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