

COVID 19 Advisory 6 Illustrated Presidential Address Supplement 1

Association of Anaesthetists COVID Webinar 2 21st March 2020 - Group Sponsorship with the Intensive Care Society, The Royal College of Anaesthetists, and Faculty of Intensive Care
This Seminar is intended as a resource and for information. It will be published in J.Anaesthesia .

COVID 19 replicates in the larger airways of the lung and spreads by coughing which generates Droplets 1 (> 5micron particles)and Foamite spray. This is not aerosol spread

(< 5 micron) . The droplet spray is propelled by the cough and falls by gravity. It will hit a near target and contaminate other surfaces.

Apparently, the more fancy street masks you see being worn, are called “respirators”!

The SAARS epidemic has provided useful guidelines (Canadian Journal of Anaesthesia 50;p.983-998). Recommended airway management should be Safe, Accurate & Swift (SAS). A Mapleson C circuit 2 is preferred to a valved system. Our first speaker, Prof.Tim Cook, showed us the protocol for correct PPE donning for tracheal Intubation. He also showed the routine for **e FONA** - establishing an **e**mergency Front Of Neck Airway. This was called a Tracheostomy in my day! He also introduced another novel acronym to me – the MACOCHA score for difficult airway patients such as those with a small jaw, curved or ridged spine, obesity or chronic sleep disorder. The champion of this scoring system is **Audrey Jong** Centre Hospitalier Universitaire de Montpellier, **France**. Successful intubation is confirmed by wave form capnography which demonstrates the rise and fall of CO₂, just as on an anaesthetic machine.

Dr. Charlotte Summers, an Academic Critical Care Physician, Cambridge, dealt first with the “Elephant in the room” 3. She declared that she was not an Anaesthetist! COVID 19 causes ARDS (Adult Respiratory Distress Syndrome). Charlotte referred to 14 different causal groups 4. She explained that **going blue** (because there is not enough oxygen in the blood), can be caused by 1. **Under - ventilation**, 2. **Impaired** air to blood oxygen exchange, 3. **Shunt** – a proportion of pulmonary blood flow never getting exposure to the alveolar air and 4. **a regional mismatch** between ventilation and blood flow (V/Q mismatch) 5.

The digitalisation of NHS records now makes ‘Big Data’ accessible for research. It has allowed her to prove that the calculation of ventilation settings commonly made in ICU have commonly resulted in the selection of settings *which are too great.

Charlotte offered an answer to the NHS challenge of having too few ventilators. Using older, simpler ventilators, such as the Manley 6, would serve so long as (it)

- Kept air going in and out of the lungs
- Kept oxygen levels in the blood in a reasonable range
- Used a modest setting for *Tidal Volume of each breath
- Holds the CO₂ partial pressure in the arterial blood not too far above normal range. This is acceptable so long as the blood pH fall, caused by CO₂ dissolving in the

blood and becoming carbonic acid, does not pass 7.2 (normal 7.4). The body knows how to deal with CO₂.

The next speaker, Dr. Dan Harvey addressed the challenge of ethical decision making. As an enforced example, he invited us to choose only two out of the following three - Good, Quick, Cheap – which would we choose if only two are available! He recommended applying a **Framework**, weighing factors on a **Moral Balance** 7. This does not yield the answer but it does support and reduce conflict. However pressured, there is always time to include everyone with “skin in the game” – patient, family, nurses, doctors and the hospital. Even when all of your resources are overwhelmed, we can still provide individualised care to our patients and their family.

Our final Speaker, Dr. Sarah Clarke, Consultant in Intensive Care & Anaesthesia, East Lancs. Hospital, gave us a warning. “**London is struggling-the rest of us will follow in two weeks time.**”⁸

The Question and Answer session raised several important issues.

The panel declared that **we must rein-in the misuse/inappropriate use of PPE**. Ironically, much of this equipment has normally been made in Wuhan!

It was emphasised that Anaesthetists are used to taking a moment to agree a plan with their **Operating Department Practitioner. There is always enough time for a well considered quick decision.**

The use of the **prone position** to nurse a **ventilated patient** has already been **validated by French research**. It needs to be a practiced nursing technique and introduced sooner rather than later into the management of any ventilated patient.

On March 22nd an Engineer neighbour showed me a Medicines & Healthcare products Regulatory Agency(MHRA) document, entitled ‘Rapidly Manufactured Ventilator System’(RMVS: RMV001 Specification). I found the 8 pages difficult to comprehend in places.

I hope this will not hinder urgent manufacture! I have contacted some Intensive Care colleagues to help me understand it.

David R. Hughes

President IESF British Section

21st March 2020

Illustrations 1. Droplet spread: 2. Emergency intubation(Mapleson **C**): 3. Elephant: 4. ARDS 5. V/Q Oxygenation 6. Manley: 7. Moral Balance: 8. Coming soon:

SARS-CoV-2

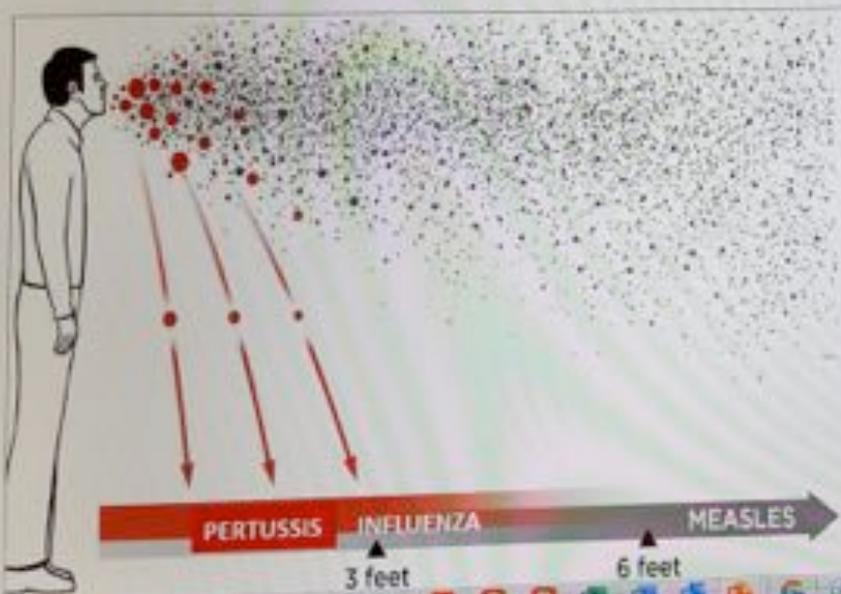
Corona virus

COVID-19

Thanks Sean Runnels



TRANSMISSION OF INFECTIOUS RESPIRATORY ORGANISMS



- **DROPLET**

- Large droplets $> 5 \mu$
- Don't remain suspended in air
- If inhaled, don't reach alveoli

- **AIRBORNE**

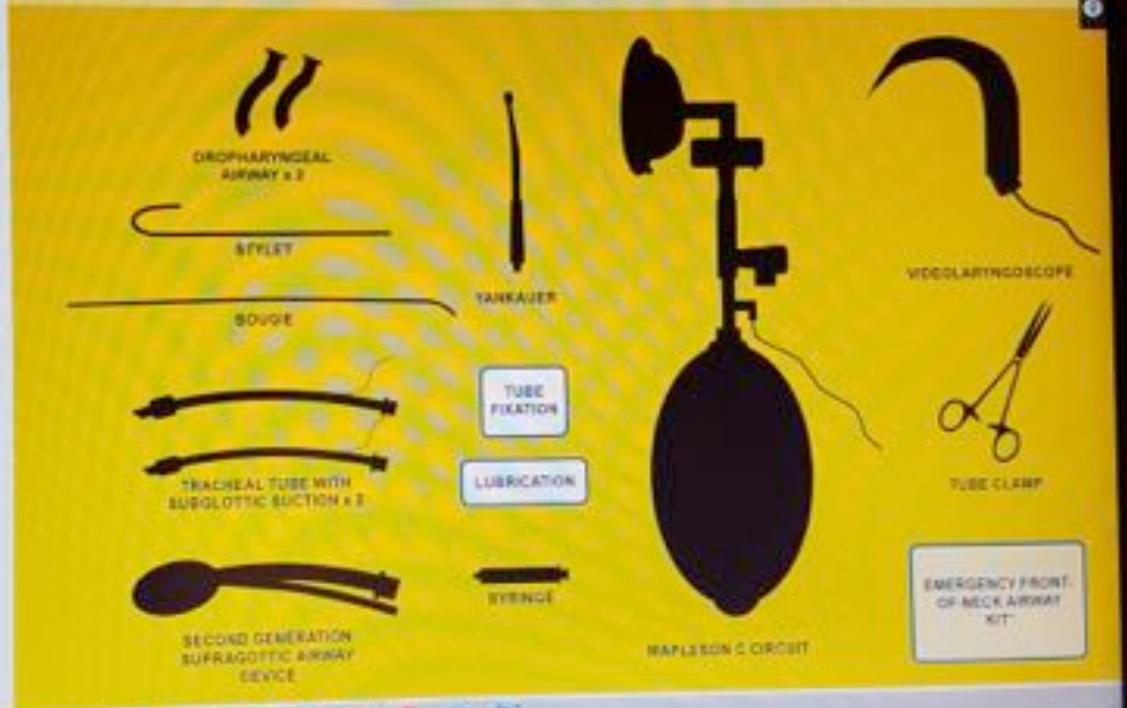
- Small droplet nuclei, $< 5 \mu$
- Stay suspended in air
- When inhaled, can reach alveoli

- **PRIMARY ROUTE OF TRANSMISSION** for SARS-COV2 felt to be **droplet**, and **contact**

Emergency tracheal intubation kit dump
COVID-19

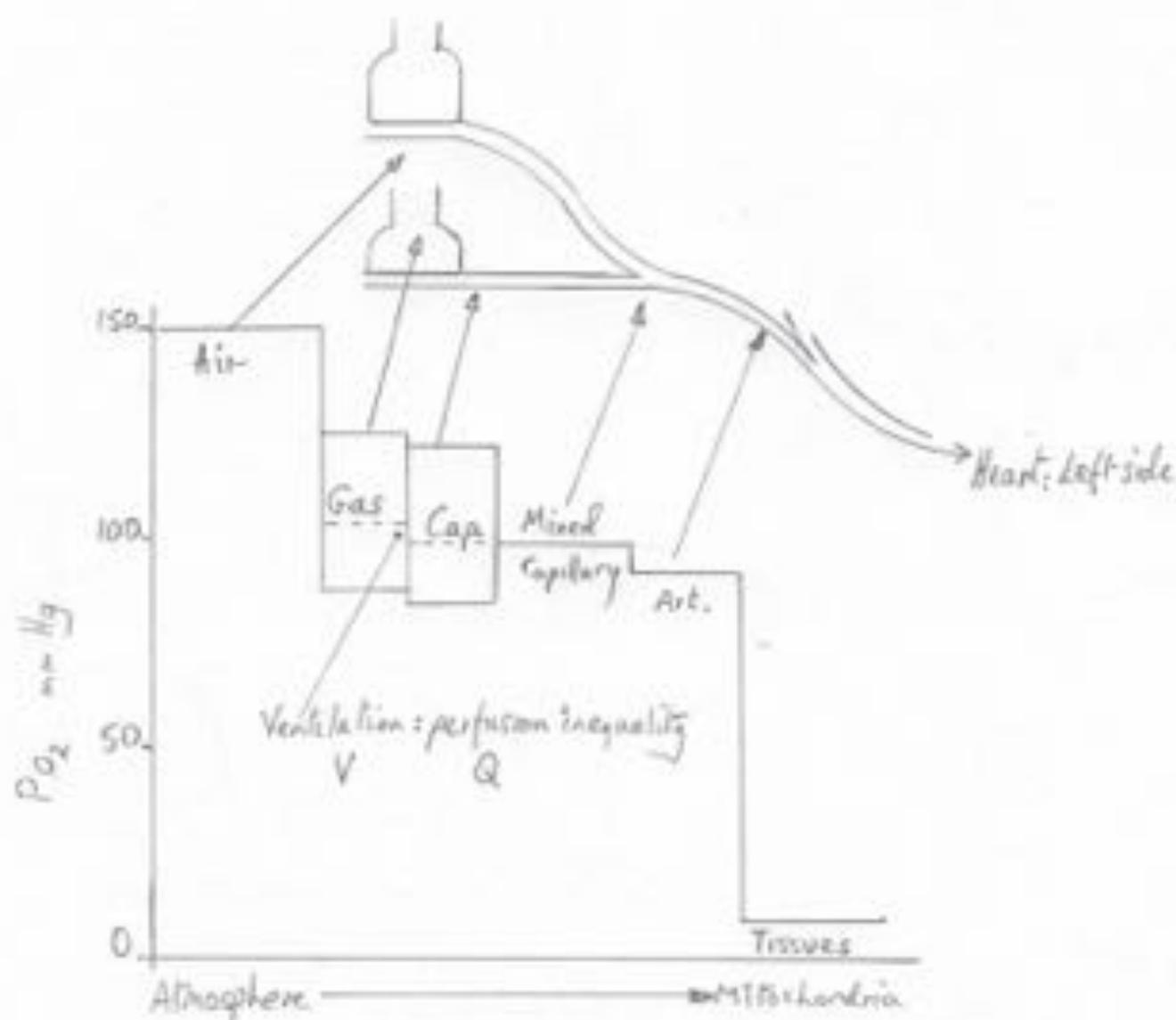
Note

- No NPA
- VL
- 2nd gen SGA
- Tube clamp



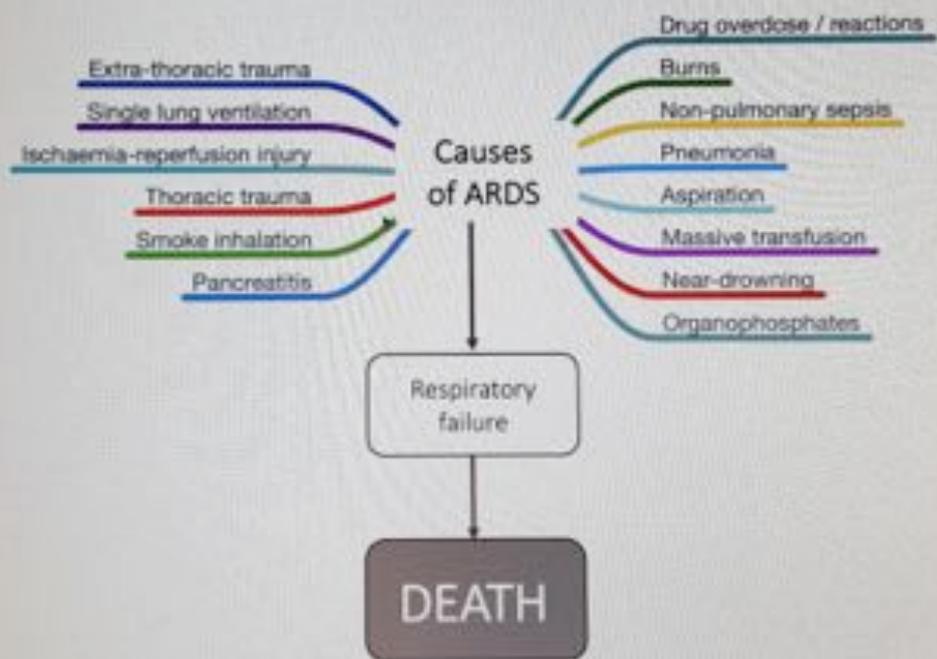


From Lungs To Tissues
The Oxygen partial pressure staircase



John B. West: V/Q and gas exchange (1965)

Causes



Autonomy

Independence priority
"Burden on family"
Capacity?

Harm

Pain & distress
Communication
Cognition (? duration)
Independence (uncertain)
Functional outcome
Dignity

Benefit

Pt - Mortality, prevented or deferred?
Family & Team - Grief & Regret
Team - complaint

Justice

Resource utilisation
Equality of access to ICU
Duration of therapy - short
Bed State - good

Facts - COVID 19 London or Your place + 2/52

ICU at capacity + 10 in theatres

Expected continued COVID presentation

Anaesthetic & ICU resource stretched

Delivery of some L2 facilities on ward supported already (CPAP)

- New plan to "balance box" - surgery, no epidural, PCAS, ward