COVID 19 Advisory 11 Saturday 25th April 2020

Association of Anaesthetists Webinar 6 COVID 19: An Irish Update

Last Saturday Jane and I attended the Webinar 6 (Slide 1), looking forward to learning about COVID experience in Ireland! The speakers offered some dramatic strap lines -

- Never let a crisis go to waste
- The COVID surge has given unique experience to a cohort of staff. Refresher training is essential
- GO DTE SIBH SLAN – there is strength in unity!
- "We peaked on April 10th and were not overwhelmed"

Dr. Rory Dwyer Clinical Lead, National ICU Audit Project, showed that **ICU related deaths for Ireland were approximately two times those for the UK (Slide 2).** Within the island of Ireland, hospital death rates per million of population were circa 115 in Northern Ireland and circa 72 in Eire. He speculated that there had been different lockdown strategies but perhaps also their ICUs had been under less pressure and had been able to keep patients ventilated for longer, thereby improving outcome. **Ireland has developed four hub medical centres (Slide 3 Eire) – namely Dublin, Galway, Limerick and Cork.** They also value their **National Intensive Care Bed Information Systems (ICUBIS).** Daily plots give numbers for each hospital for COVID confirmed or suspected, ventilated or not, for ICU bed occupancy. The margin of critical care beds total over ventilated patients is a measure of Health Service reserve. All hospitals can access this website. As a consequence of COVID to date, "**elective surgery has been dramatically wiped out."**

Dr. Catherine Motherway, President of the Intensive Care Society of Ireland, spoke in forthright manner. The 2009 report "Toward Excellence in Critical Care" had laid out the necessary expansion, in stages, to achieve a total L2 and L3 ICU bed capacity of 579. The necessary financial support for salaries, training and material was detailed.
The February 2020 report "Right Care, Right Now" shows that there has been **a fall** in bed numbers from 289 to 257. The headlines of **a Health Service under the cosh of COVID show**

- Circa 400 ICU beds, of which 100 are "surge" i.e. temporary
- The bed information system (ICUBIS) is operational.
- All 6 Dublin hospital ICU beds are full but there is capacity more widely in the country
- Public awareness & engagement is huge

Nationally, ICU admissions have become the daily metric of COVID 19. Dr. Motherway declared "**the pandemic is a 12 to 24 month issue"**. She also used this Webinar and her Presidential Office to call for

- An improved critical care transport network, matching patients to spare capacity
- The re-opening of society needs to be directly and proportionately related to an increase in Critical beds
- Active maintenance of the numbers of up-skilled staff

Prof. John Laffey, ICU & Anaesthetics at the National University of Ireland, Galway said, **"We are learning as we treat".** He revealed that the existence of an internet **has allowed the sharing of information by researchers worldwide including, significantly, research papers submitted but not yet peer reviewed for publication.**

The succession of Coronavirus Epidemics – SARS, MERS, following on the great research stimulus of HIV, has caused a mushrooming of world research capacity. For certain things a *trial is not necessary* **- Slide 4 – (Dettolgate?). Following President Trump's suggestion on 23rd March that 'disinfectants might be used on Covid 19 patients', the Authors used the correct format for USA's premier medical journal NEMJ for an Article which reads - METHOD; We read the label on the bottles we found in the Janitor's closet. CONCLUSION; This will kill you. Don't do it.**
Importantly, clinical research has been greatly assisted by the use of a trial design involving multiple trial groups (arms). Such studies, like the WHO Solidarity, keep rolling, allowing serial recruitment and the addition of new arms when fresh drugs or combinations are to be tested.

Many different known drugs are being retested for Coronavirus. It may be helpful to classify these by their mode of action.

- **RNA polymerase inhibitors** obstruct the multiplying of RNA chains i.e. virus growth. Trial drugs include ***Remdesivir and Favipiravir***. Other inhibitors (HIV protease) include ***Lopinavir and Ritinavir***
- **Other interference with virus action** include **binding with host cells** such as ***Arbindol, ace 2 and o*bstructing viral entry into cells**, the mode of action of ***(Hydroxy)Chloroquine*** (anti malarial drug), a research interest in MERS 2018.
- Modulating the body's response to the virus by **influencing the immune response and over reaction**, such as ***Inactivated Convalescent Plasma***, giving IV anti bodies to bind the virus,
- Steroids ***(Methylprednisolone***) , **a major anti inflammatory action**

- ***Interferon types 1 and 3***, a group of **signalling proteins synthesised** to mimic the natural action of virus infected cells, which release Interferon and **cause neighbouring cells to heighten their anti viral defences**

- **A monoclonal antibody** (drug names ending in 'mab'), produced by cultivation of a single clone of human cells in a commercial laboratory, produces antibody molecules which are all identical. Research trials are using human monoclonal anti body *antagonists* with names such as ***Tocilizumab and Sarilumab*** to calm immune reaction

- **Mesenchymal stem cells** such as ***Anakinra*** have immune-modulatory and pro-resolution effects and are *Prof. Laffey's passion!*

Prof. Laffey believes the optimal drug treatment will prove to be a combination of antiviral and imminune-modulation.

Dr. John Bates, **University Hospital Galway**, reflected on the pressures to reorganise into COVID and NOVID streams and wondered how to recommence high risk complex surgery which makes routine use of ICU. He demonstrated a variety of breathing hoods which might offer the best prospect of preventing aerosol spread
Echoing our earlier Advisories, he observed that lungs often remain easy to inflate even as COVID takes hold. Care must be taken to avoid excessive tidal volumes (each breath). Also, as we have learned before, the kidney may fail if the patient is given more intravenous fluid than the calculated 24 hour need. Renal support by haemofiltration may be complicated by the Covid induced activation of the blood clotting cascade. Filters and even circulation tubing may clot unless anticoagulant drugs (blood thinning) are prescribed. The use of nebulised Heparin delivery into the lungs was another trial Prof Laffey had mentioned.
Dr Bates reflected that Covid 19 presents ***a novel form of Adult Respiratory Distress Syndrome (ARDS).*** "***We little understand how to manage it and fear another surge".***

Dr. David R Hughes **President** **28th April 2020**

P.S. *Niall Ferguson reminds us in the Sunday Times, 26th April, page 21 that Pandemics come in waves. A similar threat to humanity is depicted in The Japanese " Great Wave off Kanagawa" depicts a great threat to the fishermen! He looked at the history of pandemics. He cites the first recorded plague outbreak in Athens which had three waves - 430, 429 and 427BC. The 20th Century gave us The Great Influenza 1918 in March, October and again in early 1919. The influenza pandemic hit Hong Kong in 1957, in '58 and further spikes in '60 and '63. Others have hit since.*
This time, calm waters will come only with high Herd Immunity or the Vaccine. ***P.P.S.***

Back in mid April, Barry Brooks passed a specification to me entitled "Field Ventilator Design Pack". The concept is to mechanise the wide spread method of manual bag squeezing used in developing countries for anaesthesia for surgery and life support. In similar fashion to the Oxvent prototype, a clear plastic self restoring breathing bag is used. It is compressed intermittently by rollers which simulate the more subtle action of the Anaesthetist's hand. Equipment is made simple to maintain with Allen key and spanner!

Barry is still on the case! (www.fieldventilator.com).