Pennsylvania Society of Anesthesiologists COVID-19 Webinar

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Disclaimer:

The items we discuss today are provided for informational purposes only and do not constitute medical or legal advice. Items we discuss today may be contrary to CDC guidance or may involve off-label use of medications or equipment. You should consult with your own medical or legal counsel should you have further questions.

The opinions shared during this webinar represent the opinions of the speakers and do not represent the official position of the Pennsylvania Society of Anesthesiologists, the American Society of Anesthesiologists, or the Pennsylvania Medical Society.

Scientific and Educational Resources

Current Status in Pennsylvania

- As of 11:59pm 3/21/20
  - Total Cases: 479 (up from 371)
  - Total Deaths: 2 (one in Allegheny, one in Northampton)
  - Breakdown by County: 33/67

Philadelphia	91	York	10	Wayne	2
Montgomery	87	Luzerne	7	Butler	1
Delaware	43	Washington	7	Centre	1
Allegheny	40 (1)	Lackawanna	6	Columbia	1
Bucks	32	Lancaster	6	Dauphin	1
Monroe	31	Adams	5	Fayette	1
Chester	23	Westmoreland	4	Franklin	1
Northampton	21 (1)	Beaver	3	Mercer	1
Lehigh	19	Lebanon	3	Montour	1
Berks	13	Pike	3	Potter	1
Cumberland	11	Erie	2	Schuylkill	1

What's New about the Disease?

- Outstanding resource from *Anesthesiology* that is free to all right now about the experiences gleaned from Wuhan and elsewhere including
  - Intubation and Ventilation Strategies for patients with COVID-19
  - Techniques for preventing infection of patients and healthcare workers
  - Perioperative Implications of of COVID-19
  - Intubation Precautions for patients with COVID-19

  All available at https://anesthesiology.pubs.asahq.org/ss/coronavirus.aspx

COVID-19: The Basics

- Novel Zoonotic Coronavirus disease
- Incubation time variable, with onset typically ranging from 2-14 days from exposure.
- Thought to be primarily carried by respiratory droplets, though aerosolization possible. Reasonably hearty on most hard surfaces, though readily killed by 62-71% isopropyl alcohol, 0.5% hydrogen peroxide, or 0.1% sodium hypochlorite.
- Most commonly lower respiratory symptoms (dry cough, fever, myalgias). Growing experience from Italy and the United States show there may be more GI symptoms than originally expected (index case in US presented with fever, nausea, and vomiting).
- Most common initial deterioration from respiratory failure, leading to ARDS. Frequently accompanied by myocarditis, depressed EF, and lymphopenia

Intubation of the COVID-19 Patient

- Current Recommendations from ASA/CDC
  - Intubation is an aerosolizing procedure
    - Those involved in airway management should wear **N95 or PAPR, eye protection, gloves, and gown**, and should, if at all possible, take place in an Airborne Infection Isolation Room (AIIR). Fit testing on N95 masks is a must and varies based on the manufacturer and model of mask.
    - *APSF states that a PAPR may be warranted for airway procedures on these patients given the infection of healthcare workers with SARS-CoV-1 while using N95 masks.*
  - Attach HEPA filter to oxygen bag for preoxygenation to avoid aerosolizing into the room. Preoxygenate with 5 min. tidal volume respirations where possible.
  - Avoid awake fiberoptic intubation. Consider RSI to avoid positive pressure ventilation.
  - Most experienced anesthesia professional present should perform the airway
  - Use closed-system suctioning if at all possible.
  - If initial intubation technique unsuccessful, place LMA while shifting to second technique.

Management of the COVID-19 Patient

- Management currently supportive. Majority of cases will be relatively minor and will not require hospitalization.
- ICU level care usually provided for ARDS symptoms, and care of ARDS due to COVID-19 is consistent with typical lung-protective strategies for ARDS
- Pharmacologic Therapy
  - Antiviral success mixed: Remdesivir currently under trial, lopinavir/ritonavir failed to improve outcomes in 199 patients, favipiravir seemingly successful in China, results unpublished
  - Chloroquine/Hydroxychloroquine may block infection. Small French study suggests utility, but data weak. Second small French study combining Hydroxychloroquine and Azithromycin pending publication.

Special Population: Pregnant Patients

- Current experiences in New York show C-sections in COVID-19+ patients are common
- Society for Obstetric Anesthesia and Perinatology has released guidance – with frequent updates. In addition to standard recs (minimum number of people possible, AIIP room, etc.):
  - Early labor epidural is recommended in these patients to avoid GA when possible.
  - All HCW entering labor room should (minimally) wear face shield, face mask, gown, and gloves.
  - Active labor management should be used to avoid emergency cesarean delivery whenever possible
  - **FOR C-SECTION:** *Regardless of type of anesthesia,* anesthesia providers and assistants should ideally implement AIRBORNE and CONTACT precautions (N95/PAPR) at the start of the case.
  - *If intubation required*, ALL PERSONNEL in the OR at the time of intubation should wear airborne PPE (N95/PAPR)
  - Moving to a negative-pressure room for extubation and recovery should be considered, though extubation in the OR is permissible.

https://soap.org/education/provider-education/expert-summaries/interim-considerations-for-obstetric-anesthesia-care-related-to-covid19/

Resources

- ASA: http://www.asahq.org/coronavirus
- APSF: https://www.apsf.org/novel-coronavirus-covid-19-resource-center/
- SOAP: https://soap.org/education/provider-education/expert-summaries/interim-considerations-for-obstetric-anesthesia-care-related-to-covid19/
- Anesthesiology: https://anesthesiology.pubs.asahq.org/ss/coronavirus.aspx
- SCCM – including education refreshers for non critical care trained physicians: https://www.sccm.org/disaster
- PA Dept. of Health: https://www.health.pa.gov/topics/disease/Pages/Coronavirus.aspx

Equipment, Logistics, and Practice Management Resources

What's the deal with PPE?

- Powered Air Purifying Respirator (PAPR)
  - Surrounds the user's head and provides purified air under positive pressure
  - PAPR consist of a hood with face-shield, HEPA filter, neck or chin collar, and battery pack.
  - May be disinfected after each use with a single wipe***
  - Neck collar, when present, should be personalized to each healthcare provider so as to decrease risk of contamination.

https://www.cdc.gov/niosh/docs/2018-176/pdfs/2018-176.pdf?id=10.26616/NIOSHPUB2018176

Surgical N95 Masks

- Filters at least 95% of airborne particles
- Should be used for all aerosolizing procedures including intubation and extubation
- Preference should be given to:
  - Anyone working within 3 feet of the airway in positive COVID-19 patient
  - Those at high risk of severe illness from COVID-19
  - Anyone in the presence of an aerosolizing procedure
- Can be worn for up to 8 hours of extended use.
- Can be donned and doffed up to 5 times for reuse following proper hand hygiene procedures. Reused masks should be donned with clean gloves which are immediately removed after donning and seal check.
- Consider wearing cover or facemask over N95 to protect from blood and secretions for extended use.
- *CURRENT CDC RECOMMENDATIONS STATE TO DISCARD MASKS AFTER WORKING WITH PATIENTS UNDER CONTACT PRECAUTIONS OR FOLLOWING AEROSOLIZING PROCEDURES*

One more disclaimer:

Many of the alternatives discussed in the remainder of this presentation are off-label or contrary to CDC or FDA guidance. We recommend you discuss with your medical and legal counsel before implementing and use at your own risk.

Cleaning Procedures for Surgical N95 Masks

- The primary concern with mask reuse is fomites on the surfaces. Anything that enters the mask fibers is extremely unlikely to disassociate.
- Several techniques have been discussed, but the most common are:
  - Cleaning wipes
    - Wipe the surface with bleach wipe or hydrogen peroxide wipe (damp, not saturated)
    - Place in a porous container to dry completely (paper bag) prior to reuse.
  - UV light
    - Techniques vary, but even small UV boxes provide enough power to kill SARS-CoV-2
    - Primary concern is breakdown of the elastic straps and avoidance of contamination of the UV box
    - Resource: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4699414/

Industrial Alphabet-Soup Respirators

- Families First Coronavirus Response Act (FFCRA, signed into law 3/18/20) permits industrial respirators (N95, 99, 100; R 95, 99, 100; P95, 99, 100) to be sold to healthcare workers. Industrial companies lining up to make masks for the medical market.
- Industrial N95 masks meet the same NIOSH standards for and provide the same protection as Surgical N95 masks for inhaled particles
- However, they are not cleared as surgical masks. Therefore, they should be covered with a surgical mask when they are used.
- N, R, and P refer to the filter's efficiency at stopping oil-based solvents (N=None, R=Oil-resistant, P=Oil proof)
- The number is the efficiency at removing particles:
  - 95=95% efficient, 99=99% efficient, 100=99.97% efficient
- N masks are single use up to 8 hours (under normal circumstances). R masks have a usage life of a single shift. P masks are limited only by your ability to breathe through them and manufacturer's limitations (3M recommends discarding at 40 hours of use or after 30 days, whichever comes first)

International Standards Equivalent with N95

- Part of CDC's Crisis Strategies for PPE is substantial equivalence with international standards.
- These standards provide "equivalent or similar protection" to NIOSH standards.
- Several hospitals/health systems turning to international suppliers where possible

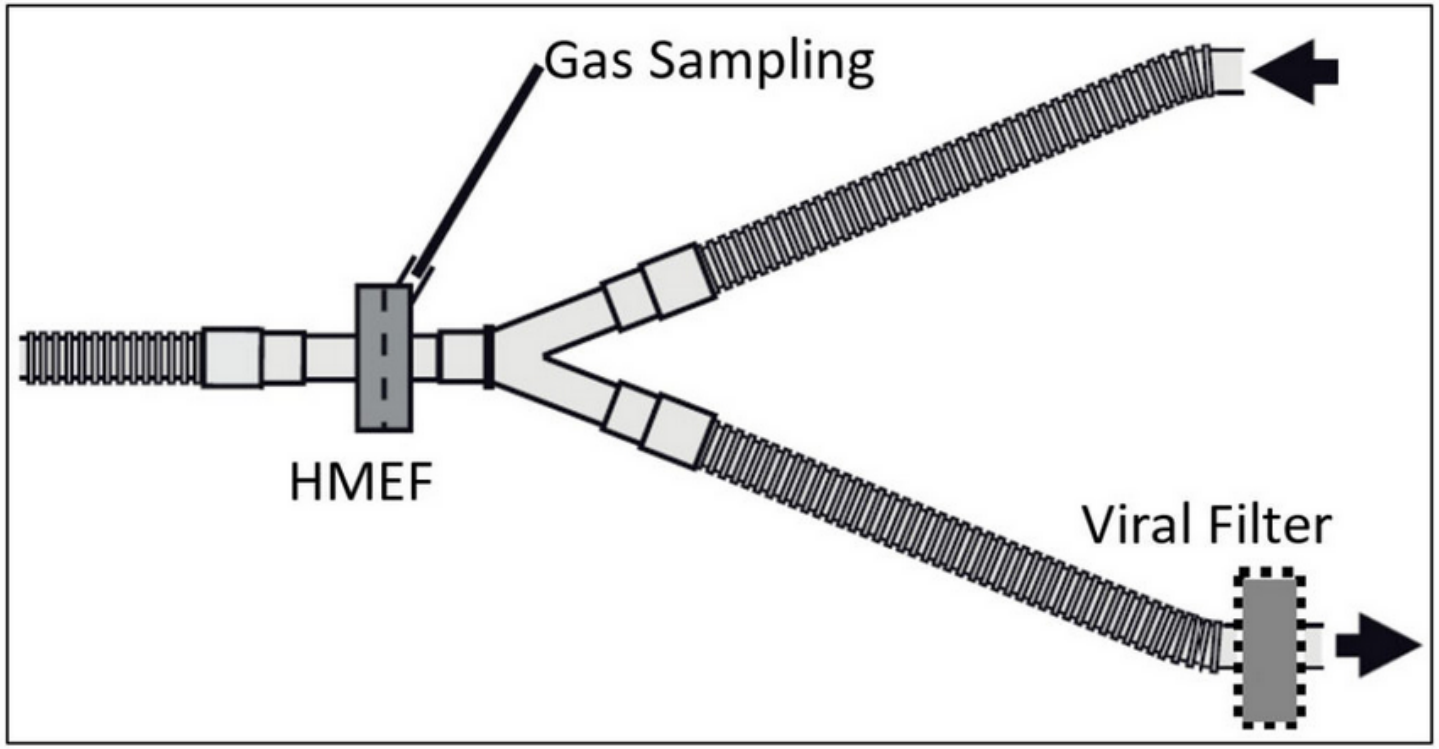
Country	Performance Standard	Acceptable product classifications	Standards/Guidance Documents	Protection Factor ≥ 10
Australia	AS/NZS 1716:2012	P3 P2	AS/NZS 1715:2009	YES
Brazil	ABNT/NBR 13698:2011	PFF3 PFF2	Fundacentro CDU 614.894	YES
China	GB 2626-2006	KN 100 KP100 KN95 KP95	GB/T 18664—2002	YES
Europe	EN 149-2001	FFP3 FFP2	EN 529:2005	YES
Japan	JMHLW-2000	DS/DL3 DS/DL2	JIS T8150: 2006	YES
Korea	KMOEL-2017-64	Special 1st	KOSHA GUIDE H-82-2015	YES
Mexico	NOM-116-2009	N100, P100, R100 N99, P99, R99 N95, P95, R95	NOM-116	YES
US NIOSH Requirements	**NIOSH approved 42 CFR 84**	**N100, P100, R100 N99, P99, R99 N95, P95, R95**	**OSHA 29CFR1910.134**	**YES**

https://www.cdc.gov/coronavirus/2019-ncov/hcp/respirators-strategy/crisis-alternate-strategies.html

Ventilators and Anesthesia Machines

- Filters:
  - HMEF filters with VFE>99.99% should be used at the Y-connector
  - Sample gas should be collected at the machine side of the HMEF filter to prevent contamination.
  - A second HMEF or HEPA filter with VFE>99.99% may be placed on the expiratory limb of the circuit to prevent contamination of the machine in case the first filter is soiled with secretions.
  - Mechanical filters are recommended over electrostatic filters.
- Filtering is extremely important: Drager is recommending a 28-day decontamination period should a machine become contaminated.

Filter Configuration



Preferred Filter Configuration

VFE > 99.99% for each filter. Gas sampling on machine side of filter. (Courtesy Draeger Medical)

Anesthesia Machines as ICU Ventilators

- Neither Draeger nor GE recommends the use of the anesthesia machine in lieu of an ICU ventilator
- Anesthesia machines do not have the same functionalities and modes as ICU ventilators
- May be used off-label if ICU ventilators are exhausted
- Important to cross-train anesthesia staff on the use of ICU ventilators and vice-versa.
- Follow specific manufacture recommended guidelines on machine maintenance, changing accessories, and flow rates.
- Specifically, scavenging systems MUST be installed appropriately, or viral particles may be exhausted into the room.

Anesthesia Staff Cross-Covering ICU

- Many may not have formally worked in ICU since training.
- For those without critical care fellowship training, the majority of our roles in the ICU will be supportive:
  - Intubations
  - Ventilator management
  - Central lines, A-lines, IVs
  - Fluid and pressor management
- Anesthesia staff should begin cross-training on ICU ventilators and vice-versa.
- For practices that don't have in-house anesthesia call staff, now is the time to consider having in-house call.
- CRNA staff may need to be used as ICU nurses.
- SCCM has excellent free refreshers: https://www.sccm.org/disaster

How to Keep Your Practice Afloat Financially

- Ask your hospital if they can provide financial assistance or increase stipend
- Ask hospital if they can temporarily hire CRNAs
- Encourage people to take PTO or make it mandatory
- Cancel Per Diem hires
- Consider cutting salaries or converting from salary to hourly
- Furlough employees so they can continue to get benefits
- Tax deductions for paid medical leave and paid family leave

Business Loans

- Governor Wolf has declared a state of disaster in Pennsylvania.
- Low interest or interest free loans are now available for small businesses.
  - PIDA (Pennsylvania Industrial Development Authority)
    - Provides companies with < 100 employees $100,000 in interest free loans with no payment for 1 year.
    - https://dced.pa.gov/programs/pennsylvania-industrial-development-authority-pida/
  - EIDL (Economic Injury Disaster Loan)
    - Provides companies with < 500 employees $2M at 3.75% interest loan to be repaid over a max of 30 years.
    - https://www.benefits.gov/benefit/1504

Personal Finances

- Student Loans
  - Loans *owned* by the Federal Government (all Direct loans, some FFELP loans) ordered to offer forbearance of 90 days with no interest accrual and without jeopardizing loan repayment plans that require consecutive payments.
  - Interest reduction is automatic, but *forbearance is not automatic.* You must apply for it. Go to your loan servicer's website for details. This is a very new announcement. Websites may not have details until Monday.
  - Does not apply to FFELP loans not owned by the government and to private loans. Contact your servicer – many are working with physicians to temporarily reduce or eliminate payments.
- Home Costs
  - Pennsylvania Supreme Court halted eviction and foreclosure actions throughout the disaster declaration.
  - Governor's office is recommending you contact your lender or servicer – many are working with borrowers to help.

Questions and Answers