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The impact of the COVID-19 pandemic on anaesthesia trainees and their training

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Appendix 1. Online-only. These are the original fuller and more personal reports from individual countries.

Plymouth, UK

Over the last few months, training has almost stopped but the clock continues to tick. ICU on-call, shortages in PPE and a reduction in operating all contribute. Trainees feel pressure to complete modules in the same time with significantly Fewer cases. Despite flexibility from the College, trainees are aware that this will impact on their level of experience by the start of their consultant career or require a delay in completion of training.

Recently, there has been some reinstatement of training. Trainees have been prioritised according to training need and transition points. It is a positive development but one which undoubtly causes a certain level of angst amongst peers.

For those able to access training lists, new challenges present. Case mix prioritises urgent or emergency cases (across all specialties) with no opportunity for solo lists. Only senior trainees have access to emergency procedures and usually at night or the weekend. Training in full PPE is extremely difficult for both trainee and trainer.

The current disruption to society in general makes the juggle of home life even more complicated than before. Add this to the strains of the current training situation and there is a potential recipe for long lasting morale and mental health issues in the cohort of trainees affected by it. It is something which must be given precedence once some level of 'normality' resumes.

However, all is not lost. COVID-19 has forced us to be more creative and rethink our ways of working. Weekly trainee meetings have increased in importance. Combining on-site with remote access increases attendance and enables issues to be raised and dealt with in a timely manner. Socially distanced tutorials can be accessed in person via a virtual meeting and saved for access on demand. This flexibility can be a positive and permanent development.

COVID 19 will not go away any time soon and therefore the new balance between service provision and training needs to be agreed in a sensitive way to avoid further frustration amongst the trainee body. On a positive note, the reduced time in theatre has focussed the minds of both the trainee and the trainers; 'every moment counts'. This means that training objectives are being thought about for each list and both parties are more engaged than previously.

The pandedemic has born a certain comraderie, with consultants and trainees supporting one another – and focussed on staff wellbeing. The knowledge that you are not alone can itself boost morale. Work-life balance is even more important than before.

Although progress can be made with regards to the curriculum, the cancellation of exams has meant that trainees at these critical points have stalled (even if only psychologically) in their training. The plans that have been made around the timing of exams and their preparation have been lost. The unknown as to when these will be held again causes a certain level of anxiety.

The similar level of anxiety and potential 'unfairness' also applies to those applying nationally for Year 3 posts. The good news for many is that it went ahead and they now have their training number and some level of security. However, for those who were unsuccessful, the fact that it was purely paper based feels like they have only been able to present half of themselves and perhaps in different times, their story would have been a different one.

The changes in exams and recruitment may tip some into other specialties or leaving the profession altogether. It is these people in particular we all need to do our best to support and protect.

Dublin, Ireland

SARS –CoV2 has placed the healthcare service executive (HSE) in Ireland into uncharted territory. An already overstretched public health service has had to adapt at an extraordinary rate. On the western-most edge of Europe we had slightly more time to prepare than other European countries and this was hugely beneficial to our efforts. Rapid increases in Intensive care bed (ICU) capacity, re-deployment of medical and nursing staff as well as major changes in day to day running of hospitals were implemented in advance of an anticipated surge in cases.

The necessary adaptations that the HSE have made have had major implications for anaesthesia in Ireland. Like many other countries theatre cases have been reduced to emergencies, cancer and obstetric cases. Irish anaesthesia trainees have a significant amount of ICU exposure during their training – both through rotations and provisional of call. For trainees rotating through subspecialties or those more interested in theatre, the disruption of these training opportunities has been a challenge. Theatre training modules (cardiac, regional etc) have been put on hold resulting in concerns about obtaining competencies. Examinations, simulation days and workshops have all been postponed leaving trainees clinical progression pathways uncertain. The vast majority of Irish anaesthesiology trainees undertake international fellowships once they complete the training scheme. These have mostly been deferred for indefinite periods of time creating massive uncertainty regarding future employment and consultant jobs.

A significant challenge to trainees in Ireland is the change of work location. The temporary utilisation of private hospitals for public service has meant many trainees have moved to unfamiliar sites for theatre lists. Different staff, policies and concerns regarding perioperative continuity of care can add extra layers of stress to an already tense environment.

Another change has been the redeployment of non-anaesthesia colleagues to ICU. It is undoubtedly an unsettling and challenging time for those trainees redeployed – for example some of our surgical and psychiatric junior doctors have been redeployed to ICU teams or “pods”. It has been very important to introduce them to ICU in a safe and controlled manner.

Despite the initial cessation of routine morning teaching, it has been replaced with online/video conference teaching and this is undoubtedly a positive development. Online webinars, lectures and discussions have become the norm. As well as enhancing the spread of information, it encourages communication between different locations and helps to break down barriers between departments.

A relative lack of national Intensive care beds per capita (v.s. European standards) has long been a topic of debate in Ireland. The pandemic has significantly increased the awareness of ICU, and its

necessity, amongst hospital management, government and the general public. Although the level of critically ill COVID-19 patients in Ireland has not (so far) reached the terrifying heights experienced in other countries it has been widely accepted that adequate ICU capacity must be prioritised going forward.

Other positive developments include an increased sense of camaraderie between trainees/consultants, different specialities as well as between medical and allied health staff. Many junior doctors have returned from abroad to assist with the battle against COVID-19. Galvanised by a common goal hospital staff have rallied and supported each other throughout this crisis. This sense of community is a welcome silver lining and will be paramount in helping our health service transition smoothly out of crisis mode into "the new normal".

Santiago, Chile

As in the rest of the world, although later than in Asia, Europe and North America, the pandemic is hitting South America hard. The reality in our region is remarkably diverse, not only in the social, cultural, and demographic aspects, but also due to the great contrasts in the political and economic situation of their countries.

After a brief survey of different program managers in the region, it can be seen that important changes have had to be made to make teaching-care work compatible during the pandemic due to the drastic reduction in surgeries, the restructuring of clinical activities associated with the pandemic and the suspension of practically all group face-to-face teaching activities.

In general, a distinction is observed in the management of those first-year residents and those of second- and third-year residents. Some centres have chosen to keep first-year residents away from clinical activity, prioritizing their safety. This group has tried to promote theoretical teaching activities, especially online teaching. In several programs, specific training has been implemented for COVID-19 on the correct use of PPE, airway and CPR using online platforms and on-site simulation. Many centres, however, do not have the technical means necessary to implement this modality. This limitation has been faced by some with the provision of internet scholarships and access to laptops

for residents and teachers. Our own first-year residents, who we initially excluded from clinical practice, asked to be included in the clinical work and are now incorporated into the ward and intensive work. Other programs that have chosen to incorporate new residents into their clinical rotations have done so by taking additional supervisory precautions to decrease the risk of contagion. This activity is, however, limited by the reduction in the number of cases and the clinical rotations in “on” and “off” weeks that have been structured in many centres. Regarding second- and third-year residents, in general, the programs have had to make their rotations more flexible, privileging the support requirements of COVID patients within the hospital. Residents have taken a fundamental assistance role in some countries such as Chile, Argentina, and Colombia, being a valuable contribution to our work teams. Multiple rotations have been suspended due to the almost total absence of elective surgery. To ensure the adequate achievement of all the competences that the programs require, an extension of the programs has been requested and in some cases flexibility of the program to dispense with some rotations. In the case of the residents who were finishing their training, many training centres decided to permanently suspend the final exams, allowing the early incorporation of these doctors to their new destination centres.

Mental health problems are frequent in times of crisis, which is why different programs have created support networks to identify and help those residents who are most affected. In addition, websites and training courses have been developed in some places to promote self-care and provide mental health support. (http://apoyo.saludestudiantil.uc.cl/) There are, however, many places where there is no type of structured support.

Hong Kong, China

In Hong Kong, elective surgery is running at around 40-80% capacity across different hospitals, with cancer surgeries, general surgical and orthopaedic emergencies, and obstetrics being prioritized. In our hospital, which has a multi-floor operating theatre design with 2-3 rooms per floor, one floor has been cordoned off for COVID cases only, to decrease the risk of transmission, and to shorten the route of transport as COVID wards are located on that floor.

Inside the operating theatre, we treat all patients as potential COVID carriers. The mix of anaesthetic techniques that trainees are exposed to have changed, as anaesthetic methods have been adapted, with universal use of video laryngoscopy instead of direct laryngoscopy, very restricted use of laryngeal masks, and universal use of rapid or modified rapid sequence inductions to avoid bag-mask ventilation. To decrease the transmission risk from airway manipulation, some centres heavily advocate use of regional techniques instead, with the patients continuing to wear surgical facemasks whilst in-theatre. Alternately, some hospitals have set up airway management teams, which intubate and extubate most of the GA patients of that day in the theatre complex, limiting the number of staff exposed to these aerosol-generating procedures.

Operating list-wise, with the cut in elective surgeries, there is a significant decrease in general case-log numbers, with trainees allocated to subspecialty modules needing a longer time before they are exposed to adequate numbers and varieties of procedures. Exposure to pre-anaesthetic clinics is also reduced. Face-to-face classroom tutorials and continuous medical education activities have either been cancelled, conducted in larger conference rooms to enable social distancing, or changed to an on-line format.

On a College level, all face-to-face training workshops and courses have been postponed because they all have simulation or practical skills components that cannot be replaced by on-line teaching. The first sitting of the Intermediate and Final Fellowship exams have been cancelled, prolonging the training time for some. A backlog of exam candidates for the subsequent exams have stretched the capacity of the examination committee. The second sitting exams are presumably going ahead, with video-conferencing proposed as the back-up plan if face-to-face vivas are not possible. External examiners from other countries will probably not be able to attend, and the status of the FRCA Final Exam MCQ component in our Final exam is unclear.

For medical students, all patient contact has been suspended. Didactic components of the program have been moved and grouped together, with all the teaching material, including lectures and small-group discussions, delivered on-line. Clinical components are moved to later in the program. If

patient examination is a must as part of the medical school exam, patients would be COVID tested and wear N95 masks. Final year medical students are expected to graduate as scheduled.

To better-prepare staff to deal with COVID patients, we have on-line chat groups to distribute COVID-related logistical and educational materials, including videos for gowning up/degowning, intubation and resuscitation. Special disposable intubation and ventilation equipment have been prepared for ward intubations. Tutorials and simulation drills have also been organized to familiarize trainees with PPE use, and intubation and resuscitation of COVID patients. But specialists remain the first point of contact when dealing with COVID-confirmed or suspected cases.

Some trainees have been deployed to ICU or the medical isolation wards, and they have learnt to provide clinical care for COVID patients, including anti-viral regimes, when to initiate further investigations, and patient care via different communication methods (eg telephone ward rounds for well patients).

Durban, South Africa

Anxiety and Mental Health:

Registrars are already working under a great deal of pressure and a baseline elevation in stress levels. This is recognized by the academic department and there have been quite a few seminars focusing on how to recognize when our stress levels have overwhelmed our ability to be productive. The current crisis has significantly added to that pre-existing burden. I have found from discussion with peers that we are mostly experiencing this anxiety in a similar manner. It has evolved in stages. There has been fear for personal health and the health of vulnerable family members coupled with the burden of responsibility amongst younger staff (particularly trainees) to protect others in the department who were considered higher risk. The loss of the social support structures due to social distancing measures have left many doctors struggling to juggle childcare and work commitments. Finances have become stretched with households dropping to a single income.

The threat of insufficient PPE and what we would be expected to do in its absence is an area of great concern. Circulars from certain hospital mangers had been sent out to staff threatening disciplinary

action if they failed to continue to perform the swab tests despite not having the appropriate PPE. This was met with swift response from our union body but remains a threat to junior staff.

Examination preparation and structured teaching drastically reduced and, in some instances, fell away completely. For the candidates preparing for finals this was a devastating blow. This was coupled with the impression that academics were of the lowest priority and at this time we were foremost health care service providers.

There has been a great flood of information on the virus and its treatment across so many platforms. The pressure of trying to keep up with it was immense. Many reacted by trying to acquire as much information as possible until it was the only topic of conversation. Others decided it was an impossible task and sought to avoid updates on the virus unless it was necessary.

The mental health burden was recognized early and counselling sessions both in groups and individually were offered by the psychology department. For those who did not seek out formal counselling, the shared experience with peers and seniors within the department seemed to validate the occasional feelings of apathy or the inability to be “productive” at home. That level of stress made any small additional tasks feel like an excessive burden.

Effect on examinations:

The first semester specialist exams were written at the end of January with results (and invitation to the orals) expected to be posted in early April. This coincided with the start of the crisis in South Africa and one of the first changes came with the delay in the release of results by a month. As the crisis developed the College of Medicine South Africa (the examining body for specialists) decided to cancel all second semester exams as candidates usually need to travel to a single venue in order to participate and this was not in keeping with government regulations. The orals for the final examination as well as the orals for the diploma in Anaesthesia are due to take place at some point after June. The dates have not been finalized. The format of the exam is also expected to change. Hints have been made at workplace-based assessments and paper case discussions over platforms like Zoom but to date there is no consensus on what the exams will look like. Communication

between college and candidates has been sparse will the College of Anaesthetists being answerable to the parent body CMSA before disseminating plans to candidates. This has contributed to elevated anxiety levels amongst the final years.

Extended Time:

For most candidates in the 48-month program, we become eligible to sit for finals from the 36th month onward giving us 12 months and 2 opportunities to attempt the exam. For the registrars of 2020, many will end their contract in June with the prospect of completing the orals while out of a job. For others, whose time ends in December, they will have missed the opportunity to write as planned due to cancellation of second semester sessions. Registrars who have yet to write the primary examinations will find it difficult to move on to the rotations kept in reserve for the post-primaries period.

For the final years immediately affected, plans are being made to extend their contract by 6 months. While this is the best plan available, it is a hard pill to swallow for trainees exhausted from 4 years of personal sacrifice, compulsory overtime and study.

An argument has been made for all trainees across the board to have their time extended by 6 months but this has a wider impact on future registrar intakes, financial commitment from the department of health and universities and will require more discussion.

Rotations

Elective case work has come to a halt with theatre time being kept in reserve for urgent surgery only. This has drastically reduced the registrar's exposure to complex cardiac, neurosurgery and vascular surgery. Despite this, academic departments have opted to continue with the rotation of trainees to different departments and hospitals, a decision that was met with approval from registrars indicated by a local survey. Whether these rotations will need to be supplemented with extra time in the future is yet to be determined. Departments have proposed to perform more in block assessments to determine the experience of the registrar.

Innovations in teaching approaches.

The experience across the different Academic institutions in South Africa is far from uniform. Some universities have embraced the virtual platforms to give tutorials and webinars to their post-graduate students and have managed to keep to a regular schedule from the start of the lockdown. These are usually attended after normal work hours and have shown a high level of dedication and professionalism from teachers and registrars. Other institutions have little to no teaching activity from the time that the University closed. It highlights discrepancies in training across the country which is an issue already on the radar of educators and the college. This crisis may well usher in the next revolution in post-graduate education with online teaching becoming the new normal.

COVID preparation and Training:

Nothing "flattens the hierarchy" better than a global pandemic the likes of which has not been seen in anyone's lifetime. It has resulted in a new level of collaboration amongst trainees and seniors. Trainees have worked side by side with consultants in developing protocols, sifting through current evidence and running practical simulations. In some institutions, registrars have taken the lead in COVID preparedness training with consultants taking a back seat.

Lively discussion has taken place over safety profiles of intubation techniques and ventilation where registrar's opinions can have equal weight with the consultants. In the 8 weeks since the country went into lockdown, dedicated COVID teams within anaesthetic departments have become the new norm. Not only are these the doctors who are expected to go in to help in the COVID ICU first, but they have also been involved in the simulation training of all theatre users (cleaners, nurses, surgeons) within the hospital. The training has also been extended to anaesthesia providers who work at satellite hospitals or even the private sector where formal training has not been initiated. "STAN" and "HAL", the high-fidelity simulation dummies, Intubation boxes, scuba masks, video laryngoscopes and repurposed paper bin plastics have all featured in our simulation training and over time the protocols have evolved to prune what has not worked. The collaboration across all theatre users has been encouraging and a sense of unity has permeated the cloud of anxiety. Even if

the measures taken to prevent exposure are theoretical, just the act of preparation has helped to allay fears which may be the single most helpful outcome.

Our country has not seen a flood of hospital admissions of positive patients over the last 8 weeks. The western cape has been the hardest hit and is being treated as an epicentre. It seems there that both trainees and consultants have been redistributed away from theatre and on to COVID wards and ICUs. In other places like KwaZulu Natal and Gauteng, there has been a lag in consultant involvement mirroring the low numbers of hospital/ icu admissions of COVID positive patients. In these regions trainees have been put forth to manage the patients with supervision from a few consultants.

At my hospital, we have not experienced positive patients who have not already been intubated at a peripheral hospital. The greatest concern now are patients coming to theatre without prior testing for COVID. We rely on screening questionnaires, chest xrays and temperature checks to decide the patient's risk. In the scenario of trauma cases with decreased levels of consciousness and other possible causes for fever or respiratory distress it becomes challenging to estimate their risk for having the virus.

Since activating the entire COVID protocol has implications for the amount of full ppe used per staff member, where the patient will be nursed post – operatively, and exposure to staff during circuit disconnections, CPR, and other high -risk scenarios, the labelling of a patient as a suspect becomes contentious.

We have moved towards wearing N95 masks during airway procedures on all patients. Theatre users are provided with masks which must be reused (if not directly contaminated) for at least one week before being issued with a new one. Cases which can be done using supraglottic devices are being reconsidered for tracheal intubation instead. Where they are being used, spontaneous ventilation is preferred to controlled modes. Modified rapid sequence intubations are be used more commonly. IV inductions preferred to gas inductions etcetera. Surgical team and circulating nurses are advised to leave the room during airway procedures if they do not strictly need to be there.

What is planned is that during the intubation of a COVID positive patient, the senior most provider would take the airway responsibility with one other junior member available to give the drugs and provide assistance during the procedure.

Communication in PPE:

It is challenging. But we have not yet started using sign language and code. Those of us who mumble must speak up. Those who tend to be verbose have had to become more concise. Departmental meetings are discouraged now and most communication in the regard happens over whatsapp.

Texas, USA

In the USA, it seems that the most junior trainees and students have experienced the greatest disturbance in education. Medical students no longer rotate on clinical rotations and participate with remote learning with no in-person group lectures. At our institution, a large medical school and anesthesiology residency in Houston Texas, the first year anesthesiology residents traditionally complete a year of ICU, surgery, and medicine rotations before completing a month of introduction to anesthesia. Some medicine and surgery clinic rotations like ENT, coagulation clinic, or blood bank were cancelled to reduce exposure to both doctors and patients. Even the introductory month of anesthesia changed significantly. Traditionally, the first year residents, or interns, have four weeks of OR experience. Now, they had two weeks of simulations and lectures, followed by only two weeks in the operating room to prepare them to work in their own rooms come July with attending (consultant) direction and supervision. The typical first year skills, such as bag-masking, direct laryngoscopy, and fiberoptic intubations are no longer taught or performed unless absolutely clinically necessary. The new residents are taught to intubate with a video scope and deep extubate under supervision to avoid coughing and possible droplet exposure to the trainees and the rest of the operating room. For all level residents, large lectures are given remotely, and multiple choice questions are given instead of physical simulation to avoid close contact with groups of trainees. Early on in COVID experience, the operating rooms were only open for urgent/emergent cases. A single “intubating team” in full protective PPE would induce and extubate each room to minimize

exposure as well as to preserve PPE, which caused quite the bottleneck. In mid-May, the hospitals began allowing elective surgeries once again, and every anesthesia faculty and trainee had the opportunity to have their own N95 or P100 mask daily, face shield, and gown for intubations. The N95s are re-processed by aerosolized hydrogen peroxide between uses. All anaesthetists were also given the opportunity to be fitted and given their own P100 mask. COVID positive patients are intubated by faculty.

In terms of the mental toll the virus has had on the junior trainees, some have expressed heightened levels of anxiety at home and at work. The program required one session of mental health counseling via video conferencing and trained various faculty to be available as counselors to any of the trainees if they needed to confide or talk to someone. In the case a resident needs to be quarantined, the American Board of Anesthesiology allows for the time to count as clinical time if the trainee can do didactic work from home over some of the time period.

The American Board of Anesthesiology traditionally requires a passing written exam at the end of second year and again at the end of fourth year of residency with an oral board exam to be passed within a few years of graduation. The 2nd year written exam is now being offered two months late in August, and no longer will be administered in official computer testing centers, and can be given at each individual institution to practice physical distancing. The oral and applied exams are typically prepared for and scheduled almost a year in advance. For safety measures most of the in-person exam weeks have already been cancelled through at least June, which will likely cause a back-log of anesthesiologists needing to take the exam once in-person exams can be restored. The ABA is also waiving the continuing education requirement for 2020 for currently boarded anesthesiologists if anyone is unable to complete it due to coronavirus.

Melbourne, Australia

As the COVID-19 pandemic evolved around the world, Australian case numbers remained low, allowing us to prepare and adapt. New Zealand have no active cases and have de-escalated nearly all restrictions.

The formation of a COVID committee in our department- comprising staff from the head of department to trainee representatives- was very successful. They were able to rapidly develop and adapt protocols but more importantly provide a consistent message through excellent communication involving daily updates and regular online forums to answer questions and provide rationales for their chosen strategies. In an environment of uncertainty and fear we had a clear leader and a team who were compassionate, accessible and transparent.

Personal protective equipment (PPE) up-skilling workshops were run rapidly with staff from infection control facilitating education and donning/doffing practice. Every trainee and anaesthetist undertook simulation for airborne precautions and suspected COVID19 intubations with departmental protocols created and fine tuned. Only fellows and consultant anaesthetists could perform airway management on COVID confirmed/suspect cases, necessitating rostering changes to cover a dedicated COVID theatre and hospital emergency codes with a reduced ability for junior trainees to manage critical airways.

With a reduction of elective work, entire theatre complexes were shut down. Only emergency and urgent surgery proceeded leaving trainees with minimal opportunities to meet their case mix targets and perform skills like awake fibreoptic intubations and regional anesthesia. This was of most concern to senior trainees wanting to optimise their exposure to complex anaesthesia prior to fellowship exams and independent practice. Speciality fellowships and training all merged into a similar case mix of emergency surgery. Exposure to major trauma was also reduced with increased social distancing and isolation in the community.

The pandemic emerged during the height of the primary and fellowship exams. To protect patients with chronic disease, the fellowship exam medical viva was cancelled days prior to its intended sitting. This left candidates unsure of the implications, when or if it would be rescheduled, or whether they should continue studying, just days before they had to sit the written exam. All vivas were postponed leaving candidates at the peak of their knowledge and efforts with no viva date in sight. Provisional plans to provide exams in October are not yet confirmed.

Junior medical staff keen to pursue careers in anaesthesia have had rotations changed or cancelled, negating their ability to acquire exposure to anaesthesia and find appropriate references to support applications onto formal training programs. On the other end of training, those that have been able to finish their provisional fellowships- for many overseas jobs had been cancelled- were left worrying about employment in a market with great uncertainty and reduced elective work. The supervisors of training in our hospital made exceptional changes including providing assurances of jobs that are usually conditional on exam success.

All anaesthetic trainees in our hospital were commandeered to the Intensive Care Unit for one week rotations to provide assistance and reacquaint themselves with the differences in work. ICU rotations only make up a small part of our training so the ICU refresher was useful. Fortunately, we have not been needed in any ongoing capacity. Access to ICU trainee education has been made available to our trainees for ongoing education.

Some trainees have been prevented from changing hospitals; turning four month rotations into six. Implications include perpetuating isolation away from family and friends for trainees on rural rotations and leaving others with only three months of exposure to tertiary obstetric or paediatric anaesthesia for the entirety of their training. This has been compounded by a cancellation of peak body courses, workshops and simulation leaving the majority of education down to local online group teaching sessions. One benefit, however, has been improved access to teaching and meetings for trainees off site, on leave or working after hours.

The toll of this global pandemic on trainee welfare has been significant. In our hospital all trainees have allocated senior mentors and have had opportunities to engage in welfare workshops including mindfulness and meditation, debriefing sessions, stress management strategies and education of the professional resources available to us. Ultimately for me, this pandemic has highlighted that the empathy and care we show toward our patients, needs to be extended to our colleagues and ourselves to successfully adapt to a new normal.