the intrinsic conduction system and the extrinsic innervation of the heart
P15.3 Explain the graphic recording of electrical changes on an electrocardiogram during various heart activities

Chemistry & Biochemistry

Presentation guide

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Core Competence CC.2

Explain the principles of chemistry and biochemistry as they pertain to respiratory therapy

E.1 Explain each of the following basic chemical terms and concepts as they pertain to respiratory therapy

P1.1 Element, Atom, Proton, Neutron, Electron, Valence and Isotope
P1.2 Atomic Number, Atomic Weight, Molecular Weight and Avogadro's Law
P1.3 Compound vs. Molecule
P1.4 Ion, Cation, Anion, Electrolyte and Salt
P1.5 Chemical Bonds - Ionic and Covalent
P1.6 Oxidation and Reduction
P1.7 Kinetic Energy, Potential Energy and Gradient
P1.8 Anabolism and Catabolism
P1.9 Organic vs. Inorganic Compounds
P1.10 Equilibrium
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P1.14 Hydrolysis Reaction
P1.15 Dissociation
P1.16 Enzyme
P1.17 pH, Acid and Base
P1.18 Cathode, Anode, Electrode, Voltage, Current and Resistance

E.2 Explain each of the following biochemical terms and concepts as they pertain to respiratory therapy

P2.1 Mixture, Solution, Solvent, Solute, Crystalloid, Colloid and Suspension
P2.2 Strong Acid, Strong Base and pK
P2.3 Acidosis and Acidemia
P2.4 Alkalosis and Alkalemia
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P2.6 Volatile Acid
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P2.8 Conjugate Base
P2.9 Amphoteric Compound or Molecule
P2.10 Law of Electroneutrality and Anion Gap
P2.11 Gradient, Diffusion, Osmosis, Facilitated Diffusion, Filtration and Active Transport Mechanisms

Physics

Presentation guide

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Core Competence CC.3

Explain the principles of physics as they pertain to respiratory therapy

E.1 Explain the Physical Behaviour of Gases and related principles and laws

P1.1 Atmospheric composition and its gases
P1.2 Kinetic Energy
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P1.4 Boyle's Law
P1.5 Charles' Law
P1.6 Gay-Lussac's Law
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P1.8 Ideal Gas Law
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P1.10 Volume: units of measure and conversion factors

E.2 Explain the States of Matter and Physical Changes of State

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P2.3 Evaporation, Surface Area and Contact Time
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E.4 Explain Surface Tension

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E.5 Explain Gas Diffusion

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P7.6 Clearance

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P8.4 Radiation

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Pharmacological Principles

Presentation guide

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Core Competence CC.4

Explain the pharmacological principles as they pertain to respiratory therapy

E.1 Explain the fundamental characteristics associated with the application of medications

P1.1 Discuss the basic sources of medications
P1.2 Define the following as they pertain to medications: chemical, experimental, generic official and trade.
P1.3 Outline the characteristics of the following formulations: oral, injectable, aerosol, micronized powder, suppository, sublingual and topical
P1.4 Explain the advantages and disadvantages of the following routes of administration: enteral, parenteral, topical and inhalational

E.2 Explain the pharmacokinetics of medications

P2.1 Define the following terms: affinity, agonist, partial agonist, competitive and non-competitive and antagonist drugs
P2.2 Explain the concept of half-life and clearance of a drug
P2.3 Define tolerance and tachyphylaxis
P2.4 Describe drug elimination
P2.5 Describe pharmacological receptor
P2.5 Identify cellular sites where pharmacologic receptors are found
P2.6 Define the following pharmacological terms: toxicity, median effective does and median lethal dose
P2.7 Explain drug potency and efficacy
P2.8 Explain the concept of therapeutic index and relate this to the safety of the drug

E.3 Compare the pharmacologic response of adrenergic and cholinergic drugs

P3.1 Describe drug classification based on the Autonomic Nervous System (ANS) divisions
P3.2 Describe the location and action of adrenergic receptors
P3.3 Compare adrenergic and anti-adrenergic drug action
P3.4 Describe the location and action of cholinergic receptors
P3.5 Compare cholinergic and anti-cholinergic drug action

E.4 Describe the indications, mechanism of action, routes of administration and side effects particular to each class of medications

P4.1 Describe sympathomimetic bronchodilators
P4.2 Describe parasympathomimetic bronchodilators
P4.3 Describe xanthine bronchodilators
P4.4 Describe mucolytic agents
P4.5 Describe anti-inflammatories
P4.6 Describe anti-asthmatic medications
P4.7 Describe anti-histamine drugs
P4.8 Describe antibiotic, anti-viral and anti-fungal drugs
P4.9 Describe diuretics

E.5 Describe the indications, mechanism of action, routes of administration and side effects particular to specific classes of cardiovascular medications

P5.1 Describe cardiotonic therapeutic agent
P5.2 Describe antianginal therapeutic agents
P5.3 Describe diuretic therapeutic agents
P5.4 Describe antiarrhythmic therapeutic agents
P5.5 Describe the mode of action of antihypertensive agents
P5.6 Describe antithrombotic and thrombolytic therapeutic agents

E.6 Describe the indications, mechanism of action, routes of administration and side effects particular to drugs utilized in anesthesia

P6.1 Describe the general principles of intravenous anesthetic drugs, including their pharmacokinetics
P6.2 Describe the narcotic antagonists
P6.3 Describe benzodiazepines, barbiturates and benzodiazepine antagonists
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P6.5 Describe cholinesterase inhibitors, including their physical structure and role as reversal agents
P6.6 Describe muscarinic antagonists, including their physical structure and their use in conjunction with cholinesterase inhibitors
P6.7 Describe local anesthetics

E.7 Explain the pharmacokinetics and pharmacodynamics of inhalational anesthetic agents

P7.1 Discuss inhalational anesthetic agents
P7.2 Discuss diffusion hypoxia, solubility, second gas effect, compartments of anesthesia, balanced anesthesia and interaction with CO_2 absorbents
P7.3 Describe the characteristics of inhalational anesthetics agents
P7.4 Describe the factors which alter the effects of inhaled anesthetic agents
P7.5 Explain the effects of inhalational agents on the pulmonary ventilation
P7.6 Explain the effects of inhalational agents on the cardiovascular system

Microbiology

Presentation guide

CC = Statement of the competence for a core competence
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Core Competence CC.5

Explain the principles of microbiology as they pertain to respiratory therapy

E.1 Utilize terminology associated with the mechanisms of infectious diseases

P1.1 Define the following terms: host, infectious disease, colonization, microflora, virulence, pathogen and saprophyte
P1.2 Describe the concept of host-microorganism interaction

E.2 Compare agents of infectious diseases

P2.1 Describe the structural characteristics and mechanisms of reproduction for viruses, bacteria, rickettsiae, chlamydiae, fungi and parasites
P2.2 Differentiate modes of transmission
P2.3 Explain the mechanism of infectious diseases using incidence, portal of entry, source of infection, symptomatology, disease source, site of infection, agent and host characteristics

E.3 Explain the mechanisms of infectious diseases

P3.1 Differentiate between incidence and prevalence and among endemic, epidemic and pandemic
P3.2 Describe the stages of an infectious disease
P3.3 Identify the systemic manifestations of infectious disease
P3.4 Describe the mechanisms and significance of antimicrobial and antiviral drug resistance
P3.5 Explain the actions of intravenous immunoglobulin and cytokines in treatment of infectious diseases

Pulmonary Pathophysiology

Presentation guide

CC = Statement of the competence for a core competence
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Core Competence CC.5

Differentiate between the pathophysiology of diseases and disorders of the pulmonary system as it pertains to respiratory therapy

- **** Noter que pour chacune des maladies et affections du système pulmonaire, la connaissance de divers aspects/caractéristiques distinctifs peut être attendue en surplus des critères de performance de la compétence spécifique*** Definition
- Etiology
- Pathophysiology
- Clinical manifestations
- Laboratory findings
- Differential diagnosis
- Management
- Prognosis
- Prevention

E.1 Differentiate between respiratory and ventilatory failure in acute and chronic states

P1.1 Compare respiratory (oxygenation) failure in acute and chronic states*
P1.2 Compare ventilatory (hypercapnic) failure in acute and chronic states*

E.2 Explain the obstructive processes of the lung

P2.1 Compare factors that produce obstruction such as: dynamic compression, loss of radial traction (tethering), inflammation, foreign bodies, secretions, hypertrophy and spasm
P2.2 Explain factors affecting air flow in the lower airways (i.e. below the glottis)

- airway lumen size
- elastic recoil of the lung

- physical properties of the inhaled gas

P2.3 Describe the characteristics of airway obstruction including:

- change in lung volumes/flows
- gas exchange abnormalities
-

P2.4 Compare upper and lower airway obstructions

E.3 Differentiate obstructive airway disorders

P3.1 Describe the following disorders:

- asthma
- bronchiectasis
- bronchiolitis
- bronchogenic neoplasm
- bronchopulmonary dysplasia (BPD)
- choanal atresia
- chronic obstructive pulmonary disease (COPD) : chronic bronchitis & emphysema
- croup
- cystic fibrosis
- epiglottitis
- laryngo/tracheo/bronchomalacia
- foreign body aspiration
- meconium aspiration syndrome (MAS)
- obstructive sleep apnea (OSA)
- Pierre Robin syndrome
- pulmonary interstitial emphysema (PIE)
- vascular ring
- vocal cord dysfunction

P3.2 Compare the above obstructive airway disorders per distinct features *

P3.3 Explain the basic principles of sleep studies and screening

- Describe the stages of sleep and sleep study screening
- Distinguish between sleep related disorders
- Compare the three categories of Sleep Apnea Syndrome (SAS)
- Describe the signs, symptoms and diagnostic procedures for the evaluation of SAS

E.4 Explain the restrictive processes of the respiratory system

P4.1 Compare the restrictive processes of the respiratory system in terms of origin: extra-pulmonary versus intra-pulmonary

P4.2 Discuss the effects of restrictive processes:

- decreased compliance
- decreased lung volumes
- diffusion impairment
- airway re-modeling
- gas exchange abnormalities
- pulmonary hypertension

E.5 Compare extra-pulmonary disorders

P5.1 Describe the following disorders:

- bronchopleural fistula
- pleural effusion
- pneumothorax
- thoracic cage disorders
- traumatic chest wall injuries

P5.2 Distinguish the above extra-pulmonary disorders per distinct features *

E.6 Compare intra-pulmonary disorders

P6.1 Describe the following disorders:

- acute respiratory distress syndrome (ARDS)
- atelectasis
- collagen disorders
- diaphragmatic hernia
- hyaline membrane disease / respiratory distress syndrome (RDS)
- hypersensitivity pneumonitis
- pulmonary fibrosis
- inhalation of toxic gases
- neoplasms
- oxygen toxicity
- pharmacological toxicity
- pneumoconiosis
- pneumonia
- pneumonitis
- pulmonary contusion/hemorrhage
- pulmonary edema
- sarcoidosis

- transient tachypnea of the newborn (TTN)

P6.2 Distinguish the above intra-pulmonary disorders per distinct features *

Cardiovascular Pathophysiology

Presentation guide

CC = Statement of the competence for a core competence
E = Elements of the competence for a specific statement of competence
P = Performance criteria for competency; associated with a specific element of the competence

Core Competence CC.6

Differentiate between the pathophysiology of diseases and disorders of the cardiovascular system as it pertains to respiratory therapy

*** Note, that for each of the diseases and disorders of the cardiovascular system, knowledge of the following distinct features may be expected in addition to the particular Performance Criteria for competency. Those distinct features are:**

- Definition
- Epidemiology
- Risk factors
- Etiology
- Pathophysiology
- Clinical manifestations
- Laboratory and other findings
- Differential diagnosis
- Management
- Prognosis
- Prevention

E.1 Explain coronary atherosclerotic heart disease

P1.1 Describe coronary atherosclerotic disease per distinct features *

E.2 Compare valvular heart disorders

P2.1 Describe the following valvular heart disorders:

- Tricuspid stenosis, incompetence, regurgitation
- Mitral stenosis, incompetence, regurgitation
- Aortic stenosis, incompetence, regurgitation
- Pulmonary stenosis, incompetence, regurgitation

P2.2 Compare the above valvular heart disorders per distinct features *

E.3 Compare inflammatory heart disorders

P3.1 Describe the following inflammatory heart disorders:

- Pericarditis
- Endocarditis
- Myocarditis
- Cardiomyopathies
  - Dilated
  - Hypertrophic
  - Restrictive

P3.2 Distinguish the above inflammatory heart disorders per distinct features *

E.4 Compare peripheral vascular disorders

P4.1 Describe the following peripheral vascular disorders:

Arterial

- Arteriosclerosis
- Arterial thrombosis and embolism
- Aneurysm
- Aortic dissection
- Arterioplastic disease (Raynaud's)
- Pulmonary embolism

Venous

- Thrombophlebitis
- Deep venous thrombosis
- Varicose veins

P4.2 Distinguish the above peripheral vascular disorders per distinct features *

E.5 Compare congenital heart defects

P5.1 Describe the following congenital heart defects:

- Atrial septal defect
- Aortic stenosis
- Coarctation of the aorta
- Hypoplastic left/right ventricle
- Patent ductus arteriosus
- Pulmonary stenosis
- Right ventricular outflow tract obstruction
- Tetralogy of Fallot
- Total anomalous pulmonary venous return
- Transposition of the great vessels
- Tricuspid atresia
- Truncus arteriosus
- Ventricular septal defect

P5.2 Distinguish the above congenital heart defects per distinct features *

E.6 Compare the types of shock

P6.1 Describe the following types of shock:

- Anaphylactic
- Cardiogenic
- Distributive
- Hypovolemic
- Neurogenic
- Septic

P6.2 Distinguish the above types of shock per distinct features *

E.7 Compare the cardiovascular abnormalities

P7.1 Describe the following cardiovascular abnormalities:

- Hypertension
- Myocardial infarction
- Congestive heart failure
- Rheumatic heart disease
- Dissemination intravascular coagulation

P7.2 Distinguish the above cardiovascular abnormalities per distinct features *

Other Diseases and Disorders

Presentation guide

CC = Statement of the competence for a core competence
E = Elements of the competence for a specific statement of competence
P = Performance criteria for competency; associated with a specific element of the competence

Core Competence CC.7

Differentiate between the pathophysiology of other diseases and disorders as it pertains to respiratory therapy

**** Note, that for each of the following specific diseases and disorders, knowledge of distinct features may be expected in addition to the particular Performance Criteria for competency.***
Those distinct features are:

- Definition
- Etiology
- Epidemiology
- Pathophysiology
- Clinical manifestations
- Laboratory findings
- Management
- Prognosis
- Prevention

E.1 Compare disorders of the central nervous system

P1.1 Describe the following disorders of the central nervous system:

- Central apnea syndromes

- Cerebrovascular accident
- Cerebral arterial-venous malformation
- Intraventricular hemorrhage
- Infections
- Periventricular leukomalacia
- Reye's syndrome
- Space occupying lesions
- Sudden infant death syndrom (SIDS)
- Thermal instability
- Trauma
- Brain death

P1.2 Explain the above disorders of the central nervous system per distinct features *

E.2 Compare the disorders of the peripheral nervous system

P2.1 Describe the following disorders of the peripheral nervous system:

- Amyotrophic lateral sclerosis (ALS)
- Diaphragmatic paralysis
- Guillian Barre syndrome
- Muscular dystrophy
- Myasthenia gravis
- Multiple Sclerosis
- Post-Polio syndrome
- Spinal muscular atrophy disorders

P2.2 Explain the disorders of the peripheral nervous system per distinct features *

E.3 Compare acute and chronic renal failure

P3.1 Describe acute and chronic renal failure
P3.2 Explain acute and chronic renal failure per distinct features *

E.4 Compare specific metabolic disorders

P4.1 Describe diabetes and nephritis
P4.2 Explain diabetes and nephritis per distinct features *

E.5 Explain how particular conditions impair human physiology

P5.1 Describe the following conditions:

- Gas and/or chemical inhalation
- Electrical and surface burn injuries
- Hyperthermia and hypothermia

- Drowning and near-drowning
- Hypobarism and hyperbarism
- Multiple Organ Dysfunction Syndrome (MODS)
- Obesity
- Hepatitis A & C
- Cancers

P5.2 Explain the above conditions per distinct features *

E.6 Compare systemic infections

P6.1 Influenza (flu)
P6.2 HINI Flu Virus
P6.2 HIV/AIDS
P6.3 Pneumonia (Pneumococcal)
P6.5 Poliomyelitis
P6.6 Tuberculosis (TB)
P6.7 SARS

2011 Respiratory Therapy National Competency Profile Companion Document

Performance Criteria

The following section of the '2011 RT-NCP Companion Document' is ***composed of 18 domains of competence (DC)****. These domains of competence and their respective elements are outlined in the 2011 Respiratory Therapy National Competency Profile. In addition, in the Companion* ***Document each element has been assigned a set of performance criteria intended to provide more detailed information particular to each specific element of competence****. Henceforth, the Performance Criteria section, coupled with the 'Foundation Knowledge' section, must be considered as essential components by the educational programs with respect to development of their program curriculum.*

The **18 domains of competence** are:

Professionalism

Presentation guide

DC = Statement of the competence for a particular domain
E = Elements of the competence for a specific statement of competence
P = Performance criteria for competency; associated with a specific element of the competence

Domain of Competence DC.1

Exhibit professional behaviour with patients, families, caregivers, colleagues and health care professionals in a clinical setting

E1.1 Use professional language, behaviour, and attire in a clinical environment

P1.1.1 Utilize professional language
P1.1.2 Behave in a professional manner in accordance with the standards of the profession
P1.1.3 Utilize professional and safe attire in accordance with clinical requirements in all situation

E1.2 Demonstrate support and caring towards patients, co-workers and others

P1.2.1 Describe attributes associated with supportive and caring professional attitude and behaviour
P1.2.2 Discuss the effects of patient psychosocial stress factors and how to minimize their impact
P1.2.3 Describe the psychosocial implications of particular situations such as: Dying patients and disease stigmas
P1.2.4 Discuss the legal aspect of the relationship that exists between the health care worker and the patient/family
P1.2.5 Demonstrate a supportive attitude and behaviour in clinical situations

P1.2.6 Demonstrate a caring attitude and behaviour in a variety of clinical situations

E1.3 Adhere to the scope of practice

P1.3.1 Describe the various domains of practice provincially and nationally
P1.3.2 Describe the Standards of Practice per applicable regulatory body
P1.3.3 Discuss professional responsibilities and accountabilities as it pertains to the Profession
P1.3.4 Demonstrate adherence to the applicable Standards of Practice in clinical situations

E1.4 Adhere to professional medical, legal, and ethical guidelines/regulations

P1.4.1 Distinguish between medical, legal and ethical guidelines/regulations
P1.4.2 Describe the various professional guidelines/regulations: medical, legal and ethical
P1.4.3 Demonstrate the application of professional guidelines/regulations in clinical situations

E1.5 Adhere to institutional/organizational policies and procedures

P1.5.1 Distinguish between policies and procedures
P1.5.2 Distinguish between departmental, institutional/organizational and regulatory policies and procedures
P1.5.3 Adhere to all applicable policies and procedures in a specific clinical environment

E1.6 Participate in continuing education

P1.6.1 Describe the role and importance of professional development
P1.6.2 Compare opportunities for continuing training and development
P1.6.3 Formulate a plan for personal professional development
P1.6.4 Participate in professional development/continuing education activities during clinical stage

E1.7 Perform continuous self-evaluation

P1.7.1 Describe the elements essential for an effective job performance appraisal
P1.7.2 Formulate an objective and effective self performance appraisal template
P1.7.3 Participate in role-playing exercises based on self-appraisal in a simulated context
P1.7.4 Develop awareness of personal strengths and weaknesses in relation to patient care and team work in a clinical setting

E1.8 Demonstrate stress management skills

P1.8.1 Identify major stressors commonly encountered in the workplace
P1.8.2 Compare factors that contribute to stress in the workplace
P1.8.3 Discuss the psychological impact of caring for patients
P1.8.4 Apply strategies for managing stress in a clinical setting

Communication

Presentation guide

DC = Statement of the competence for a particular domain
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Domain of Competence DC.2

Communicate professionally in writing, verbally and non-verbally with patients, families, caregivers, colleagues and health care professionals in a clinical setting

E2.1 Demonstrate effective verbal, written, and non-verbal communication skills

P2.1.1 Describe the elements for successful verbal communication
P2.1.2 Identify potential barriers to effective communication
P2.1.3 Discuss methods to minimize communication barriers
P2.1.4 Apply effective verbal communication skills in a clinical setting
P2.1.5 Discuss the organizational structure of written language
P2.1.6 Apply effective written communication skills in a clinical setting
P2.1.7 Distinguish various forms of body language and alternate communication techniques
P2.1.8 Interpret non-verbal communication
P2.1.9 Utilize effective non-verbal communication techniques in a clinical setting

E2.2 Use adjunctive equipment/techniques to facilitate communication

P2.2.1 Compare adjunctive equipment/techniques utilized to facilitate communication
P2.2.2 Utilize effectively adjunctive equipment and or techniques to facilitate communication in a clinical setting

E2.3 Apply active listening

P2.3.1 Describe “active listening” in the context of verbal and non-verbal messages
P2.3.2 Discuss the role of personal beliefs and emotions on one’s ability to actively listen
P2.3.3 Employ active listening techniques in a clinical setting

E2.4 Use recognized medical terminology

P2.4.1 Define terms and abbreviations commonly utilized in respiratory care
P2.4.2 Utilize medical terminology and abbreviations in a clinical setting

E2.5 Maintain documentation and records

P2.5.1 Compare patient charting formats
P2.5.2 Document patient assessment, patient procedures and patient progress in a clinical setting

E2.6 Participate in professional consultations in a multidisciplinary and/or interdisciplinary health care system

P2.6.1 Distinguish between multidisciplinary and interdisciplinary health care systems
P2.6.2 Collaborate as a team member in a multidisciplinary and/or interdisciplinary health care system

E2.7 Provide shift change report

P2.7.1 Outline the importance of shift change report
P2.7.2 Provide shift report using established guidelines and formats in a clinical setting

E2.8 Pursue resolution to interpersonal relationship problems

P2.8.1 Distinguish between different sources of conflict and contributing factors
P2.8.2 Compare strategies for effectively handling conflict
P2.8.3 Describe common means of addressing conflict
P2.8.4 Employ conflict resolution strategies in a clinical setting

E2.9 Receive and transcribe verbal orders

P2.9.1 Describe situations where a verbal order is accepted practice
P2.9.2 Describe situations when a verbal order may contribute to poor quality or unsafe patient care
P2.9.3 Compare procedures utilized to minimize the potential negative impact of verbal orders

Analysis and Problem Solving

Presentation guide

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Domain of Competence DC.3

Assess one's own thinking throughout the steps and processes used in problem solving and decision making in a clinical setting

E3.1 Demonstrate critical judgment in professional practice

P3.1.1 Describe the elements involved in the process of critical thinking
P3.1.2 Discuss the impact and importance of critical thinking on patient care
P3.1.3 Demonstrate critical thinking in a clinical setting

E3.2 Evaluate and address issues surrounding equipment application and/or operation

P3.2.1 Describe the steps to ensure patient safety with respect to equipment and operation
P3.2.2 Describe the steps to ensure patient safety when equipment malfunctions
P3.2.3 Outline the communication process for equipment repair/servicing
P3.2.4 Perform logical, systematic searches for sources of error or malfunction in a clinical setting
P3.2.5 Provide immediate effective and safe patient care in the presence of error or malfunctioning equipment in a clinical setting

E3.3 Demonstrate problem-solving skills

P3.3.1 Describe the common elements associated with problem-solving

P3.3.2 Outline techniques used in systematic problem-solving
P3.3.3 Demonstrate problem-solving in a clinical setting

E3.4 Demonstrate decision-making skills

P3.4.1 Describe the common elements of the decision-making process
P3.4.2 Compare decision-making methods
P3.4.3 Demonstrate decision-making in a clinical setting

E3.5 Demonstrate prioritization skills

P3.5.1 Describe common time management skills and techniques
P3.5.2 Describe the importance of developing a plan
P3.5.3 Compare prioritization techniques
P3.5.4 Identify time and resource constraints
P3.5.5 Apply prioritization with respect to time management and planning of activities in a clinical setting

Health and Safety

Presentation guide

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Domain of competence DC.4

Apply preventative measures associated with asepsis, health, welfare and safety in the clinical setting

E4.1 Adhere to procedures and operations with respect to 'Workplace Hazardous Materials Information System' (WHMIS) and Occupational Health, Safety and Wellness (OHS&W)

P4.1.1 Distinguish categories of hazardous/dangerous substances and materials
P4.1.2 Compare handling and manipulation of hazardous/dangerous substances and materials with respect to WHMIS and OSH&W
P4.1.3 Apply handling and manipulation of hazardous/dangerous substances and materials in a clinical setting as outlined in WHMIS and OSH&W
P4.1.4 Describe the priority and follow-up procedures for injuries occurring in the workplace

E4.2 Adhere to quality control/assurance guidelines

P4.2.1 Explain quality assurance testing and its relationship to safe practice
P4.2.2 Describe the standards rules and regulations relative to quality control
P4.2.3 Perform quality control procedures in according with protocols in a clinical setting

E4.3 Participate in equipment preventative maintenance programs

P4.3.1 Describe a care and maintenance program for equipment utilized in respiratory care, including calibration procedures and operational checks
P4.3.2 Participate in the care and maintenance of equipment in a clinical setting

E4.4 Clean and disinfect equipment

P4.4.1 Define the methods used to clean and disinfect equipment
P4.4.2 Identify the advantages, disadvantages, indications and precautions relative to each method used to clean and disinfect equipment
P4.4.3 Utilize methods to clean and disinfect equipment in a clinical setting

E4.5 Apply infection prevention and control precautions (e.g., isolation management)

P4.5.1 Distinguish techniques utilized for hand washing in particular situations
P4.5.2 Describe the levels of precaution in relation to types of microorganisms and the human host
P4.5.3 Describe the selection and effective use of equipment to prevent infection and apply precautions
P4.5.4 Describe the purpose and indications for culture and sensitivity testing in respiratory care
P4.5.5 Describe the use and function of bacteria filters
P4.5.6 Apply infection prevention and control precaution procedures in a clinical setting

E4.6 Use personal protective equipment

P4.6.1 Distinguish types of protective equipment used in relation to personnel and patient protection
P4.6.2 Distinguish types of protective protocols as related to a particular clinical situation and/or environment
P4.6.3 Apply the required protective protocol in a clinical setting

E4.7 Handle and dispose of biohazardous waste

P4.7.1 Identify common types of biohazardous materials
P4.7.2 Describe the safe management and handling of biohazardous materials, including storage and elimination
P4.7.3 Apply safe handling and disposal of biohazardous materials in a clinical setting

E4.8 Adhere to Canadian Standards Association (CSA) standards for medical equipment

P4.8.1 Explain the role and responsibilities of the CSA with respect to medical equipment and the safety of patients

P4.8.2 Explain general electrical safety guidelines
P4.8.3 Adhere to norms and safety standards when utilizing medical equipment in a clinical setting

E4.9 Adhere to Department of Transportation/Transport Canada regulations for cylinders and medical gases

P4.9.1 Distinguish sizes and formats of medical gases/liquids containers and their respective content
P4.9.2 Discuss the DOT/CTC regulations and required procedures for handling and storage of medical gas/liquid containers
P4.9.3 Explain the risks and dangers associated with the handling of medical gas/liquid containers
P4.9.5 Handle and store medical gas/liquid containers per DOT/CTC regulations in a clinical setting

E4.10 Adhere to institutional/organizational disaster and mass casualty plan

P4.10.1 Describe a standard plan for dealing with a disaster and mass casualty
P4.10.2 Formulate a template for an institutional disaster and mass casualty plan
P4.10.3 Describe the role of a respiratory therapist in an institutional disaster and mass casualty plan

Administration

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Domain of Competence DC.5

Apply principles of administration in a didactic assessment of learning

E5.1 Demonstrate basic computer and electronic data management skills

P5.1.1 Describe hospital information systems in terms of purpose, components and management
P5.1.2 Demonstrate the ability to utilize effectively various computer applications
P5.1.3 Utilize computer and electronic data management tools in a clinical setting

E5.2 Participate in institutional/organizational and/or professional body/association meetings/committees

P5.2.1 Describe the purpose of meetings/committees held at various levels: institutional, provincial and national
P5.2.2 Describe the basis structure and organization of a formal meeting
P5.2.3 Explain delegation and its relationship to responsibility
P5.2.4 Discuss the legislative acts, regulations, standards, codes, and scope of practice governing the delivery of the respiratory therapy profession

E5.3 Apply cost containment practices (i.e., cost effectiveness)

P5.3.1 Describe factors contributing to increasing health care costs
P5.3.2 Explain the purpose of a budget

P5.3.3 Describe the process of developing a budget
P5.3.4 Describe examples of possible cost containment measures
P5.3.5 Discuss physical resource management as it relates to respiratory care in terms of; equipment, space

E5.4 Collect and provide workload measurement data

P5.4.1 Discuss the purpose of collecting and analyzing workload measurement data
P5.4.2 Compare systems utilized for collection of workload data
P5.4.3 Analyze workload data in relationship to a defined parameter (staffing, budget allocation, equipment needs, etc.)

E5.5 Perform non-patient assessments (e.g., environment, risk management, resources, demographics)

P5.5.1 Discuss components of environmental management related to respiratory care; workplace health and safety, risk management, incident reporting
P5.5.2 Describe the forces driving change in organizations
P5.5.3 Distinguish organizational change in terms of; developmental change, and transformational change
P5.5.4 Identify systemic barriers to change
P5.5.5 Identify organizational barriers to change
P5.5.6 Identify individual barriers to change
P5.5.7 Describe issues around inappropriate change management
P5.5.8 Explain why change could be welcomed

E5.6 Evaluate the knowledge and performance of peers/students in order to be able to complete performance reports

P5.6.1 Describe the function of a job description
P5.6.2 Describe the purpose of setting clear goals and objectives
P5.6.3 Describe the importance of setting priorities
P5.6.4 Discuss the difference between manager and leader, supervisor and preceptor
P5.6.5 Discuss the importance of a performance standard
P5.6.6 Describe basic elements of an effective performance review process

E5.7 Orient students and new staff

P5.7.1 Describe aspects of an orientation program for students and new staff to a respiratory care department
P5.7.2 Participate in the orientation for students and new staff to a respiratory care department in a clinical setting

Research

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Domain of competence DC.6

Apply principles of research in a didactic assessment of learning

E6.1 Use recognized research terminology (e.g., sample size, probability, validity)

P6.1.1 Explain the meaning of research terminology as it relates to purpose and characteristics in health care applications
P6.1.2 Compare research strategies and designs with respect to purpose, characteristics, features and limitations in health research
P6.1.3 Describe basic analytic techniques
P6.1.4 Describe the application of evidence based practice
P6.1.5 Discuss the principle of biomedical ethics

E6.2 Contribute directly to research teams (e.g., data pool)

P6.2.1 Describe research planning and design
P6.2.2 Distinguish between statistical tools and techniques
P6.2.3 Differentiate and discuss evidence that is relevant to clinical practice
P6.2.4 Share research findings
P6.2.5 Apply evidence based practice in a simulated clinical situation

E6.3 Evaluate research data, methods, and outcomes with respect to validity and applicability to therapy and diagnostic procedures

P6.3.1 Evaluate the appropriateness of the research question based on rationale available and pertinent background information

P6.3.2 Evaluate the significance of finding in relation to the larger body of knowledge
P6.3.3 Differentiate published research and results that are relevant to clinical practice

Health Education and Promotion

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Domain of competence DC.7

Educate patients, families, caregivers, colleagues and health care professionals with respect to respiratory care in a clinical setting

E7.1 Provide cardio-respiratory education to patients/clients, family members, community, advocates and/or other healthcare professionals

P7.1.1 Discuss methods for enhancing comprehension and retention of important information
P7.1.2 Compare instructional aids to promote learning
P7.1.3 Teach patient and/or caregivers self management skills
P7.1.4 Validate the patient and/or caregivers comprehension of the instructions

E7.2 Promote cardio-respiratory health

P7.2.1 Describe factors which affect cardio-respiratory health and pulmonary rehabilitation
P7.2.2 Compare methods for promoting a healthy cardio-respiratory lifestyle
P7.2.3 Promote and teach tobacco smoking cessation
P7.2.4 Describe opportunities where cardio-respiratory health may be promoted

E7.3 Participate in community health programs

P7.3.1 Discuss community health programs
P7.3.2 Assess need for the development of a community health program
P7.3.3 Provide support to community health programs

E7.4 Act as a patient advocate

P7.4.1 Describe health care advocacy
P7.4.2 Participate as a patient advocate in a clinical setting
P7.4.3 Describe informed consent and advance directives

Patient Assessment

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Domain of Competence DC.8

Conduct patient assessment in a clinical setting

E8.1 Conduct a comprehensive patient/client history (e.g., environmental, resources, equipment, safety, home evaluation, occupational evaluation, psycho-social, familial and medical history)

P8.1.1 Describe the components of a complete health history and the type of information found in each section of the history
P8.1.2 Describe the role of the respiratory therapist in patient assessment
P8.1.3 Describe the value of reviewing the parts of the patient's chart
P8.1.4 Recognize the importance of properly obtaining and recording a patient history
P8.1.5 Define the difference between objective and subjective data and the difference between signs and symptoms
P8.1.6 Describe techniques for structuring the interview and techniques used to facilitate conversational interviewing
P8.1.7 Conduct a comprehensive patient history in a clinical setting

E8.2 Conduct and interpret results of complete physical respiratory assessment (i.e., inspection, palpation, percussion, auscultation)

P8.2.1 Identify normal and abnormal findings related to palpation and percussion of the chest wall
P8.2.2 Identify normal and abnormal breathing patterns and breathing rates for patients
P8.2.3 Describe proper examination of the head, neck and thoracic cage
P8.2.4 Recognize chest abnormalities and deformities and relate them to specific diseases and disorders
P8.2.5 Demonstrate the proper use and care of a stethoscope

P8.2.6 Describe the proper technique for auscultation of the lungs
P8.2.7 Identify normal and abnormal lung sounds using the accepted terminology
P8.2.8 Describe the mechanism responsible for producing lung sounds
P8.2.9 Explain assessment to patient
P8.2.10 Conduct a complete physical respiratory assessment of a patient in a clinical setting
P8.2.11 Interpret a complete physical respiratory assessment of a patient in a clinical setting

E8.3 Conduct and interpret results of basic cardiac assessment

P8.3.1 Identify normal heart rate values
P8.3.2 Identify the location of selective arteries used to assess pulse and heart rate
P8.3.3 Associate heart rate with related physiological functions
P8.3.4 Identify normal arterial blood pressure values
P8.3.5 Associate blood-pressure with related physiological functions
P8.3.6 Assess arterial blood pressure using a sphygmomanometer and a stethoscope
P8.3.7 Assess arterial blood pressure using a non-invasive monitor
P8.3.8 Measure and assess pulse-heart rate at relevant site on a patient in a clinical setting
P8.3.9 Measure and assess non-invasive blood pressure on patient in a clinical setting

E8.4 Interpret relevant diagnostic testing (e.g., chest radiography, oximetry)

P8.4.1 Describe the technical characteristics of a normal chest radiograph
P8.4.2 Describe the clinical characteristics of a normal chest radiograph
P8.4.3 Distinguish standard positions for a chest radiograph
P8.4.4 Assess position of an artificial airway using a chest radiograph in a clinical setting
P8.4.5 Compare the abnormalities in a chest radiograph in common diseases/disorders
P8.4.6 Compare special pulmonary imaging techniques: computerized tomography, Magnetic Resonance Imaging and Angiography
P8.4.7 Compare the application and indications for using pulse oximetry, co-oximetry and transcutaneous monitoring
P8.4.8 Recognize technical measurements, errors and complications related to pulse oximetry
P8.4.9 Compare the application sites for oximetry and transcutaneous monitoring
P8.4.10 Apply a pulse oximeter and a transcutaneous monitor on patients in a clinical setting

E8.5 Develop, monitor, assess and adjust respiratory treatment plan in a clinical setting

P8.5.1 Develop a measurement/assessment procedure
P8.5.2 Monitor effectiveness of respiratory care plan and evaluate progress
P8.5.3 Assess intervention outcome
P8.5.4 Adjust respiratory treatment plan

E8.6 Develop discharge plan

P8.6.1 Describe multidisciplinary discharge planning
P8.6.2 Compare the advantages and disadvantages of caring for patients in different environments
P8.6.3 Participate in a multidisciplinary discharge plan

Pharmacology - DC

Presentation guide

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Domain of Competence DC.9

Administer pharmaceutical substances for specific applications on patients in a clinical setting

E9.1 Assess need for medication

P9.1.1 Compare different forms of medications utilized in respiratory care
P9.1.2 Distinguish medications necessary for varying clinical cases

E9.2 Select administrative method (e.g., inhalation, intravenous, instillation, intramuscular)

P9.2.1 Recognize the clinical situation with regards to the administration of a particular drug
P9.2.2 Compare the administrative methods commonly utilized in respiratory care and anesthesia
P9.2.3 Associate the administrative method per clinical situation

E9.3 Calculate drug dosages within metric system

P9.3.1 Demonstrate calculations using the metric system
P9.3.2 Calculate dosage for different forms of medication including diluents
P9.3.3 Demonstrate drug preparations
P9.3.4 Label syringes and vials according to local standards in a clinical setting
P9.3.5 Prepare drug dosage

E9.4 Verify medical prescription

P9.4.1 Identify the essential elements and distinct forms of a prescription
P9.4.2 Assess prescription for respiratory care and confirm its appropriateness in a clinical setting

E9.5 Assess and recognize efficacy and side effects of medication

P9.5.1 Assess the efficacy of a medication relative to desired effects per prescription and clinical situation
P9.5.2 Assess presence of side effects
P9.5.3 Recommend course of action

E9.6 Titrate dose of medication

P9.6.1 Describe the consequences of administrating a particular medication
P9.6.2 Ascertain indications and contra-indications of a medication dose per clinical situation
P9.6.3 Apply protocol specific for the administration and adjustment of a medication in a clinical setting

E9.7 Provide oxygen therapy using appropriate method

P9.7.1 Describe the methods of storage, distribution, transportation and safety standards for oxygen
P9.7.2 Determine the indications for oxygen therapy
P9.7.3 Explain the physiological complications and side effects of oxygen therapy
P9.7.4 Explain the acute and chronic indications for hyperbaric therapy
P9.7.5 Describe the contraindications to hyperbaric therapy
P9.7.6 Describe the hazards and complications of hyperbaric therapy
P9.7.7 Describe the basic principles of operation of a hyperbaric chamber
P9.7.8 Assess the need for oxygen therapy in a clinical setting
P9.7.9 Select correct administration system and patient interface for oxygen therapy
P9.7.10 Administer oxygen therapy in a clinical setting
P9.7.11 Monitor, assess and document effectiveness of oxygen therapy in a clinical setting
P9.7.12 Modify therapy as required and wean when indicated in a clinical setting

E9.8 Administer substances (e.g., drugs, fluids) by inhalation

P9.8.1 Assess prescription for appropriateness
P9.8.2 Demonstrate precise calculation and safe preparation for substances administered by inhalation
P9.8.3 Differentiate between types of aerosol generators based on principle of operation
P9.8.4 Compare different formats and procedures for the administration of substances by inhalation
P9.8.5 Explain the factors known to influence the administration of a substance by inhalation with respect to penetration, deposition and clearance
P9.8.6 Describe potential complications associated with the administration of substances by inhalation

P9.8.7 Administer substances by inhalation per prescription in a clinical setting
P9.8.8 Monitor and document treatment and patient response

E9.9 Administer substances (e.g., drugs, fluids) by injections

P9.9.1 Assess prescription for appropriateness
P9.9.2 Demonstrate precise calculation and safe preparation for substances to be administered by injection
P9.9.3 Compare different formats and procedures of injection for the administration of substances
P9.9.4 Describe potential complications associated with the administration of substances by injection
P9.9.5 Administer substances by injection per prescription in a clinical setting
P9.9.6 Monitor and document procedure and patient response

E9.10 Administer substances (e.g., drugs, fluids) by instillation

P9.10.1 Assess prescription for appropriateness
P9.10.2 Demonstrate calculation and safe preparation for substances administered by instillation
P9.10.3 Compare different formats and procedures for the administration of substances by instillation
P9.10.4 Describe potential complications associated with the administration of substances by instillation including monitoring of patient response
P9.10.5 Administer substances by instillation per prescription in a clinical setting
P9.10.6 Monitor and document procedure and patient response

E9.11 Administer substances (e.g., drugs, fluids) by infusion

P9.11.1 Assess prescription for appropriateness
P9.11.2 Demonstrate calculation and safe preparation for substances administered by infusion
P9.11.3 Compare different formats and procedures for the administration of substances by infusion
P9.11.4 Describe potential complications associated with the administration of substances by infusion
P9.11.5 Administer substances by infusion per prescription in a clinical setting
P9.11.6 Monitor and document procedure and patient response

Bronchopulmonary Hygiene

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Domain of competence DC.10

Perform bronchopulmonary hygiene procedures on patients in a clinical setting

E10.1 Perform sputum induction

P10.1.1 Explain the purpose and process for sputum induction
P10.1.2 Select and assemble the equipment including solutions and drugs for sputum induction
P10.1.3 Prepare patient for sputum induction
P10.1.4 Identify and manage potential side effects of solutions and/or drugs used for sputum induction
P10.1.5 Perform sputum induction in a clinical setting
P10.1.6 Describe the indications and method of performing bronchoalveolar lavage
P10.1.7 Monitor and document procedure and patient response

E10.2 Perform sputum collection procedures

P10.2.1 Describe methods and equipment for obtaining a fresh and uncontaminated sputum sample
P10.2.2 Compare characteristic appearance of sputum samples
P10.2.3 Identify the factors involved in macroscopic sputum examination
P10.2.4 Perform sputum collection procedure in a clinical setting including labeling and transfer of sample to laboratory for analysis

E10.3 Perform nasopharyngeal suction therapy

P10.3.1 Describe the physiological effects of nasopharyngeal suction including indications and contraindications

P10.3.2 Describe the techniques used in nasopharyngeal suction therapy
P10.3.3 Describe complications and corrective actions associated with nasopharyngeal suctioning
P10.3.4 Select and assemble the equipment for nasopharyngeal suction therapy
P10.3.5 Perform and document nasopharyngeal suction therapy in a clinical setting and monitor its outcome

E10.4 Perform oropharyngeal suction therapy

P10.4.1 Describe the physiological effects of oropharyngeal suction including indications and contraindications
P10.4.2 Describe the techniques used in oropharyngeal suction therapy
P10.4.3 Describe complications and corrective actions associated with oropharyngeal suctioning
P10.4.4 Select and assemble the equipment for oropharyngeal suction therapy
P10.4.5 Perform and document oropharyngeal suction therapy in a clinical setting and monitor its outcome

E10.5 Perform endotracheal suction therapy

P10.5.1 Describe the physiological effects of endotracheal suction including indications and contraindications
P10.5.2 Describe the techniques used in endotracheal suction therapy
P10.5.3 Describe complications and corrective actions associated with endotracheal suctioning
P10.5.4 Select and assemble the equipment for endotracheal suction therapy
P10.5.5 Perform and document endotracheal suction therapy in a clinical setting and monitor its outcome

E10.6 Perform tracheostomy/laryngectomy suction therapy

P10.6.1 Describe the physiological effects of tracheostomy/laryngectomy suction including indications and contraindications
P10.6.2 Describe the techniques used in tracheostomy/laryngectomy suction therapy
P10.6.3 Describe complications and corrective actions associated with tracheostomy/laryngectomy suctioning
P10.6.4 Select and assemble the equipment for tracheostomy/laryngectomy suction therapy
P10.6.5 Perform and document tracheostomy/laryngectomy suction therapy in a clinical setting and monitor its outcome

E10.7 Assist with body positioning techniques to facilitate bronchopulmonary hygiene

P10.7.1 Explain the application of body positioning techniques to facilitate bronchopulmonary hygiene
P10.7.2 Distinguish body positions used to facilitate bronchopulmonary hygiene with respect to specific lung segments including potential complications
P10.7.3 Assess patient's need for specific body positioning in a clinical setting

P10.7.4 Assist with body positioning to facilitate specific lung segment hygiene clearance in a clinical setting and monitor outcome

E10.8 Provide humidity therapy using appropriate method

P10.8.1 Define terminology specific to the application of humidity therapy
P10.8.2 Explain the respiratory physiological importance of humidity and the significance of a humidity deficit
P10.8.3 Differentiate between 'cold' and 'heated' humidification with respect to physiology
P10.8.4 Explain the principle of operation of commonly used humidifiers and delivery systems
P10.8.5 Describe the factors which affect the efficiency of humidifiers
P10.8.6 Assess a patient's need for specific humidity therapy in a clinical setting
P10.8.7 Select and assemble appropriate equipment for humidity therapy in a clinical setting
P10.8.8 Provide and document humidity therapy to patients in a clinical setting and monitor effectiveness and modify as required
P10.8.9 Wean patient from humidity therapy in a clinical setting and monitor outcome

E10.9 Perform lung volume recruitment maneuvers

P10.9.1 Explain the purpose and application of lung volume recruitment maneuvers
P10.9.2 Describe lung volume recruitment maneuvers
P10.9.3 Assess patient's need for lung volume recruitment maneuvers in a clinical setting
P10.9.4 Perform and document lung volume recruitment maneuver in a clinical setting and monitor its outcome
P10.9.5 Evaluate patient's progress per lung volume recruitment maneuver in a clinical setting

E10.10 Perform assisted cough maneuvers

P10.10.1 Compare assisted cough maneuvers
P10.10.2 Instruct patient on assisted cough maneuvers and monitor application in a clinical setting
P10.10.3 Provide cough assistance to a patient in a clinical setting
P10.10.4 Evaluate patient's progress per cough assistance in a clinical setting

E10.11 Promote secretion clearance and breathing techniques

P10.11.1 Describe the importance of effective secretion clearance
P10.11.2 Compare techniques utilized to promote secretion clearance
P10.11.3 Instruct patient on effective secretion clearance techniques and monitor its application and outcome in a clinical setting
P10.11.4 Select where needed the appropriate adjunctive device to assist with secretion clearance (e.g.; PEP device, Flutter® valve)

P10.11.5 Describe the potential benefits of applying controlled breathing techniques
P10.11.6 Instruct patient on applying effective breathing techniques, document and monitor its application/progress in a clinical setting

E10.12 Teach incentive spirometry

P10.12.1 Summarize the therapeutic and technical application of incentive spirometry
P10.12.2 Assess need for incentive spirometry and prepare patient
P10.12.3 Instruct patient in using incentive spirometry
P10.12.4 Monitor for correct patient's application and progress in a clinical setting

Airway Management

Presentation guide

DC = Statement of the competence for a particular domain
E = Elements of the competence for a specific statement of competence
P = Performance criteria for competency; associated with a specific element of the competence

Domain of competence DC.11

Perform airway management techniques on patients in a clinical setting

E11.1 Insert nasopharyngeal airways

P11.1.1 Discuss the indications for inserting a nasopharyngeal airway
P11.1.2 Demonstrate equipment and patient preparation
P11.1.3 Insert nasopharyngeal airways in a clinical setting

E11.2 Manage nasopharyngeal airways

P11.2.1 Describe nasopharyngeal airway complications and corrective action
P11.2.2 Monitor patient with a nasopharyngeal airway, recognize complications and take corrective action in a clinical setting

E11.3 Remove nasopharyngeal airways

P11.3.1 Describe procedure for removal of nasopharyngeal airways
P11.3.2 Remove nasopharyngeal airways in a clinical setting

E11.4 Insert oropharyngeal airways

P11.4.1 Discuss the indications for inserting an oropharyngeal airway
P11.4.2 Demonstrate equipment and patient preparation
P11.4.3 Insert oropharyngeal airways in a clinical setting

E11.5 Manage oropharyngeal airways

P11.5.1 Describe oropharyngeal airway complications and corrective action
P11.5.2 Monitor patient with a oropharyngeal airway, recognize complications and take corrective action in a clinical setting

E11.6 Remove oropharyngeal airways

P11.6.1 Describe procedure for removal of oropharyngeal airways
P11.6.2 Remove oropharyngeal airways in a clinical setting

E11.7 Perform bag/mask ventilation with self-inflating resuscitator

P11.7.1 Describe the common components of self-inflating manual resuscitators, including accessories (i.e., pressure relief and PEEP valves)
P11.7.2 Discuss the application of a self-inflating manual resuscitator with various accessories including PEEP devices
P11.7.3 Describe the factors affecting the delivered oxygen concentration and lung volume
P11.7.4 Identify potential complications and related corrective action
P11.7.5 Perform bag/mask ventilation with a self-inflating resuscitator on patients in a clinical setting
P11.7.6 Assess patient response and make necessary adjustments

E11.8 Perform bag/mask ventilation with flow-inflating resuscitator

P11.8.1 Describe the components of flow-inflating manual resuscitator, including accessories (i.e., pressure relief and PEEP valves)
P11.8.2 Describe the factors affecting the delivered oxygen concentration and lung volume while ventilating a patient with a flow-inflating manual resuscitator
P11.8.3 Identify potential complications and related corrective action per use of a flow-inflating manual resuscitator
P11.8.4 Compare the application of ventilation using a self-inflating manual resuscitator versus a flow-inflating resuscitator
P11.8.5 Perform bag/mask ventilation with a flow-inflating resuscitator on patients in a clinical setting
P11.8.6 Assess patient response and make necessary adjustments

E11.9 Perform endotracheal intubation

P11.9.1 Describe the indications for endotracheal intubation
P11.9.2 Compare the procedures for endotracheal intubation applicable in distinct clinical situations and potential complications
P11.9.3 Describe equipment and patient preparation for endotracheal intubation for particular clinical situations
P11.9.4 Assess need for endotracheal intubation in patients in a clinical setting

P11.9.5 Perform endotracheal intubation on patients in a clinical setting while ensuring adequate ventilation throughout procedure
P11.9.6 Assess effectiveness of ventilation and oxygenation, secure tube and inflate cuff of intubated patients in a clinical setting

E11.10 Assist with endotracheal intubation

P11.10.1 Prepare equipment and patient for endotracheal intubation
P11.10.2 Assist with endotracheal intubation in a clinical setting
P11.10.3 Assess ventilation and oxygenation, secure tube and inflate cuff of intubated patients in a clinical setting

E11.11 Manage endotracheal tubes

P11.11.1 Assess adequacy of ventilation and oxygenation, and monitor the intubated patient
P11.11.2 Assess patent airway, tube placement and cuff seal for intubated patients in a clinical setting and take corrective action
P11.11.3 Recognize complications and take corrective action for intubated patients in a clinical setting

E11.12 Change endotracheal tubes

P11.12.1 Assess need for changing or discontinuing the application of an endotracheal tube in a clinical setting
P11.12.2 Prepare the equipment necessary for changing an endotracheal tube in a clinical setting
P11.12.3 Perform extubation and re-intubation of patients in a clinical setting, while maintaining a patent airway and adequate ventilation
P11.12.4 Assess effectiveness of ventilation, secure tube and inflate cuff of intubated patients in a clinical setting
P11.12.5 Recognize complications and take corrective action for re-intubated patients in a clinical setting

E11.13 Remove endotracheal tubes

P11.13.1 Assess need to remove endotracheal tubes in patients in a clinical setting
P11.13.2 Describe method for removal of endotracheal tubes
P11.13.3 Prepare equipment and patient for removal of endotracheal tubes in patients in a clinical setting
P11.13.4 Extubate patients in a clinical setting
P11.13.5 Monitor patient response while assuring a patent airway, adequate ventilation and oxygenation in patients in a clinical setting

P11.13.6 Continue to monitor for possible complications and take corrective action in patients following removal of an endotracheal tube in a clinical setting

E11.14 Perform ventilation via artificial airway with a self-inflating resuscitator

P11.14.1 Determine need for manual ventilation via artificial airway using a self-inflating resuscitator
P11.14.2 Perform ventilation via artificial airway with a self-inflating manual resuscitator on patients in a clinical setting
P11.14.3 Assess ventilation and oxygenation via artificial airway with a self-inflating manual resuscitator
P11.14.4 Assess patient response and make necessary adjustments during ventilation via artificial airway with a self-inflating resuscitator

E11.15 Perform ventilation via artificial airway with a flow-inflating resuscitator

P11.15.1 Determine need for manual ventilation via artificial airway using a flow-inflating resuscitator
P11.15.2 Perform ventilation via artificial airway with a flow-inflating manual resuscitator on patients in a clinical setting
P11.15.3 Assess ventilation and oxygenation via artificial airway with a flow-inflating manual resuscitator
P11.15.4 Assess patient response, and make necessary adjustments during ventilation via artificial airway with a self-inflating manual resuscitator

E11.16 Insert tracheostomy

P11.16.1 Describe the procedure and indications for insertion of a tracheostomy tube
P11.16.2 Distinguish potential complications associated with a tracheostomy
P11.16.3 Describe equipment and patient preparation for insertion of a tracheostomy tube
P11.16.4 Perform insertion of a tracheostomy tube on patients in a clinical setting while ensuring adequate ventilation throughout procedure
P11.16.5 Assess ventilation and oxygenation secure tracheostomy tube and inflate cuff in patients in a clinical setting

E11.17 Assist with tracheostomy

P11.17.1 Prepare equipment and patient for insertion of a tracheostomy tube for particular clinical situations

P11.17.2 Assist during insertion of a trancheostomy tube in patients in a clinical setting
P11.17.3 Assess ventilation and oxygenation secure tube and inflate cuff of tracheostomy tube in patients in a clinical setting

E11.18 Manage tracheostomy tubes

P11.18.1 Assess ventilation and oxygenation, and monitor patient response while tracheostomized in a clinical setting
P11.18.2 Provide stoma, tube and cuff care for tracheostomized patients in a clinical setting
P11.18.3 Assess patent airway for tracheostomized patients in a clinical setting and take corrective action per need
P11.18.4 Monitor for complications and take corrective action for tracheostomized patients in a clinical setting

E11.19 Change tracheostomy tubes

P11.19.1 Assess need to change tracheostomy tubes in a clinical setting
P11.19.2 Prepare the equipment necessary to change tracheostomy tube in a clinical setting
P11.19.3 Perform insertion of a new tracheostomy tube in patients in a clinical setting, while maintaining a patent airway and adequate ventilation
P11.19.4 Assess ventilation and oxygenation secure tube and inflate cuff of tracheostomy tubes in patients in a clinical setting
P11.19.5 Monitor for complications and take corrective action in a clinical setting

E11.20 Remove tracheostomy tubes

P11.20.1 Assess need to remove tracheostomy tubes in patients in a clinical setting
P11.20.2 Describe method for removal of tracheostomy tubes
P11.20.3 Prepare equipment and patient for removal of tracheostomy tubes in patients in a clinical setting
P11.20.4 Remove tracheostomy tubes in patients in a clinical setting
P11.20.5 Monitor patient response while assuring a patent airway, adequate ventilation and oxygenation and stoma care in patients in a clinical setting
P11.20.6 Continue to monitor and take corrective action in patients following removal of a tracheostomy tube in a clinical setting

E11.21 Care for and maintain various types of surgical airways

(e.g., laryngectomy)

P11.21.1 Compare the application of surgical airways
P11.21.2 Describe complications and corrective action associated with the use of specific surgical airways
P11.21.3 Assess ventilation and oxygenation, and monitor patient with a surgical airway while in a clinical setting
P11.21.4 Take corrective action as necessary in patients with a surgical airway in a clinical setting

E11.22 Utilize specialized techniques and adjuncts to facilitate endotracheal intubation (e.g., fiberoptic assisted laryngoscopy)

P11.22.1 Distinguish difficulties associated with the insertion of an endotracheal tube
P11.22.2 Compare specialized techniques and adjuncts utilized to facilitate insertion of an endotracheal tube
P11.22.3 Prepare the material necessary to facilitate a potentially difficulty endotracheal intubation in a clinical setting
P11.22.4 Prepare the patient for a difficult endotracheal intubation in a clinical setting
P11.22.5 Perform endotracheal intubation using specialized techniques and adjuncts on patients in a clinical setting while ensuring adequate ventilation throughout procedure
P11.22.6 Assess ventilation and oxygenation, secure tube and inflate cuff of intubated patients in a clinical setting

E11.23 Insert laryngeal masks

P11.23.1 Describe indications and the procedure for insertion of a laryngeal mask
P11.23.2 Describe equipment and patient preparation for insertion of a laryngeal mask
P11.23.3 Identify complications and corrective action associated with the use of a laryngeal mask
P11.23.4 Assess need for use of laryngeal mask in patients in a clinical setting
P11.23.5 Perform insertion of laryngeal masks in patients in a clinical setting while ensuring adequate ventilation throughout procedure and insert bite block
P11.23.6 Assess ventilation and oxygenation, secure and inflate laryngeal mask in a clinical setting

E11.24 Manage laryngeal masks

P11.24.1 Maintain patent airway, adequate ventilation and oxygenation for patients in a clinical setting
P11.24.2 Provide laryngeal mask and cuff care for patients in a clinical setting

P11.24.3 Monitor for complications and take corrective action for patients in a clinical setting

E11.25 Remove laryngeal masks

P11.25.1 Describe indications and method for removal of a laryngeal mask
P11.25.2 Prepare equipment and patient for removal of laryngeal mask in patients in a clinical setting
P11.25.3 Remove laryngeal masks in patients in a clinical setting
P11.25.4 Monitor patient response while assuring a patent airway, adequate ventilation and oxygenation in patients in a clinical setting
P11.25.5 Continue to monitor for complications and take corrective action in patients in a clinical setting

E11.26 Manage difficult airway

P11.26.1 Describe clinical situations involving a difficult airway and corrective action
P11.26.2 Assess ventilation and oxygenation, and monitor patient response in a clinical setting
P11.26.3 Recognize complications and take corrective action for patients with a difficult airway in a clinical setting

E11.27 Assist with insertion of specialized airways (e.g., armored tubes, double lumen tubes)

P11.27.1 Compare the application and design of specialized airways
P11.27.2 Assess the need for use of a specialized airway in a particular clinical situation
P11.27.3 Prepare equipment and patient for insertion of a specialized airway for particular clinical situations
P11.27.4 Assist during insertion of specialized airways in patients in a clinical setting
P11.27.5 Assess ventilation and oxygenation, secure tube and inflate cuff of patients in a clinical setting

E11.28 Manage specialized airways (e.g., armored tubes, double-lumen tubes)

P11.28.1 Assess the patient with specialized airways for adequacy of ventilation and oxygenation while in a clinical setting

P11.18.2 Provide specialized airway and cuff care for patients in a clinical setting
P11.18.3 Monitor for complications and take corrective action patients with a specialized airway in a clinical setting

E11.29 Remove specialized airways (e.g., armored tubes, double-lumen tubes)

P11.29.1 Assess need to remove specialized airway in patients in a clinical setting
P11.29.2 Describe method for removal of specialized airways
P11.29.3 Prepare equipment and patient for removal of specialized airway in patients in a clinical setting
P11.29.4 Remove specialized airway in patients in a clinical setting
P11.29.5 Monitor patient response while assuring a patent airway, adequate ventilation and oxygenation in a clinical setting
P11.29.6 Continue to monitor for complications and take corrective action in patients in a clinical setting

E11.30 Wean from artificial airway intervention

P11.30.1 Describe method for weaning patient from artificial airway intervention
P11.30.2 Assess needs to wean patient from artificial airway intervention
P11.30.3 Prepare equipment and patient for weaning from artificial airway in a clinical setting
P11.30.4 Wean patient from artificial airway in a clinical setting while maintaining ventilation during procedure
P11.30.5 Monitor patient response while assuring patent airway, adequate ventilation and oxygenation in a clinical setting
P11.30.6 Continue to monitor for complications and take corrective action in patients wean from artificial airways in a clinical setting

E11.31 Assist with speech therapy (e.g., speech valves)

P11.31.1 Describe methods utilized to enable patient to communicate verbally
P11.31.2 Assess patient readiness for the application of speech therapy
P11.31.3 Instruct and assist patients ready for speech therapy in a clinical setting
P11.31.4 Determine effectiveness of speech therapy on patients in a clinical setting

Anesthesia

Presentation guide

DC = Statement of the competence for a particular domain
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Domain of competence DC.12

Perform anesthesia assistance in a clinical setting

E12.1 Set up and verify anesthetic equipment

- P12.1.1 Verify the integrity of the anesthesia machine
- P12.1.2 Prepare the equipment and accessories necessary for anesthesia in a clinical setting
- P12.1.3 Verify the setting of various alarms per hospital protocol
- P12.1.4 Prepare the drugs in accordance with a particular type of anesthesia and surgery in a clinical setting
- P12.1.5 Prepare equipment for fluid and blood administration for anesthesia in a clinical setting
- P12.1.6 Prepare airway equipment for a particular patient and procedure in a clinical setting
- P12.1.7 Prepare equipment for invasive monitoring per need in a clinical situation
- P12.1.8 Prepare equipment for local or regional anesthesia per need and protocol in a clinical setting

E12.2 Perform pre-anesthetic assessment of airway

- P12.2.1 Demonstrate airway management techniques
- P12.2.2 Evaluate patient airway prior to induction
- P12.2.3 Anticipate when assisted ventilation is required in a clinical setting
- P12.2.4 Perform mask/bag assisted ventilation in a clinical setting

P12.2.5 Perform oral pharyngeal airway insertion in a clinical setting

E12.3 Assist with general and regional anesthesia

P12.3.1 Distinguish general from regional anesthesia procedures including clinical indications and contraindications
P12.3.2 Describe complications associated with general and regional anesthesia procedures and corresponding corrective action
P12.3.3 Assess patient general status (ASA status) and verify feasibility of procedure in a clinical setting
P12.3.4 Perform pre-anesthetic procedures as per hospital protocol in a clinical setting
P12.3.5 Assist the anesthesiologist with regional block anesthesia in a clinical setting
P12.3.6 Assist the anesthesiologist during induction of general anesthesia in a clinical setting
P12.3.7 Assess immediate patient response to interventions in a clinical setting

E12.4 Monitor patient/client status intra-operatively and manage symptoms

P12.4.1 Describe physiological monitoring of patients during anesthesia according to CAS guidelines
P12.4.2 Assess and monitor the physiological response to anesthetic and surgical interventions in anesthetized patients in a clinical setting
P12.4.3 Adjust ventilatory parameters in response to physiological reactions or surgical manipulation in anesthetized patients in a clinical setting
P12.4.4 Administer and adjust drugs in anesthetized patients in response to physiological reactions or surgical manipulation per anesthetist instructions
P12.4.5 Adjust fluid and blood administration in anesthetized patients per particular needs and anesthetist instructions
P12.4.6 Record all pertinent observations and data as per hospital protocol in anesthetized patients in a clinical setting
P12.4.7 Recognize the following complications in anesthetized patients in a clinical setting;
- Changes in oxygenation status – FiO_2 & SpO_2
- Changes in ventilation status – PIP, $ETCO_2$
- Changes in circulatory status due to hypovolemia, anaphylaxis, light patient, MH

P12.4.8 Describe appropriate treatment for complications occurring in anesthetized patients in a clinical setting

E12.5 Monitor patient/client post-operatively and intervene as required

P12.5.1 Describe procedures and techniques associated with emergence from anesthesia, including potential complications and corrective action
P12.5.2 Prepare equipment and patient for emergence from anesthesia in a clinical setting

P12.5.3 Determine timing of emergence from anesthesia with end of surgical procedures in patients a clinical setting
P12.5.4 Assist anesthesiologist during patient emergence from anesthesia in a clinical setting
P12.5.5 Perform immediate and ongoing surveillance of patient response to emergence from anesthesia and intervene as required
P12.5.6 Record all pertinent observations and data as per hospital protocol with respect to emergence and post-operative monitoring in a clinical setting
P12.5.7 Assist with safe patient transport to recovery room in a clinical setting

E12.6 Manage fluid replacement (e.g., crystalloid, blood)

P12.6.1 Describe fluid balance and requirements in anesthetized surgical patients
P12.6.2 Describe clinical indications and complications associated with blood replacement in anesthetized surgical patients, including compatibility testing
P12.6.3 Describe types of fluid/blood replacement
P12.6.4 Evaluate fluid/blood requirements in anesthetized surgical patients in a clinical setting
P12.6.5 Prepare the equipment and material necessary for fluid/blood replacement in anesthetized surgical patients in a clinical setting
P12.6.6 Insert intravenous lines in a clinical setting
P12.6.7 Monitor fluid/blood needs and for potential complications in anesthetized surgical patients in a clinical setting and take corrective action as per anesthesiologist's instructions
P12.6.8 Record all pertinent observations and data as per hospital protocol with respect to fluid/blood replacement in a clinical setting

E12.7 Recognize complications related to anesthesia (e.g., malignant hyperthermia) and take corrective action

P12.7.1 Describe complications related to anesthesia (e.g., allergies, malignant hyperthermia, hypotension, hypothermia, anaphylaxis, aspiration, air embolus)
P12.7.2 Describe corrective action related to commonly recognized complications related to anesthesia
P12.7.3 Prepare equipment and materiel necessary in anticipation of major complications related to anesthesia (e.g., allergies, malignant hyperthermia, hypotension, hypothermia, aspiration)
P12.7.4 Describe changes to anesthesia management for patients with specific considerations such as: heart disease, the common cold, COPD/asthma, pregnancy, pediatrics and day surgical cases
P12.7.5 Apply hospital protocol in the event of complications related to anesthesia in patients in a clinical setting

E12.8 Provide thermal regulation

P12.8.1 Explain the importance of maintaining thermal regulation during surgical interventions
P12.8.2 Compare techniques and equipment utilized to maintain thermal regulation in anesthetized surgical patients
P12.8.3 Assess need for thermal monitoring and the application of supplemental thermal assistance in anesthetized surgical patients
P12.8.4 Apply procedure to maintain thermal regulation in anesthetized surgical patients in a clinical setting per hospital protocol
P12.8.5 Monitor thermal regulation in anesthetized surgical patient, and take corrective action in the advent of complication

E12.9 Perform patient positioning

P12.9.1 Differentiate between the various surgical positions and influence on anesthetic techniques
P12.9.2 Assist in positioning patient for surgery in a clinical setting
P12.9.3 Monitor patient vital signs and airway during positioning and while in a new position in a clinical setting
P12.9.4 Record patient body position and response during surgical procedure in a clinical setting

E12.10 Assist with anesthetic procedures outside of operating room (e.g., in radiology, magnetic resonance imaging, computed tomography)

P12.10.1 Describe anesthetic procedures infrequently performed outside of the operating room
P12.10.2 Describe recommended precautions per specific location and environment when anesthetic procedure is performed outside of operating room
P12.10.3 Prepare the equipment and material necessary for a specific anesthetic procedure performed outside an operating room in a clinical setting
P12.10.4 Assure patient and personal protection and safety during anesthetic procedures performed outside operating room in a clinical setting
P12.10.5 Assist the anesthesiologist during all phases of anesthetic procedures performed outside operating room in a clinical setting
P12.10.6 Monitor patient during anesthetic procedure performed outside operating room in a clinical setting, with attention to potential complications and apply corrective action
P12.10.7 Record all pertinent observations and data as per hospital protocol with respect to anesthetic procedure outside operating room in a clinical setting

E12.11 Assist with conscious sedation

P12.11.1 Describe conscious sedation anesthesia including its specific applications
P12.11.2 Compare conscious sedation anesthesia with general anesthesia including associated potential complications
P12.11.3 Distinguish between anesthetic drugs commonly utilized in conscious sedation anesthesia

P12.11.4 Prepare the equipment and material necessary a conscious sedation anesthesia for patients per hospital protocol in a clinical setting

P12.11.5 Assess patient general status and verify for quality control of procedure in a clinical setting

P12.11.6 Assist anesthesiologist during conscious sedation anesthesia procedures in a clinical setting

P12.11.7 Monitor patient during conscious sedation anesthesia procedures in a clinical setting, with particular attention to potential complications and apply corrective action

P12.11.8 Record all pertinent observations and data as per hospital protocol with respect to conscious sedation anesthesia

E12.12 Perform conscious sedation as per protocol

P12.12.1 Prepare the equipment and material necessary for a conscious sedation anesthesia in patients per hospital protocol in a clinical setting

P12.12.2 Perform procedures as per anesthesiologist's instructions for conscious sedation anesthesia in patients per hospital protocol in a clinical setting

P12.12.3 Monitor patient during conscious sedation anesthesia procedures in a clinical setting, with attention to potential complications and apply corrective action

P12.12.4 Respond to potential complications of conscious sedation and apply corrective action

P12.12.5 Record all pertinent observations and data as per hospital protocol with respect to conscious sedation anesthesia

Invasive Vascular Procedures

Presentation guide

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Domain of competence DC.13

Perform invasive vascular procedures on patients in a clinical setting

E13.1 Perform vascular access through IV

- P13.1.1 Describe purpose, sites and techniques for vascular access through IV
- P13.1.2 Identify complications and corrective action associated with IV procedures
- P13.1.3 Compare types of equipment set-ups and accessories commonly utilized
- P13.1.4 Prepare equipment and patient per hospital protocol in a clinical setting
- P13.1.5 Perform vascular access through IV in patients per hospital protocol in a clinical setting
- P13.1.6 Assess and monitor equipment function and patient and take corrective action in the advent of complications in a clinical setting
- P13.1.7 Document procedures and related information in patient ‘s chart per hospital protocol in a clinical setting

E13.2 Assist with vascular access through central lines/pulmonary artery catheter

- P13.2.1 Compare indications, sites and techniques for central line cannulation and pulmonary artery catheterization
- P13.2.2 Identify normal values and perform calculations related to pulmonary artery catheterization

P13.2.3 Prepare the set-up equipment and patients for central line / PA line cannulation per hospital protocol in a clinical setting
P13.2.4 Prepare the set-up equipment and patients for pulmonary artery catheterization per hospital protocol in a clinical setting
P13.2.5 Assist with central line cannulation and pulmonary artery catheterization in patients per hospital protocol in a clinical setting
P13.2.6 Monitor and interpret central venous pressure measurements in patients in a clinical setting and apply corrective action in the advent of complications
P13.2.7 Monitor and interpret pulmonary artery catheterization values and calculations in patients in a clinical setting and apply corrective action in the advent of complications
P13.2.8 Document procedures and related data in patient ‘s chart per hospital protocol in a clinical setting

E13.3 Use indwelling catheters to collect arterial samples

P13.3.1 Describe the methods for obtaining arterial line samples from indwelling catheters, including calibration
P13.3.2 Describe complications and corrective action associated with arterial line sampling form indwelling catheters
P13.3.3 Prepare the equipment and patient for arterial line sampling from an indwelling catheter per hospital protocol in a clinical setting
P13.3.4 Collect arterial blood samples from indwelling catheters in patients per hospital protocol in a clinical setting
P13.3.5 Monitor patient and indwelling catheter for possible complications and take corrective action in a clinical setting
P13.3.6 Assure effective transfer of blood samples to lab for analysis
P13.3.7 Document procedure and relevant data in patient ‘s chart per hospital protocol in a clinical setting

E13.4 Use indwelling catheters to collect venous samples (e.g., central line)

P13.4.1 Describe the methods for obtaining venous blood samples from indwelling catheters, including calibration
P13.4.2 Describe complications and corrective action associated with venous blood sampling form indwelling catheters
P13.4.3 Prepare the equipment and patient for venous blood sampling from an indwelling catheter per hospital protocol in a clinical setting
P13.4.4 Collect venous blood samples from indwelling catheters in patients per hospital protocol in a clinical setting
P13.4.5 Monitor patient and indwelling catheter for possible complications and take corrective action in a clinical setting
P13.4.6 Assure effective transfer of blood samples to lab for analysis and document procedure and relevant data in patient ‘s chart per hospital protocol in a clinical setting

E13.5 Perform insertion of arterial lines

P13.5.1 Describe indications, sites and methods for insertion of arterial lines
P13.5.2 Compare relative and absolute contraindications and corrective action per insertion of arterial lines
P13.5.3 Identify equipment and accessories required for arterial line insertions
P13.5.4 Describe procedures for insertion of arterial lines
P13.5.5 Identify pre-procedural recommendations, patient position and assessment of coagulation profile and platelets
P13.5.6 Prepare set-up and patient per hospital protocol in a clinical setting
P13.5.7 Insert arterial lines in patients per hospital protocol in a clinical setting
P13.5.8 Monitor post-procedure set-up and patient in a clinical setting and take corrective action in the advent of complications
P13.5.9 Document procedure and relevant data in patient's chart in a clinical setting

E13.6 Assist with insertion of arterial lines

P13.6.1 Prepare set-up and patient per hospital protocol in a clinical setting
P13.6.2 Assist during the insertion of arterial lines in patients per hospital protocol in a clinical setting
P13.6.3 Monitor post-procedure set-up and patient in a clinical setting and take corrective action in the advent of complications
P13.6.4 Document procedure and relevant data in patient's chart in a clinical setting

E13.7 Perform capillary puncture

P13.7.1 Describe indications and methods for obtaining blood samples from capillary punctures
P13.7.2 Describe complications and corrective action associated with capillary puncture
P13.7.3 Prepare the equipment, accessories and patient for capillary puncture per hospital protocol in a clinical setting
P13.7.4 Perform capillary puncture per hospital protocol in a clinical setting
P13.7.5 Assure effective transfer of blood samples to lab for analysis and document procedure and relevant data in patient 's chart per hospital protocol in a clinical setting

E13.8 Perform blood gas analysis

P13.8.1 Describe the basic components of standard blood analysis instruments
P13.8.2 Compare the application and principles of operation of the electrodes
P13.8.3 Summarize the procedure used to perform sample analyze, including handling of samples
P13.8.4 Perform blood gas analysis procedure according to hospital protocol in a clinical setting
P13.8.5 Document and report results of analysis per hospital protocol in a clinical setting
P13.8.6 Describe regular maintenance of blood gas analyzers
P13.8.7 Describe quality control of blood gas analysis

E13.9 Perform radial artery puncture

P13.9.1 Describe the procedure for performing a radial artery puncture, including indications and contraindications
P13.9.2 Identify the hazards and complications and corrective action related to radial artery puncture
P13.9.3 Prepare the equipment and material for radial artery puncture per hospital protocol in a clinical setting
P13.9.4 Prepare patient for radial artery puncture in a clinical setting
P13.9.5 Perform radial artery puncture on patients per hospital protocol in a clinical setting
P13.9.6 Assure effective transfer of blood samples to lab for analysis and document procedure and relevant data in patient ‘s chart per hospital protocol in a clinical setting

E13.10 Perform brachial artery puncture

P13.10.1 Describe the procedure for performing a brachial artery puncture, including indications and contraindications
P13.10.2 Identify the hazards and complications and corrective action related to brachial artery puncture
P13.10.3 Prepare the equipment and material for brachial artery puncture per hospital protocol in a clinical setting
P13.10.4 Prepare patient for brachial artery puncture in a clinical setting
P13.10.5 Perform brachial artery puncture on patients per hospital protocol in a clinical setting
P13.10.6 Assure effective transfer of blood samples to lab for analysis and document procedure and relevant data in patient ‘s chart per hospital protocol in a clinical setting

E13.11 Perform femoral artery puncture

P13.11.1 Describe the procedure for performing a femoral artery puncture, including indications and contraindications
P13.11.2 Identify the hazards and complications and corrective action related to femoral artery puncture
P13.11.3 Prepare the equipment and material for femoral artery puncture per hospital protocol in a clinical setting
P13.11.4 Prepare patient for femoral artery puncture in a clinical setting
P13.11.5 Perform femoral artery puncture on patients per hospital protocol in a clinical setting
P13.11.6 Assure effective transfer of blood samples to lab for analysis and document procedure and relevant data in patient ‘s chart per hospital protocol in a clinical setting

E13.12 Interpret blood gas analysis and co-oximetry results

P13.12.1 Explain the role of the lungs with respect to acid-base balance

P13.12.2 Explain the role of the kidneys with respect to acid-base balance
P13.12.3 Identify for adults, children and neonates the normal sea level values for blood gas components and co-oximetry
P13.12.4 Describe the various concepts of acid-base balance and its regulation in the body
P13.12.5 Explain the composition and action of the chemicals buffers
P13.12.6 Compare acid-base disturbances including mixed disturbances with respect to clinical manifestations and management
P13.12.7 Interpret acid-base status in patients in a clinical setting
P13.12.8 Explain the concept of oxygenation in relation to the respiratory and cardiovascular systems
P13.12.9 Explain external respiration in relation to ventilation-perfusion matching, deadspace, shunting and diffusion
P13.12.10 Describe the relationship of oxygen transport and internal respiration
P13.12.11 Describe the oxyhemoglobin relationship with oxygenation
P13.12.12 Evaluate oxygenation status from blood gas values in patients in a clinical setting
P13.12.13 Describe the mechanisms of hypoxemia
P13.12.14 Assess for signs and symptoms of hypoxemia and hypercarbia, including compensated status, in patients in a clinical setting

E13.13 Interpret blood electrolytes and metabolites

P13.13.1 Compare extracellular and intracellular fluid compartments
P13.13.2 Explain the basic principles of body fluid balance
P13.13.3 Describe basic concepts of fluid deficit including clinical manifestations and management
P13.13.4 Describe basic concepts of fluid overload including clinical manifestations and management
P13.13.5 Identify normal plasma electrolyte values and their respective functions
P13.13.6 Describe regulation of cation levels in the body
P13.13.7 Describe concepts of electrolytes imbalance including clinical manifestations and management
P13.13.8 Explain the basic physiological interactions between electrolyte imbalance and acid-base balance
P13.13.9 Describe basic regulations of albumen, glucose and lactate
P13.13.10 Interpret blood electrolytes and metabolites results in patients in a clinical setting

Ventilation Management

Presentation guide

DC = Statement of the competence for a particular domain
E = Elements of the competence for a specific statement of competence
P = Performance criteria for competency; associated with a specific element of the competence

Domain of competence DC.14

Optimize pulmonary ventilation on patients in a clinical setting

E14.1 Initiate non-invasive mechanical ventilation

- P14.1.1 Describe the indications, advantages, complications and hazards of non-invasive mechanical ventilatory support
- P14.1.2 Compare the function and use of non-invasive positive pressure ventilatory support systems/devices including accessories
- P14.1.3 Describe how non-invasive mechanical ventilatory support affect patient physiology
- P14.1.4 Describe non-invasive ventilatory set-up and strategies as they apply to treat common respiratory pathophysiologies, including: Ventilatory failure, Oxygenation failure, exacerbation of COPD, Pulmonary Edema, Obstructive Sleep Apnea, Central Sleep Apnea and Apnea of prematurity
- P14.1.5 Assess patient need for non-invasive mechanical ventilation support in a clinical setting
- P14.1.6 Determine goals and strategies for non-invasive mechanical ventilation support in a clinical setting, including: oxygenation, ventilation and work of breathing
- P14.1.7 Prepare the equipment and accessories for non-invasive mechanical ventilatory support in a clinical setting
- P14.1.8 Prepare patient and caregiver for non-invasive mechanical ventilation in a clinical setting
- P14.1.9 Initiate non-invasive mechanical ventilation on patients in a clinical setting

P14.1.10 Monitor initial patient response and respond to complications in a clinical setting
P14.1.11 Report and document non-invasive mechanical ventilation initiation and treatment plan in patient's chart in a clinical setting

E14.2 Maintain non-invasive mechanical ventilation

P14.2.1 Describe the indications, advantages, complications and hazards of non-invasive mechanical ventilatory support
P14.2.2 Maintain optimal non-invasive mechanical ventilation for patients in a clinical setting
P14.2.3 Recognize and respond to changes in the patient's pathophysiology for non-invasive mechanical ventilation in a clinical setting
P14.2.4 Report and document observations and actions taken during non-invasive mechanical ventilation in a clinical setting

E14.3 Initiate invasive mechanical ventilation

P14.3.1 Describe the indications, advantages, complications and hazards of invasive mechanical ventilatory support
P14.3.2 Describe the control schemes of a mechanical ventilator
P14.3.3 Describe the fundamental elements associated with spontaneous breathing and positive pressure breathes
P14.3.4 Describe phase variables related to a positive pressure breath cycle
P14.3.5 Describe the methods used to measure flow, pressure and volume in a mechanical ventilator
P14.3.6 Describe what the basic waveforms indicate about the patient-ventilator interactions
P14.3.7 Distinguish between control interactions of the different modes of ventilation
P14.3.8 Adjust ventilator controls appropriately given a specific ventilator
P14.3.9 Describe how changes in patient conditions (e.g.; compliance and resistance) affects ventilation when using distinct modes of mechanical ventilation
P14.3.10 Compare common modes of mechanical ventilation
P14.3.11 Explain the various alarms found on ventilators per their respective purpose and function
P14.3.12 Assemble and install the breathing circuits on mechanical ventilators
P14.3.13 Calculate mechanical ventilator breathing circuit compressible volume, compliance and resistance
P14.3.14 Explain the differences between adults, children, and neonates that will affect the selection of a mechanical ventilator and mode of ventilation
P14.3.15 Describe the methods utilized to evaluate the need for invasive mechanical ventilation
P14.3.16 Explain factors that govern selection for a specific mechanical ventilation mode
P14.3.17 Discuss the selection of distinct ventilator parameters in relation to patient

needs

P14.3.18 Describe the complications and hazards related to invasive mechanical ventilation

P14.3.19 Assess patient need for invasive mechanical ventilation in a clinical setting

P14.3.20 Determine goals and strategies for invasive mechanical ventilation in a clinical setting

P14.3.21 Prepare the equipment and accessories for invasive mechanical ventilation in a clinical setting

P14.3.22 Prepare patient for invasive mechanical ventilation in a clinical setting

P14.3.23 Initiate invasive mechanical ventilation in patients in a clinical setting

P14.3.24 Monitor initial patient response to invasive mechanical ventilation and respond to complications in a clinical setting

P14.3.25 Report and document invasive mechanical ventilation support and treatment plan in patient's chart in a clinical setting

E14.4 Maintain invasive mechanical ventilation

P14.4.1 Recognize and respond to changes in the patient's pathophysiology

P14.4.2 Report and document observations and actions during invasive mechanical ventilation in patients in a clinical setting

E14.5 Wean from invasive (mechanical) ventilation

P14.5.1 Compare methods to wean patients from invasive mechanical ventiltory support

P14.5.2 Explain the indices to predict success for weaning and discontinuation from invasive mechanical ventilation

P14.5.3 Describe complications, hazards and corrective action as related to weaning procedures from invasive mechanical ventilation

P14.5.4 Perform patient respiratory assessment and measure applicable indices for weaning and discontinuation of invasive mechanical ventilation in a clinical setting

P14.5.5 Initiate weaning procedure from invasive mechanical ventilatory support in a clinical setting

P14.5.6 Assess for indices of discontinuation from invasive mechanical ventilatory support in a clinical setting

P14.5.7 Discontinue invasive mechanical ventilatory support in a clinical setting

P14.5.8 Monitor patient during discontinuation of invasive mechanical ventilatory support and take corrective action in the event of complications in a clinical setting

P14.5.9 Perform patient respiratory assessment after discontinuation of invasive mechanical ventilatory support and initiate appropriate therapy (e.g.; oxygen therapy)

P14.5.10 Report and chart observations, actions, concerns and treatment plan in a clinical setting

P14.5.11 Perform ventilator and equipment maintenance in a clinical setting

E14.6 Wean from non-invasive (mechanical) ventilation

P14.6.1 Compare weaning methods from non-invasive mechanical ventilatory support
P14.6.2 Explain the indices to predict success for weaning and discontinuation from non-invasive mechanical ventilatory support
P14.6.3 Describe complications, hazards and corrective action as related to weaning procedures from non-invasive mechanical ventilatory support
P14.6.4 Perform patient assessment and measure applicable indices for weaning and discontinuation of non-invasive mechanical ventilatory support in a clinical setting
P14.6.5 Assess patient readiness for long-term discharge from non-invasive mechanical ventilatory support in a clinical setting
P14.6.6 Remove non-invasive mechanical ventilatory support from patient in a clinical setting
P14.6.7 Monitor patient during discontinuation of non-invasive mechanical ventilatory support and take corrective action in the event of complications in a clinical setting
P14.6.8 Maintain or initiate oxygen therapy if required and perform patient respiratory assessment after discontinuation of non-invasive mechanical ventilatory support in a clinical setting
P14.6.9 Report and chart observations, actions, concerns and treatment plan in a clinical setting
P14.6.10 Perform equipment maintenance per hospital protocol in a clinical setting

E14.7 Interpret ventilator waveforms

P14.7.1 Differentiate between ventilatory output waveforms
P14.7.2 Describe the functional characteristics of the lungs and airways that can be determined from specific waveforms, including: auto-peep, air trapping, lower and upper inflection points, auto triggering, patient triggering, inspiratory pause, differential static and dynamic compliance and lung resistance
P14.7.3 Compare strategies for modifying ventilator settings which optimize mechanical ventilation utilizing wave form analysis
P14.7.4 Identify changes in patient lung characteristics using waveform analysis in a clinical setting
P14.7.5 Implement and monitor strategies for modifying ventilator settings which optimize mechanical ventilation from the wave form analysis in a clinical setting
P14.7.6 Report and document observations and changes in ventilator setting in a clinical setting

E14.8 Measure and interpret pulmonary mechanics

P14.8.1 Describe how volumes are measured on a mechanical ventilator
P14.8.2 Describe how pressures are measured on a mechanical ventilator
P14.8.3 Calculate lung compliance

P14.8.4 Measure pulmonary mechanics from information obtained during mechanical ventilation in a clinical setting
P14.8.5 Describe strategies to optimize mechanical ventilation using information obtained from measuring pulmonary mechanics in a clinical setting
P14.8.6 Implement strategies that would modify ventilator settings to optimize mechanical ventilation from measuring pulmonary mechanics in a clinical setting
P14.8.7 Report and document observations and changes in ventilator setting in a clinical setting

E14.9 Assess need for and initiate hyperinflation and/or lung volume recruitment techniques on ventilated patients

P14.9.1 Compare the clinical applications and indications for instituting hyperinflation and/or lung volume recruitment techniques
P14.9.2 Discuss the complications and hazards associated with the application of hyperinflation and lung volume recruitment techniques
P14.9.3 Assess need for hyperinflation and/or lung volume recruitment techniques per hospital protocol in a clinical setting
P14.9.4 Initiate hyperinflation and/or lung volume recruitment techniques per hospital protocol in a clinical setting
P14.9.5 Monitor patient response to the application of hyperinflation and/or lung volume recruitment techniques in a clinical setting
P14.9.6 Report and document observations and changes concerning the application of hyperinflation and/or lung volume recruitment techniques in a clinical setting

E14.10 Initiate and maintain advanced modes of mechanical ventilation (e.g., HFOV)

P14.10.1 Compare clinical applications, indications and benefits for advanced modes of mechanical ventilation, including: HFOV, Jet ventilation, airway pressure release ventilation and tracheal insufflation
P14.10.2 Describe recent studies and clinical trials related to the use of advanced modes of ventilation
P14.10.3 Identify complications and hazards associated with the application of specific advanced modes of mechanical ventilation
P14.10.4 Assess need and benefits for initiating advanced modes of mechanical ventilation in a clinical setting
P14.10.5 Determine goals and strategies for the application of advanced modes of mechanical ventilation in a clinical setting
P14.10.6 Differentiate between indications and selection of advanced modes of ventilation for adults, children, and neonates
P14.10.7 Prepare the equipment and accessories required to initiate advanced modes of mechanical ventilation in a clinical setting
P14.10.8 Prepare patient for the application of advanced modes of mechanical ventilation in a clinical setting
P14.10.9 Initiate the application of advanced modes of mechanical ventilation in a clinical setting

P14.10.10 Monitor and maintain advanced modes of mechanical ventilation and respond to complications in a clinical setting
P14.10.11 Report and document observations and strategies linked to advanced modes of ventilation in patient chart in a clinical setting

E14.11 Perform apnea testing for the determination of brain death

P14.11.1 Identify the indications for performing an apnea test
P14.11.2 Describe the inclusion criteria for performing an apnea test
P14.11.3 Prepare the equipment and material necessary for performing an apnea test in a clinical situation
P14.11.4 Prepare patient for an apnea test per hospital protocol in a clinical setting
P14.11.5 Apply oxygen therapy and disconnect ventilator for the prescribed time interval in a clinical setting
P14.11.6 Assess patient response and evaluate data per hospital protocol in a clinical setting
P14.11.7 Explain what constitutes a finding of either positive or negative per hospital protocol and report findings to physician in a clinical setting
P14.11.8 Document procedure and observations in patient's chart in a clinical setting

E14.12 Manage internal transport of a ventilated patient

P14.12.1 Describe the factors which influence the selection of equipment for intra-hospital transport of a ventilated patient
P14.12.2 Describe the equipment and accessories utilized for intra-hospital transport of a ventilated patient
P14.12.3 Describe the necessary precautions required when transporting a ventilated patient within a hospital per hospital protocol
P14.12.4 Prepare the equipment and accessories necessary for intra-hospital transport of a ventilated patient
P14.12.5 Inform patient and caregivers with respect to transport procedure and care during intra-hospital transfer
P14.12.6 Manage intra-hospital transport of a ventilated patient
P14.12.7 Stabilize and monitor ventilated patient during intra-hospital transport and respond to complications
P14.12.8 Report and chart procedure and observations relative to intra-hospital transport of ventilated patient

E14.13 Manage external transport of a ventilated patient

P14.13.1 Describe the factors which influence the selection of equipment for out-of-hospital transport of a ventilated patient
P14.13.2 Describe the equipment and accessories used for out-of-hospital transport of a ventilated patient
P14.13.3 Describe the necessary precautions required when transporting a ventilated patient out-of-hospital per protocols

P14.13.4 Prepare the equipment and accessories necessary for out-of-hospital transport of a ventilated patient with special attention to environmental factors per protocols
P14.13.5 Inform ventilated patient and caregivers with respect to transport procedure and care during out-of-hospital transfer
P14.13.6 Participate in out-of-hospital transport of a ventilated patient
P14.13.7 Monitor ventilated patient during out-of-hospital transport and respond to complications
P14.13.8 Stabilize ventilated patient post transport
P14.13.8 Report and chart procedure and observations relative to out-of-hospital transport of ventilated patient

E14.14 Manage internal transport of a non-ventilated patient

P14.14.1 Describe the factors which influence the selection of equipment for intra-hospital transport of a non-ventilated patient
P14.14.2 Describe the equipment and accessories used for intra-hospital transport of a non-ventilated patient
P14.14.3 Describe the necessary precautions required when transporting a non-ventilated patient within a hospital
P14.14.4 Prepare the equipment and accessories necessary for intra-hospital transport of a non-ventilated patient
P14.14.5 Inform non-ventilated patient and caregivers with respect to transport procedure and care during intra-hospital transfer
P14.14.6 Manage intra-hospital transport of a non-ventilated patient
P14.14.7 Monitor non-ventilated patient during intra-hospital transport and respond to complications
P14.14.8 Stabilize non-ventilated patient post intra-hospital transport
P14.14.9 Report and chart procedure and observations relative to intra-hospital transport of non-ventilated patient

E14.15 Manage external transport of a non-ventilated patient

P14.15.1 Describe the factors which influence the selection of equipment for out-of-hospital transport of a non-ventilated patient
P14.15.2 Describe the equipment and accessories used for out-of-hospital transport of a non-ventilated patient
P14.15.3 Describe precautions required when transporting a non-ventilated patient out-of-hospital per protocols
P14.15.4 Prepare the equipment and accessories necessary for out-of-hospital transport of a non-ventilated patient with special attention to environmental factors per protocols
P14.15.5 Inform non-ventilated patient and caregivers with respect to transport procedure and care during out-of-hospital transfer
P14.15.6 Participate in out-of-hospital transport of a non-ventilated patient per hospital protocol
P14.15.7 Monitor non-ventilated patient during out-of-hospital transport and respond to complications

P14.15.8 Stabilize non-ventilated patient post transport in a new location
P14.15.9 Report and chart procedure and observations relative to out-of-hospital transport of non-ventilated patient

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Cardiopulmonary Resuscitation & Stabilization

Presentation guide

DC = Statement of the competence for a particular domain
E = Elements of the competence for a specific statement of competence
P = Performance criteria for competency; associated with a specific element of the competence

Domain of competence DC.15

Assist in maintaining cardiopulmonary stability of patients in a simulated clinical setting

E15.1 Perform basic life support (BLS) protocols according to the current standards of the Heart & Stroke Foundation of Canada

P15.1.1 Provide the required treatment for a foreign-body airway obstruction (Choking) per protocol in a clinical setting
P15.1.2 Utilize a Bag-Valve-Mask (BVM) device for Adult/Child/Infant CPR per protocol in a clinical setting
P15.1.3 Perform adult CPR in a clinical setting
P15.1.4 Perform child CPR in a clinical setting
P15.1.5 Perform infant CPR in a clinical setting
P15.1.6 Demonstrate the use of an Automated External Defibrillator (AED) for Adult/Child CPR per protocol in a simulated clinical setting

E15.2 Perform pediatric advanced life support (PALS) protocols according to the current standards

P15.2.1 Perform the systematic assessment of a seriously ill or injured child in a simulated clinical setting
P15.2.2 Perform the "assess-categorize-decide-act" approach to decision-making l in a simulated clinical setting

P15.2.3 Recognize and manage a child in respiratory distress and failure in a simulated clinical setting
P15.2.4 Recognize and manage a child in shock in a simulated clinical setting
P15.2.5 Describe the management of bradyarrhythmias and tachyarrhythmias
P15.2.6 Recognize and manage a child in cardiac arrest
P15.2.7 Describe the post-resuscitation stabilization and transport of a child and overall team dynamics

E15.3 Perform neonatal resuscitation program (NRP) protocols according to the current standards

P15.3.1 Describe the "Principals of Resuscitation" as related to NRP
P15.3.2 Perform the initial steps in resuscitation in a simulated clinical setting
P15.3.3 Perform Positive Pressure Ventilation (PPV) in a simulated clinical setting
P15.3.4 Perform chest compressions according to NRP in a simulated clinical setting
P15.3.5 Perform endotracheal intubation in a simulated clinical setting
P15.3.6 Administer medications during resuscitation in a simulated clinical setting
P15.3.7 Discuss the ethical principals with starting and stopping neonatal resuscitation
P15.3.8 Perform resuscitation of pre-term babies in a simulated clinical setting

E15.4 Perform advanced cardiac life support (ACLS) protocols according to the current standards

P15.4.1 Perform Basic Life Support (BLS) Primary Survey (ABCD) per protocols in a clinical setting
P15.4.2 Perform ACLS Secondary Survey (ABCD) per protocols in a clinical setting
P15.4.3 Perform management of a Respiratory Arrest per protocol in a clinical setting
P15.4.4 Perform management of a patient with a Pulseless Arrest (VF/VT), according to the ACLS algorithm in a clinical setting
P15.4.5 Perform management of a patient with Bradycardia/Asystole/PEA, according to the ACLS algorithm in a clinical setting
P15.4.6 Perform management of a patient with Tachycardia (Stable & Unstable) according to the ACLS algorithm in a clinical setting
P15.4.7 Describe Acute Coronary Syndromes (ACS)
P15.4.8 Describe the signs and symptoms of a patient having a stroke and the necessary treatment
P15.4.9 Demonstrate effective team interaction and communication during resuscitation

E15.5 Perform rapid response assessment skills

P15.5.1 Perform assessment of the patients' airway/breathing as appropriate (BLS, NRP, PALS, ACLS) and intervene as required per protocols in a clinical setting
P15.5.2 Perform assessment of the patients' cardiac status as appropriate (BLS, NRP, PALS, ACLS) and intervene as required per protocols in a clinical setting
P15.5.3 Document the assessment findings and interventions in a clinical setting
P15.5.4 Communicate your assessment findings with the team on a ongoing basis in a clinical setting

Cardiac Diagnostics

Presentation guide

DC = Statement of the competence for a particular domain
E = Elements of the competence for a specific statement of competence
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Domain of competence DC.16

Perform hemodynamic monitoring in a simulated clinical setting and diagnostics testing on patients in a clinical setting

E16.1 Perform electrocardiogram (ECG)

P16.1.1 Describe the electrical conduction system of the human heart
P16.1.2 Describe the clinical indications and applications for an ECG at rest and during exercise
P16.1.3 Distinguish between common causes of artifacts and corrective action
P16.1.4 Describe the basic functions and preparations for ECG recording and/or monitoring equipment including different placements of electrodes
P16.1.5 Prepare equipment and materials for ECG recording and/or monitoring in a clinical setting
P16.1.6 Prepare patient for ECG recording and/or monitoring in a clinical setting
P16.1.7 Perform ECG recording and/or monitoring of patient per hospital protocol in a clinical setting
P16.1.8 Assess quality of tracing before and during recording and correct common causes of artifacts that may interfere with the ECG
P16.1.9 Report and document observations of patient ECG recording and/or monitoring in a clinical setting

E16.2 Interpret electrocardiogram

P16.2.1 Assess heart rate and rhythm from an ECG recording or monitor display

P16.2.2 Distinguish between basic arrhythmias and likely causes
P16.2.3 Distinguish between a normal ECG and an abnormal recording and/or monitor display
P16.2.4 Analyze and interpret patient's ECG tracings for rate and rhythm, including normal sinus rhythm and common dysrhythmias in a clinical setting
P16.2.5 Apply corrective action and/or report the observation of an arrhythmia on a patient in a clinical setting
P16.2.6 Report and document observations and interpretations in the patient's chart in a clinical setting

E16.3 Set-up and calibrate equipment for invasive hemodynamic procedures (e.g., pulmonary artery catheter, arterial lines)

P16.3.1 Distinguish the equipment and accessories essential for invasive hemodynamic procedures
P16.3.2 Describe the calibration of the equipment utilized for invasive hemodynamic procedures
P16.3.3 Describe the technical and procedural complications associated with invasive hemodynamic set-ups
P16.3.4 Prepare the set-up and calibrate equipment for invasive hemodynamic procedures per protocol in a simulated clinical setting

E16.4 Interpret hemodynamic data

P16.4.1 Describe the measured/calculated (non-invasive) hemodynamic parameters
P16.4.2 Describe the measured/calculated (invasive) hemodynamic parameters
P16.4.3 Distinguish between hemodynamic pressure waveforms
P16.4.4 Describe how to obtain invasive cardiac output measurements
P16.4.5 Describe the ventilatory effect on the various pulmonary hemodynamic pressures
P16.4.6 Measure and interpret hemodynamic parameters and pressure waveforms on patients in a clinical setting, including cardiac output measurements

Pulmonary Diagnostics & Investigations

Presentation guide

DC = Statement of the competence for a particular domain
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Domain of competence DC.17

Perform pulmonary diagnostics and investigation testing on patients in a clinical setting

E17.1 Measure static and dynamic lung compliance

P17.1.1	Differentiate between static and dynamic lung capacity
P17.1.2	Describe methods utilized to evaluate pulmonary mechanics
P17.1.3	Identify the indications and contraindications for measurement of static and dynamic lung compliance
P17.1.3	Identify the indications for early and/or timely termination of a test
P17.7.4	Describe the variables measured during the measurement of static and dynamic lung compliance and their respective significance
P17.2.5	Prepare the equipment and material necessary to evaluate pulmonary mechanics in a clinical setting
P17.1.6	Prepare the patient for evaluation of pulmonary mechanics in a clinical setting
P17.1.7	Perform evaluation of patient pulmonary mechanics in a clinical setting
P17.1.8	Report and chart procedure and patient results in a clinical setting
P17.1.9	Perform routine equipment cleaning and maintenance in a clinical setting

E17.2 Perform walking oximetry

P17.2.1	Compare the methods utilized for a walk test
P17.2.2	Identify the indications and contraindications for distinct walk tests

P17.2.3 Describe the variables measured during a walk test including pulse oximetry and their respective significance
P17.2.4 Identify the indications for early and/or timely termination of a test
P17.2.5 Prepare the equipment and the patient for a walk test in a clinical setting
P17.2.6 Initiate and monitor patient during a walk test in a clinical setting
P17.2.7 Report and chart patient observations and data from a walk test in a clinical setting

E17.3 Perform flow/volume loop measurement (spirometry)

P17.3.1 Describe the principle of a flow/volume loop measurement
P17.3.2 Compare the indications and contraindications for a flow/volume measurement test
P17.3.3 Describe the variables measured during a flow/volume loop and their respective significance
P17.3.4 Describe how predicted values are determined for various spirometry tests
P17.3.5 Explain the rationale for pre and post bronchodilator testing
P17.3.6 Identify the indications for early and/or timely termination of a test
P17.3.7 Compare the principles of operation, advantages and disadvantages of devices used to perform spirometry tests
P17.3.8 List the advantages and disadvantage of using computerized systems for spirometry tests
P17.3.9 Prepare the equipment and material for a flow/volume measurement in a clinical setting
P17.3.10 Prepare the patient for a flow/volume measurement in a clinical setting
P17.3.11 Perform a flow/volume measurement on patients in a clinical setting
P17.3.12 Report and chart observations and patient results from a flow/volume measurement in a clinical setting
P17.3.13 Perform routine equipment cleaning and maintenance in a clinical setting

E17.4 Measure lung volume, airway resistance and conductance by body plethysmography

P17.4.1 Describe the method used for measuring lung volume, airway resistance and conductance by body plethysmography
P17.4.2 Compare the indications and contraindications for measuring lung volume, airway resistance and conductance by body plethysmography
P17.4.3 Explain the variables measured during a lung volume, airway resistance and conductance by body plethysmography and their respective significance
P17.4.4 Identify the indications for early and/or timely termination of a test
P17.4.5 Explain the functional principal of a body plethysmograph
P17.4.6 Prepare the equipment and material for lung volume, airway resistance and conductance measurement by body plethysmography in a clinical setting
P17.4.7 Prepare the patient for lung volume, airway resistance and conductance measurement by body plethysmography in a clinical setting
P17.4.8 Perform lung volume, airway resistance and conductance measurement by body plethysmography on patients in a clinical setting

P17.4.9 Report and chart observations and patient results from lung volume, airway resistance and conductance measurement by body plethysmography in a clinical setting
P17.4.10 Perform routine equipment cleaning and maintenance in a clinical setting

E17.5 Perform functional residual capacity (FRC) measurements

P17.5.1 Describe the method used for measuring FRC and its significance
P17.5.2 Compare the indications and contraindications for measuring FRC
P17.5.3 Identify the indications for early and/or timely termination of a test
P17.5.4 Explain the functional principal of the devices used to measure FRC
P17.5.5 Prepare the equipment and material for FRC measurement in a clinical setting
P17.5.6 Prepare the patient for FRC measurement in a clinical setting
P17.5.7 Perform FRC measurements on patients in a clinical setting
P17.5.8 Report and chart observations and patient results from FRC measurements in a clinical setting
P17.5.9 Perform routine equipment cleaning and maintenance in a clinical setting

E17.6 Measure pulmonary diffusion capacity

P17.6.1 Describe the method used for measuring pulmonary diffusion capacity
P17.6.2 Compare the indications and contraindications for measuring pulmonary diffusion capacity
P17.6.3 Explain the variables measured during the measurement of pulmonary diffusion capacity and their respective significance
P17.6.4 Identify the indications for early and/or timely termination of a test
P17.6.5 Prepare the equipment and material for the measurement of pulmonary diffusion in a clinical setting
P17.6.6 Prepare the patient for pulmonary diffusion capacity measurement in a clinical setting
P17.6.7 Perform pulmonary diffusion capacity measurement on patients in a clinical setting
P17.6.8 Report and chart observations and patient results from pulmonary diffusion capacity measurement in a clinical setting
P17.6.9 Perform routine equipment cleaning and maintenance in a clinical setting

E17.7 Perform bronchoprovocation testing

P17.7.1 Describe the method used for bronchoprovocation testing
P17.7.2 Compare the indications, contraindications and hazards associated with bronchoprovocation testing
P17.7.3 Explain the variables measured during the bronchoprovocation testing and their respective significance
P17.7.4 Identify the indications, contraindications and hazards associated with specific drugs utilized for bronchoprovocation testing and how the provocation dose is determined
P17.7.5 Identify the indications for early and/or timely termination of a test

P17.7.6 Prepare the equipment and drugs necessary for bronchoprovocation testing in a clinical setting
P17.7.7 Prepare patient for bronchoprovocation testing in a clinical
P17.7.8 Perform bronchoprovocation testing in patients in a clinical setting.
P17.7.9 Continue with dosing and testing protocol until a clear indication of bronchial reactivity or maximum dose has been reached in a clinical setting
P17.7.10 Evaluate the results of a bronchoprovocation test and determine the degree of reactivity in a clinical setting
P17.7.11 Report and chart procedure and patient results in a clinical setting
P17.7.11 Perform routine equipment cleaning and maintenance in a clinical setting

E17.8 Measure inspiratory and expiratory pressure by occlusion

P17.8.1 Describe the method used to measure inspiratory and expiratory pressure by occlusion
P17.8.2 Compare the indications, contraindications and hazards associated with the measurement of inspiratory and expiratory pressure by occlusion
P17.8.3 Explain the variables measured during the measurement of inspiratory and expiratory pressure by occlusion
P17.8.4 Identify the indications for early and/or timely termination of a test
P17.8.5 Prepare the equipment and material necessary for the measurement of inspiratory and expiratory pressure by occlusion in a clinical setting
P17.8.6 Prepare patient for the measurement of inspiratory and expiratory pressure by occlusion in a clinical
P17.8.7 Perform the measurement of inspiratory and expiratory pressure by occlusion in patients in a clinical setting
P17.8.8 Evaluate the results and ensure reproducibility of the measurement of inspiratory and expiratory pressure by occlusion in a clinical setting
P17.8.9 Report and chart procedure and patient results in a clinical setting
P17.8.10 Perform routine equipment cleaning and maintenance in a clinical setting

E17.9 Perform testing to American Thoracic Society (ATS) standards

P17.9.1 Define and summarize the importance of ATS standards
P17.9.2 Identify the factors affecting validity of spirometry test results according to ATS standards
P17.9.3 Perform spirometry testing in accordance with hospital protocol and ATS standards

E17.10 Interpret and validate pulmonary function test results

P17.10.1 Describe how pulmonary function tests are validated
P17.10.2 Describe how pulmonary function tests are interpret
P17.10.3 Identify factors utilized to determine predicted values for particular pulmonary function tests
P17.10.4 Determine validity of procedure and derived results from pulmonary function tests in a clinical setting

P17.10.5 Report and chart validated results from pulmonary function test in a clinical setting

E17.11 Perform/teach peak flow monitoring

P17.11.1 Describe the purpose and applications for peak flow monitoring
P17.11.2 Describe how predicted values are determined for peak flow measurement
P17.11.3 Compare the principles of operation, advantages and disadvantages of devices used to measure peak flow
P17.11.4 Prepare/teach the patient for peak flow measurement in a clinical setting
P17.11.5 Perform peak flow measurements in patients in a clinical setting
P17.11.6 Report and chart observations and patient results from a peak flow measurement in a clinical setting
P17.11.7 Perform routine equipment cleaning in a clinical setting

E17.12 Assist with bronchoscopy procedures

P17.12.1 Describe the application and purposes for a bronchoscopy procedure
P17.12.2 Identify the indications and contraindications and hazards associated with a bronchoscopy procedure
P17.12.3 Describe corrective actions in the advent of various complications associated with a bronchoscopy procedure
P17.12.4 Differentiate between flexible (fiberoptic) and rigid bronchoscopes
P17.12.5 Describe the purpose of various drugs commonly used during a bronchoscopy procedure
P17.12.6 Describe methods of obtaining and preparing samples during a bronchoscopy procedure
P17.12.7 Describe modifications required for bronchoscopy in an intubated and ventilated patient
P17.12.8 Prepare the equipment, accessories and drugs necessary for a bronchoscopy procedure in a clinical setting
P17.12.9 Prepare patient for a bronchoscopy procedure with special attention to monitoring in a clinical setting
P17.12.10 Assist during a bronchoscopy procedure on patients in a clinical setting
P17.12.11 Assume responsibility for monitoring and sample collection during the patient's recovery period in a clinical setting
P17.12.12 Report and chart procedure in a clinical setting
P17.12.13 Perform routine equipment cleaning and maintenance in a clinical setting

E17.13 Perform laryngoscopy procedures

P17.13.1 Describe the application and purposes for a laryngoscopy procedure
P17.13.2 Identify the indications and contraindications and hazards associated with a laryngoscopy procedure
P17.13.3 Describe corrective actions in the advent of various complications associated with a laryngoscopy procedure
P17.13.4 Prepare the equipment and accessories necessary for a laryngoscopy procedure in a clinical setting

P17.13.5 Prepare patient for a laryngoscopy procedure with special attention to monitoring in a clinical setting
P17.13.6 Perform a laryngoscopy procedure in patients in a clinical setting and apply corrective action in the advent of complications
P17.13.7 Monitor patient during laryngoscopy procedure and recovery period in a clinical setting
P17.13.8 Report and chart procedure in a clinical setting
P17.13.9 Perform routine equipment cleaning and maintenance in a clinical setting

E17.14 Assist with laryngoscopy procedures

P17.14.1 Prepare the equipment and accessories necessary for a laryngoscopy procedure in a clinical setting
P17.14.2 Prepare patient for a laryngoscopy procedure with special attention to monitoring in a clinical setting
P17.14.3 Assist during a laryngoscopy procedure in patients in a clinical setting
P17.14.4 Monitor patient during laryngoscopy procedure and recovery period in a clinical setting
P17.14.5 Report and chart procedure in a clinical setting
P17.14.6 Perform routine equipment cleaning and maintenance in a clinical setting

E17.15 Perform transcutaneous monitoring (e.g., transcutaneous oxygen and carbon dioxide pressure [TcP02, TcPC02])

P17.15.1 Describe the purpose and applications for transcutaneous monitoring
P17.15.2 Describe the indications and contraindications for transcutaneous monitoring
P17.15.3 Identify the complications and corrective action associated with transcutaneous monitoring
P17.15.4 Describe the basic principle of operation for transcutaneous blood gas monitoring
P17.15.5 Prepare the equipment and material for transcutaneous monitoring in a clinical setting
P17.15.6 Prepare patient for transcutaneous monitoring in a clinical setting
P17.15.7 Institute and monitor transcutaneous monitoring in patients in a clinical setting
P17.15.8 Report and chart procedure and patient data in a clinical setting
P17.15.9 Perform routine equipment cleaning and maintenance in a clinical setting

E17.16 Perform end-tidal carbon dioxide monitoring (e.g., set-up and interpretation)

P17.16.1 Describe the applications and limitations of end tidal carbon dioxide analyzers/monitors
P17.16.2 Describe monitoring of end-tidal carbon dioxide via capnography including purpose and applications
P17.16.3 Describe the indications and contraindications for end-tidal carbon dioxide monitoring

P17.16.4 Compare the technical operation of end-tidal carbon dioxide analyzers/monitors: side stream versus mainstream sampling
P17.16.5 Identify complications and corrective action associated with end-tidal carbon dioxide monitoring
P17.16.6 Interpret end-tidal carbon dioxide waveforms and trends
P17.16.7 Prepare the equipment and material for end-tidal carbon dioxide monitoring in a clinical setting
P17.16.8 Institute and monitor end-tidal carbon dioxide monitoring in patients in a clinical setting
P17.16.9 Report and chart procedure and patient data in a clinical setting
P17.16.10 Perform routine equipment cleaning and maintenance in a clinical setting

E17.17 Perform basic sleep studies (e.g., oximetry plus one or more channels)

P17.17.1 Explain the significance of recordings obtained during sleep studies
P17.17.2 Explain the principles of operation of commonly used measuring devices (e.g., single channel)
P17.17.3 Prepare the equipment and accessories, including the room, for sleep studies per protocol in a clinical setting, including oximeter
P17.17.4 Prepare patient for a sleep study per protocol in a clinical setting
P17.17.5 Perform sleep study and ensure patient compliance per protocol in a clinical setting
P17.17.6 Monitor patient and equipment during sleep study per protocol in a clinical setting
P17.17.7 Evaluate, document and report the results of a sleep study in a clinical setting
P17.17.8 Perform routine equipment cleaning and maintenance in a clinical setting

E17.18 Perform overnight oximetry

P17.18.1 Describe overnight oximetry monitoring including purpose and applications
P17.18.2 Describe the indications and contraindications for overnight oximetry monitoring
P17.18.3 Identify complications and corrective action associated with overnight oximetry monitoring
P17.18.4 Prepare the equipment and material for overnight oximetry monitoring in a clinical setting
P17.18.5 Prepare patient for overnight oximetry monitoring in a clinical setting
P17.18.6 Initiate and monitor overnight oximetry monitoring in patients in a clinical setting
P17.18.7 Report and chart procedure and patient data in a clinical setting
P17.18.8 Perform routine equipment cleaning and maintenance in a clinical setting

Adjunct Therapy

Presentation guide

DC = Statement of the competence for a particular domain
E = Elements of the competence for a specific statement of competence
P = Performance criteria for competency; associated with a specific element of the competence

Domain of competence DC.18

Perform adjunct respiratory care procedures on patients in a clinical setting

E18.1 Administer surfactant replacement therapy

- P18.1.1 Describe the application protocol, indications and contraindications for surfactant replacement therapy
- P18.1.2 Describe the delivery route, the types of surfactant and relative dosages
- P18.1.3 Identify the complications and corrective action associated with the administration of surfactant replacement therapy
- P18.1.4 Prepare the equipment and material necessary for the administration of surfactant replacement therapy in a clinical setting
- P18.1.5 Prepare the patient for the administration of surfactant replacement therapy in a clinical setting
- P18.1.6 Assume responsibility for the management of the airway, oxygenation and ventilation of the patient in a clinical setting
- P18.1.7 Administer to patient surfactant replacement therapy in a clinical setting
- P18.1.8 Monitor and assure patient safety during surfactant replacement therapy and take corrective action in the advent of complications in a clinical setting
- P18.1.9 Documenter in patient chart observations, actions and outcomes associated with the administration of surfactant replacement therapy in a clinical setting

E18.2 Assist with surfactant replacement therapy

P18.2.1 Prepare the equipment and material necessary for the administration of surfactant replacement therapy in a clinical setting
P18.2.2 Prepare the patient for the administration of surfactant replacement therapy in a clinical setting
P18.2.3 Assume responsibility for the management of the airway, oxygenation and ventilation of the patient in a clinical setting
P18.2.4 Assist with the administration to patient surfactant replacement therapy in a clinical setting
P18.2.5 Monitor and assure patient safety during surfactant replacement therapy and take corrective action in the advent of complications in a clinical setting
P18.2.6 Chart observations, actions and outcomes associated with the administration of surfactant replacement therapy in a clinical setting

E18.3 Administer specialty medical gases (e.g., Heliox, nitric oxide – excluding oxygen)

P18.3.1 Describe the applications, indications and contraindications for heliox administration
P18.3.2 Describe the recommended procedure for heliox administration
P18.3.3 Apply flow corrections for low-density gas mixtures when used with non-specific gas metering devices
P18.3.4 Calculate cylinder duration for various heliox mixtures
P18.3.5 Describe the applications, indications and contraindications for nitric oxide administration
P18.3.6 Discuss pollution concerns and control regarding nitric oxide administration
P18.3.7 Explain specific monitoring during nitric oxide administration including weaning considerations
P18.3.8 Prepare the equipment for specialty medical gases administration in a clinical settting
P18.3.9 Administer specialty medical gases to patients in a clinical setting
P18.3.10 Monitor specialty medical gas administration to patients and take corrective action in the advent of complications in a clinical setting
P18.3.11 Report and document observations in patient's chart with respect to specialty medical gas administration in a clinical setting

E18.4 Perform medical gas analysis

P18.4.1 Explain the principles of operation of the electrochemical oxygen analyzers
P18.4.2 Describe the calibration of the electrochemical oxygen analyzers
P18.4.3 Compare the clinical and technical advantages and disadvantages of galvanic and polarographic oxygen analyzers
P18.4.4 Discuss the factors which affect the efficiency and accuracy of oxygen analyzers
P18.4.5 Describe the operating principles of nitric oxide and nitrogen dioxide analyzers
P18.4.6 Utilize medical gas analyzers/monitors on patients in a clinical setting
P18.4.7 Troubleshoot and report common analyzer/monitor problems in a clinical setting

E18.5 Assist with esophageal placement (e.g., oral, nasogastric tubes, gastric suction)

P18.5.1 Discuss the methods used for assessing airway patency as it relates to application of esophageal tubes
P18.5.2 Describe the various techniques used to manually maintain a patent airway as it relates to the use of esophageal tubes
P18.5.3 Compare the anatomical differences and characteristics of non-tracheal airways in neonates, children and adults
P18.5.4 Describe the physiological effects including indications and contraindications of gastric suction/drainage
P18.5.5 Describe the techniques utilized in gastric suction/drainage including the insertion techniques for specialized esophageal tubes
P18.5.6 Describe complications and corrective action associated with the placement of specialized esophageal tubes and gastric suction/drainage
P18.5.7 Prepare the equipment and material necessary for the placement of a specialized esophageal tube in a patient in a clinical setting
P18.5.8 Prepare the patient for the placement of a specialized esophageal tube in a clinical setting
P18.5.9 Assist with insertion and secure a specialized esophageal tube in a patient in a clinical setting
P18.5.10 Ensure gastric suction/drainage therapy in patients in a clinical setting
P18.5.11 Monitor patient, specialized esophageal tube and gastric suction/drainage and take corrective action in the advent of a complication in a clinical setting
P18.5.12 Assist with removal of drainage tube in patients in a clinical setting
P18.5.13 Report and document procedure and observations in patient's chart in a clinical setting

E18.6 Assist with insertion of a chest tube

P18.6.1 Describe the applications and indications for the placement of a chest tube
P18.6.2 Identify the complications and corrective action associated with the insertion and placement of a chest tube
P18.6.3 Describe the procedure for inserting and securing a chest tube
P18.6.4 Prepare the equipment and material necessary for insertion and maintenance of a chest tube in a patient in a clinical setting
P18.6.5 Assist during patient preparation for insertion of a chest tube in a clinical setting
P18.6.6 Assist during the insertion and maintenance of a chest tube in a patient in a clinical setting
P18.6.7 Monitor patient during chest tube therapy and take corrective action in the advent of a complication in a clinical setting
P18.6.8 Report and chart observations and actions as related to chest tube therapy in a patient in a clinical setting

E18.7 Assist thoracic suction or drainage therapy

P18.7.1 Describe the applications and indications for thoracic suction and drainage therapy
P18.7.2 Discuss the physiological effects associated with thoracic suction and drainage therapy including potential complications and corrective actions
P18.7.3 Discuss the effects of transpulmonary pressure changes on closed chest drainage during normal breathing and mechanical ventilation
P18.7.4 Discuss the capabilities and limitations of closed chest drainage systems
P18.7.5 Discuss thoracentesis/rapid needle decompression
P18.7.6 Compare techniques utilized for thoracic suction and drainage therapy
P18.7.7 Assemble and test equipment required for thoracic suction and/or drainage therapy in patients in a clinical setting
P18.7.8 Prepare patient for thoracic suction and/or drainage therapy in patients in a clinical setting
P18.7.9 Assist during thoracic suction and/or drainage therapy in patients in a clinical setting
P18.7.10 Assess patient, recognize complications and take corrective action during thoracic suction and/or drainage therapy in patients in a clinical setting

It should be noted that the following elements (E18.8, E18.9 and E18.10) do not appear in the 2011 NCP – they were added as very important elements to this and other domains.

E18.8 Utilized medical supply systems in a clinical setting

P18.8.1 Describe the basic physical and chemical properties of commonly utilized medical gases (excluding oxygen) in respiratory care
P18.8.2 Describe the methods of storage, distribution and transportation of various medical gases
P18.8.3 Describe the safety standards applicable to various supply formats for medical gases
P18.8.4 Describe the compressed medical gas pipeline systems of a hospital with emphasis on safety features
P18.8.5 Describe the locations and purpose of zone valves utilized for compressed medical gas systems in a hospital
P18.8.6 Describe the various Canadian standards and other regulatory bodies as they relate to compressed medical gases and their respective clinical application
P18.8.7 Estimate gas flow duration in gas and liquid cylinders
P18.8.8 Describe the general concepts for safety connection systems for compressed medical gases
P18.8.9 Describe the emergency action required for major leakage from a gas wall outlet in a clinical facility
P18.8.10 Handle and maintain compressed medical gases in a clinical setting

E18.9 Regulate and maintain the pressure and flow of medical gases in a clinical setting

P18.9.1 Describe the measurement of atmospheric pressure using a barometer
P18.9.2 Differentiate between types of pressure manometers/gauges
P18.9.3 Utilize reducing valves and/or regulators in a clinical setting

P18.9.4 Describe the principles related to fluid entrainment, mixing and gas concentration
P18.9.5 Explain the functional use and operation of fluid entrainment and gas mixing devices
P18.9.6 Utilize flow-metering devices in a clinical setting
P18.9.7 Compare low-flow and high-flow gas administration devices per respective applications
P18.9.8 Describe the complications and hazards associated with the use of low flow gas administration devices
P18.9.9 Describe the complications and hazards associated with the use of high-flow gas administration devices
P18.9.10 Select and utilize various types of medical gas administration devices on patients in a clinical setting

E.18.10 Provide Thermal Regulation

P18.10.1 Describe the basic function of temperature servo-controlled devices
P18.10.2 Discuss the advantages and disadvantages of various thermoregulation devices (e.g.; incubators, radiant warmers, heated humidifiers etc.)
P18.10.3 Assess need for thermal regulation therapy
P18.10.4 Select and assemble appropriate equipment for thermal regulation therapy in a clinical setting
P18.10.5 Initiate thermal regulation therapy in a clinical setting
P18.10.6 Monitor and chart thermal regulation therapy in a clinical setting