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### Understanding COVID-19

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# Understanding COVID-19

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## Topic

- Provided are materials for safety and education on COVID-19 for the anesthesia provider
- SARS-CoV-2 causes COVID-19 (Coronavirus Disease 2019 (COVID-19), 2020)

## Why COVID-19

- COVID-19 has grown to impact new lives each day
- Empowerment of knowledge to combat virus
- Remain healthy to serve and educate others
- 43% of infected with 2003 SARS (similar to COVID-19) in Canada were healthcare providers (Peng et al., 2020)
- Many anesthetic procedures have potential to transmit the disease
- Anesthetists will be exposed to the viral plume

## Signs and Symptoms

- Many patients are asymptomatic per Jacofsky et al. (2020)
- Those with symptoms per Jacofsky et al. (2020) identified
  - dry cough
  - sore throat
  - fever
- Transmission via viral shedding can occur 2 days prior to reported symptoms (He et al. 2020)

## Underlying Patho

- Transmission entry points per Kowalik et al. (2020)
  - Upper respiratory tract
  - Gastrointestinal tract not ruled out
- Once inside host COVID-19 response includes per Kowalik et al. (2020)
  - Large amounts of inactive CD8+ T cells produced
  - Amount of inactive cells block active immunity
  - Viral particles switch on the apoptosis of macrophages

- Extensive proinflammatory cytokines release (cytokine storm)
- Cytokine storm present in those with immune risk lead to acute respiratory distress syndrome (ARDS)
- Fatal complications per Jacofsky et al. (2020)
  - ARDS
  - severe pneumonia
  - organ failure
  - septic shock

## Viral, Antigen-Antibody Response

- Viral and antibody testing combined per Jacofsky et al. (2020)
  - reliable source of information
  - (-) viral, (-) IgM, (-) IgG
    - Does not rule out recent exposure
  - If symptoms present, retest at later date
  - Recommend self-isolation
- (+) viral, (+) IgM, (-) IgG

**Figure 1**  
Reduce Exposure While Performing Tracheostomy

<b>C O R O N A</b>	<b>Tracheostomy for</b> ✓ Cap ✓ Shoe cover ✓ Mask (FFP2 or FFP3 covered with surgical mask) ✓ Goggles/Face shield ✓ Gown (Double gown if available) ✓ Gloves ✓ Buddy check	
	<b>Operating Room setting</b> ✓ Correct planning in timing ✓ Tracheostomy Team with expertise ✓ Limited number of people involved during the procedure ✓ Surgical kits & different size of cannula ready	
	<b>Open the trachea</b> ✓ Deep neuromuscular blockade ✓ Check SatO2 before opening the trachea ✓ Push tube cuff caudally to avoid air leakage ✓ Hyper-inflate tube cuff	
	<b>Nursing &amp; Airway management</b> ✓ Safe suction of secretions ✓ Regular cuff-pressure check ✓ Planned cannula change ✓ Wound closure when possible	

Note: Utilized for tracheostomy procedure to reduce exposure of COVID-19 (Pichi et al., 2020)

- Early stage, likely to be transmittable
- Recommend self-isolation
- (+) viral, (+) IgM, (+) IgG
  - Early to mid stage, likely transmittable
  - Recommend self-isolation

- (-) viral, (-) IgM, (+) IgG
  - Late stage, unlikely to be transmittable

## COVIDs Significance

- Due to impact on immune system per Kowalik et al. (2020)
  - Healthy children and adults combat virus

- Elderly, Immuno-compromised have difficulty combating disease
- When complications arise, procedures to maintain airway may be indicated
- Viral shedding and transmission via the respiratory tract pose risk for anesthesia providers due to aerosol plume of procedures (Peng et al., 2020)
  - Intubation
  - Tracheostomy

## Nursing Care

- To reduce exposure Peng et al. (2020) posed
  - Personal protective equipment (PPE)
  - Double gloving
  - Room prep
  - Airway management
  - Air purifying respirators
- Due to direct exposure Sommers et al. (2020) advises
  - Avoid tracheostomy if possible

- Pichi et al (2020) finds early tracheostomy reduced mortality rates over last 30 years.
- Figure 1 shows acronym with steps for successful tracheostomy (Pichi et al., 2020)
  - C – Cover self
  - O and R – utilize the OR
  - O – Open the trachea with deep neuromuscular blockade
  - N – Nursing, schedule cannula change
  - A – Airway management, safe suction management
- Pichi et al (2020) found a designated team utilized for tracheostomy reduced complication

## Conclusion

- COVID-19 continues to complicate lives
- Symptoms may or may not be present during the transmission period

- Viral and antibody testing combined give information on progression of disease
- Immunocompromised and elderly at risk for severe complications
- Anesthetists are at risk for exposure due to respiratory plume
- Use of PPE reduces chance of exposure
- Tracheostomy should be avoided if possible
- If not possible to avoid tracheostomy remember CORONA to guide care
- A specialized team for tracheostomy reduces issues and exposure

## References

