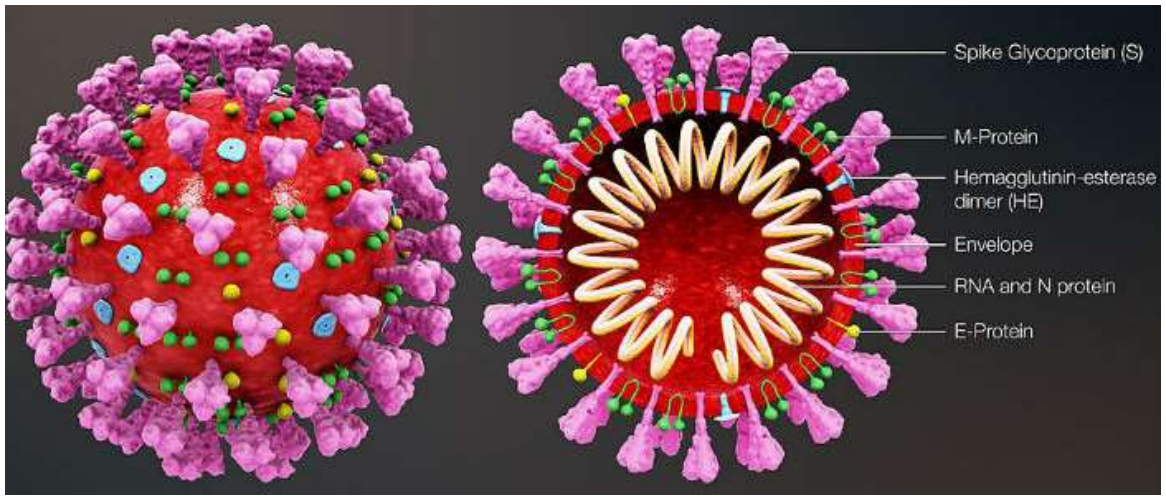


COVID-19 UPDATE

JAMES PAUL O'NEILL

MARCH 19TH 2020

Terminology

WHO

Coronavirus disease 2019 (COVID 19)

International Committee on Taxonomy of Viruses

Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)

COVID-19 Global Data: WHO: March 18th

COVID-19 now expands to more than 164 countries

193,475 cases and 7,864 deaths in
164 countries reported to WHO.

Symptoms & Signs.
Mean Incubation Period 5.5 days

Fever

Myalgia

Fatigue

Dry Cough

Most patients have a favourable prognosis

Older patients and those with chronic underlying conditions may have a worse outcome.

Science

RESEARCH ARTICLES

Cite as: R. Li *et al.*, *Science* 10.1126/science.abb3221 (2020).

Substantial undocumented infection facilitates the rapid dissemination of novel coronavirus (SARS-CoV2)

Ruiyun Li[1]*, Sen Pei[2]*†, Bin Chen[3]*, Yimeng Song[4], Tao Zhang[5], Wan Yang[6], Jeffrey Shaman[2]†

[1]MRC Centre for Global Infectious Disease Analysis, Department of Infectious Disease Epidemiology, School of Public Health, Faculty of Medicine, Imperial College London, London W2 1PG, UK. [2]Department of Environmental Health Sciences, Mailman School of Public Health, Columbia University, New York, NY 10032, USA. [3]Department of Land, Air and Water Resources, University of California, Davis, Davis, CA 95616, USA. [4]Department of Urban Planning and Design, The University of Hong Kong, Hong Kong. [5]Ministry of Education Key Laboratory for Earth System Modeling, Department of Earth System Science, Tsinghua University, Beijing 10084, P. R. China. [6]Department of Epidemiology, Mailman School of Public Health, Columbia University, New York, NY 10032, USA.

*These authors contributed equally to this work.

86% cases 'Undocumented'

These undocumented infections often experience mild, limited or no symptoms and hence go unrecognized, and, depending on their contagiousness and numbers, can expose a far greater portion of the population to virus than would otherwise occur

Risk Factors associated with development of Acute Respiratory Distress Syndrome & progression to death

Older age – Reduced immune activation

Neutrophilia

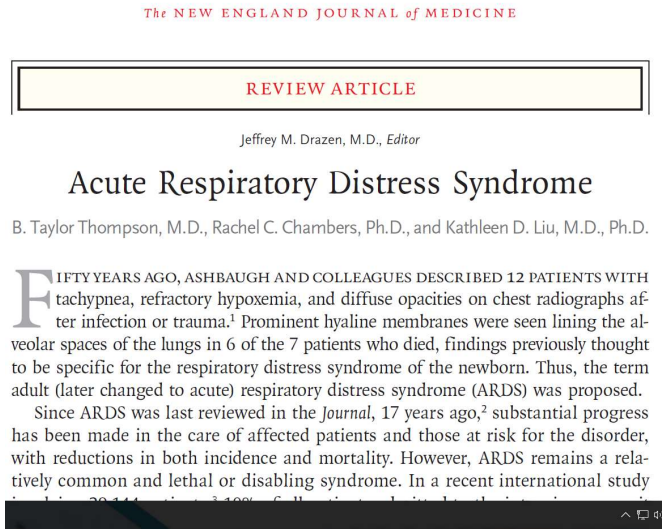
Organ and coagulation dysfunction

What is Acute Respiratory Distress Syndrome ?

ARDS

This is a type of respiratory failure characterized by rapid onset of widespread inflammation in the lungs

- Tachypnea
- Refractory hypoxemia
- Diffuse opacities on chest radiographs



The NEW ENGLAND JOURNAL of MEDICINE

REVIEW ARTICLE

Jeffrey M. Drazen, M.D., *Editor*

Acute Respiratory Distress Syndrome

B. Taylor Thompson, M.D., Rachel C. Chambers, Ph.D., and Kathleen D. Liu, M.D., Ph.D.

FIFTY YEARS AGO, ASHBAUGH AND COLLEAGUES DESCRIBED 12 PATIENTS WITH tachypnea, refractory hypoxemia, and diffuse opacities on chest radiographs after infection or trauma.[1] Prominent hyaline membranes were seen lining the alveolar spaces of the lungs in 6 of the 7 patients who died, findings previously thought to be specific for the respiratory distress syndrome of the newborn. Thus, the term adult (later changed to acute) respiratory distress syndrome (ARDS) was proposed.

Since ARDS was last reviewed in the *Journal*, 17 years ago,[2] substantial progress has been made in the care of affected patients and those at risk for the disorder, with reductions in both incidence and mortality. However, ARDS remains a relatively common and lethal or disabling syndrome. In a recent international study

In a recent international study involving 29,144 patients, 10% of all patients admitted to the intensive care unit (ICU) and 23% of mechanically ventilated patients had ARDS

Table 2. Risk Factors for ARDS.

Direct lung-injury risk factors
Pneumonia (bacterial, viral, fungal, or opportunistic)*
Aspiration of gastric contents*
Pulmonary contusion
Inhalation injury
Near drowning
Indirect lung-injury risk factors
Sepsis (nonpulmonary source)*
Nonthoracic trauma or hemorrhagic shock
Pancreatitis
Major burn injury
Drug overdose
Transfusion of blood products
Cardiopulmonary bypass
Reperfusion edema after lung transplantation or embolectomy

* Pneumonia, aspiration of gastric contents, and sepsis together account for more than 85% of cases of ARDS in recent clinical trials.

Rx

Supportive therapy for ARDS is focused on limiting further lung injury through a combination of **lung-protective ventilation** to prevent ventilator-associated lung injury and **conservative fluid therapy** to prevent lung edema *formation* and promote lung edema *resorption.*

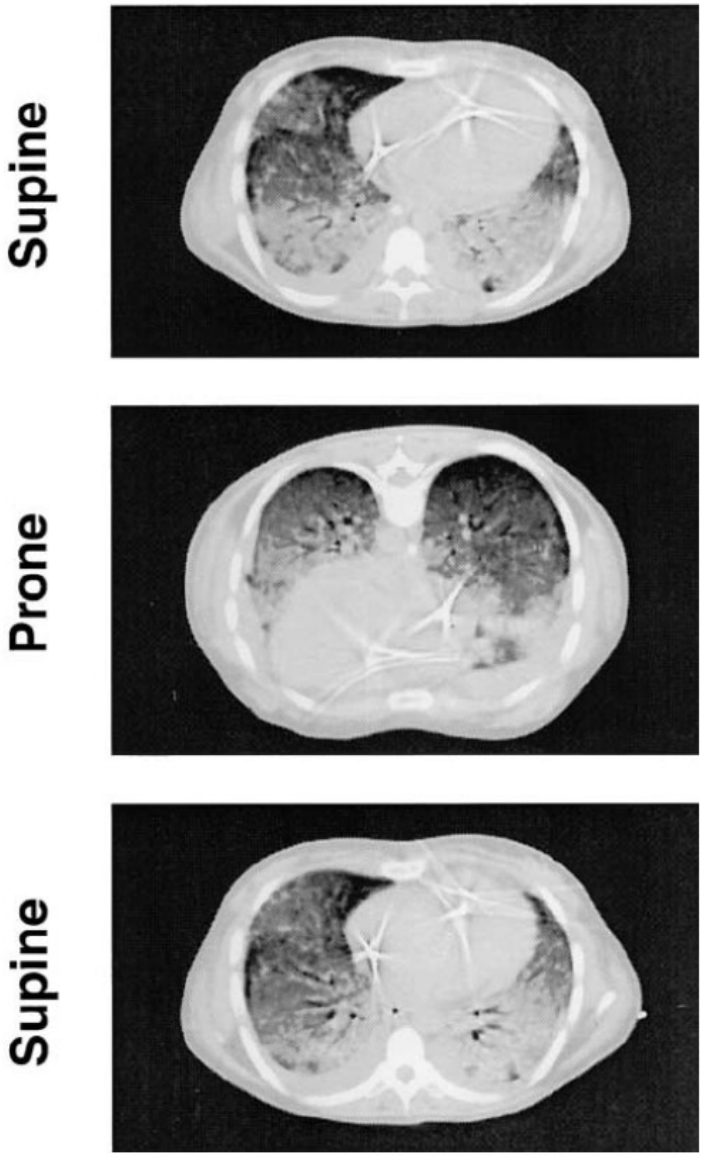
PEEP = Pressure applied by the ventilator at the end of each breath to ensure alveoli do not collapse.

Higher PEEP (a mean initial PEEP of approximately 16 cm of water), in patients with moderate-to-severe ARDS

‘PRONING’

In cases of moderate-to-severe ARDS ventilation while the patient is in the prone position is associated with reduced mortality and is currently recommended.

A benefit is likely to accrue from reducing the risk of ventilator associated lung injury through the combined effects of more uniform distribution of ventilation and less compression of the left lower lobe (by the heart)



The CTs were taken at end expiration and 10 cm H2O PEEP.

Note how gravity-dependent densities shift from dorsal to ventral within minutes when the patient is turned prone

Death

Multiorgan Failure

Refractory Hypoxia

Of Note : Covid 19 ARDS

Day 5 IL 1&6 mediated Resp deterioration

Personal Safety:

1. Start at home: Don't go home in your scrubs. Try to change before leaving hospital. Also, don't have patient contact in your street clothes.

2. Clean your phones. The data from Italy shows a lot of transmission from phones. If possible don't take out your phone in front of patients, in A&E, ICU… etc.

3. Hand hygiene and not touching your face is obvious.

OTOLARYNGOLOGY EXAM

Exam/Endoscopy precautions:

- Head and neck exam is high risk for aerosols.
- If you can defer or delay the visit, or manage on the phone, **do so**.
- Absolutely NO exam without gloves, face masks, gown & eye shields.
- Put a mask on the patient
- If you think you don't have to scope people, **don't.**
- **Scope to a screen if possible**

- All Trainees, check with on call Consultant before scoping.

- Avoid Inter-Hospital transfers if at all possible. Check with On Call Consultants before agreeing.

Donning

Wash Hands

Put Face mask & visor on first

Put 1st pair of Gloves on next

Put Gown On

Put Second pair of gloves on over gown

Doffing

Errors in doffing is one of the reasons why our Italian colleagues had such high infection rates

1. Remove outer gloves
2. Gel Inner Gloves
3. Break strap back of gown, roll and bin along with second pair of gloves
4. Go outside of room
5. From behind - Remove eye protection & mask
6. Clean hands

HEAD AND NECK CANCER PATIENTS

Discuss & agree patient management with all of your MDT personnel. Virtual MDT if possible or personnel numbers limited.

Triage and postpone all but the most essential cancer operations.

Critically examine Theatre cases where inpatient stay postoperatively is expected to exceed 5 days. This therefore includes the majority of our free tissue transfer cases.

If there is no alternative for life-threatening disease, seek immediate MDT (virtual) approval and proceed with excellent communication with the patient and family.

However, if there is any potential alternative treatment approach (radiation, chemoradiation therapy, other …) then strongly explore those options.

Tracheostomy

Not advised given risk to Surgical, ICU, Health care staff and other patients. Avoid Open and Perc Tracheostomy.

Communicate with Anaesthetics early and have a common agreement.

Discuss any Trach request with a Trach 'MDT' – ENT & Anaesthetic Colleagues. Form this NOW. Perc & smaller exposure preferable. Open has increased aerosolization risk.

If a Trach is considered-

Don’t trach early.

Let the infection peak and wane, and utilize trach later in the course when viral loads are likely much lower, and you are really traching in order to help with the underlying ARDS/lung injury, not the infection itself

Open Tracheostomy- if required

1. Anesthesia given

2.Neuromuscular blockade

3.IV Glycopyrrolate 0.4mg to reduce secretions

4.Clean and drape

5.LA infiltration (lidocaine 1% with 1:100000 epinephrine)

6. VERTICAL Incision

7.Exposure of trachea

8.Hemostasis if required

9.Anesthesia informed ready for tracheal incision

10.Preoxygenation 100% for 3min then apnea

11. Ventilator 'OFF'

12. Cuff deflated just before incision down to trachea

13.Pulled back 3cm and visualisation of tip of ETT at tracheotomy

- No tracheal suctioning to avoid aerosolization

14.Insertion of tracheostomy tube

- Cuffed up
- Connection to ventilator

15.ET CO2 check

16.Start ventilation and check tidal volume

17.ETT out and disposed into a biohazard bag

18.Stitch down tracheostomy with Silk 2/0

19.Cotton ties

20.Check before degowning and exiting room

Lastly:

- Your safety and well being is our first priority. Everything else comes next.
- Any questions or Concerns, please reach out to me or other department heads.
- You are all professionals.
- **We will get through this.**