

January 2023 Vent/CCT proficiency outline

Alex Wharton

Vent review

- Setup
 - Vt calculation, IBW chart
 - Paperwork
- Vent modes
 - A/C, SIMV
- Breath types
 - Volume, pressure, PRVC
- Settings
 - Vt
 - Rate
 - I-time, I:E ratio
 - PC
 - PS
 - PEEP
 - FiO₂
 - Sensitivity
- Alarms
 - Have a process for investigating alarms
 - Silence alarm, stop and assess patient, assess pt/vent systematically
 - PEEP
 - High/low pressure
 - Low minute volume
 - Volume limited
 - Apnea
 - Low O₂ pressure
 - Patient circuit
- Measurements
 - PIP
 - Pplat (I-hold)
 - ABGs
- Specific conditions
 - Obstructive (asthma, COPD)
 - May need lower end of tidal volumes
 - Need longer expiratory period (therefore higher I:E ratio of 1:2 or higher)
 - More prone to air trapping and autoPEEP, may need lower PEEP setting
 - May do better with SIMV if tachypneic to prevent full volume breaths
 - May need bronchodilators
 - May need higher pressures to deliver breaths if using PC
 - Restrictive disease (ARDS, PF, obesity, chest wall injury)
 - Decreased respiratory compliance
 - May see higher pressures
 - Need higher FiO₂ and PEEP

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- Head injuries
 - Hyperventilation usually contraindicated
 - Only a rescue maneuver for impending herniation due to cerebral vasoconstriction (cerebral ischemia)
 - Maintain EtCO₂ at low end of normal (35-40 mmHg)
 - PEEP can increase ICP, but may only be significant with much higher settings (>15 cmH₂O)
- RV failure (Massive PE, pulmonary HTN)
 - Lower PEEP, higher FiO₂ to maintain oxygenation
 - Higher PEEP → higher intrathoracic pressure → increased pulmonary vascular pressures → worsening RV failure
- Pregnancy
 - Have around 40% higher Vt at baseline at term
 - May need to sit up or tilt on side
- ARDS
 - Higher FiO₂ and PEEP, lung protective tidal volume
 - See restrictive diseases

Lab Review

- Lab basics
 - How do we obtain labs?
 - How are labs measured?
 - SI vs US units
 - Lab reference ranges
 - Blood composition
- Common lab panels - To include ranges, common causes for abnormal values, and will highlight most common/most applicable lab derangements
 - **CBC**
 - RBC
 - Hemoglobin
 - Hematocrit
 - Platelets
 - WBC
 - Neutrophils
 - Lymphocytes
 - Monocytes
 - Eosinophils
 - Basophils
 - Segs
 - Bands
 - MCV
 - **BMP**
 - Sodium
 - Potassium

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- Chloride
 - CO2
 - BUN
 - Creatinine
 - eGFR
 - Glucose
- **CMP**
 - Everything in BMP
 - Calcium
 - AST
 - ALT
 - ALP
 - Bilirubin
 - Albumin
 - Protein
- **Coagulation**
 - PT
 - PTT
 - INR
- **Other common labs**
 - Troponin
 - BNP
 - CK-MB
 - Myoglobin
 - Creatine kinase (CK)
 - Lactate
 - Amylase
 - Lipase
 - Blood cultures
- **Scenarios**
 - Hyponatremia
 - Liver injury
 - DKA
 - Pancreatitis
 - Anemia