

**“How has medical education been affected during this COVID-19 pandemic.  
How have you adapted your learning style and/or clinical practice?”**

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**Introduction**

COVID-19 has significantly impacted the socio-economical structures and personal factors governing our lives worldwide. Undoubtedly the detrimental effects of COVID-19 on education and healthcare sectors have compounded to impinge on medical education. The pandemic necessitated changes at both preclinical and clinical stages of training, and whilst we all await an end to the pandemic, the innovative teaching strategies developed will be here to stay.

**Initial reaction**

Many medical schools responded to the spread of the virus by stopping all in person activities<sup>(1)</sup> and replacing them with online alternatives<sup>(2)</sup>. This was done predominantly to prevent the spread of the outbreak amongst the student body as well as to reduce the risk of students acting as vectors of the virus<sup>(3)</sup> in the clinical environment. However, this had a negative effect on students as they missed much of their clinical placement (especially in the lead up to exams). Medical schools have attempted to fill the gap in clinical experience with online learning. For example, Imperial College uploaded a bank of patient interviews<sup>(4)</sup>, each with various conditions to provide an alternative to encountering patients with different conditions on the wards. Whilst this resource has proven invaluable, it is difficult to draw a comparison with the rich and varied patient interactions which students would normally experience on the wards of a hospital. It cannot yet be determined if this lapse in experience will have any long-term negative impact on the students as they move through their academic careers.

The nature of the online classroom posed a particular problem to examinations. Written exams were moved online: many exams became open book by default. This change is somewhat controversial for the obvious reason that the exam no longer serves to highlight those without the baseline knowledge expected at their stage of training. In some cases, it also did not allow for enough differentiation between top performing students and thus special awards for excellence could not be awarded in the traditional manner.

Practical examinations were cancelled all together with results based on previous performance. Some students may have felt this an opportunity missed; their development since their previous exams essentially going ungraded. This is demotivating for students<sup>(1)</sup> and changes around exams contributes to uncertainty thus increasing stress amongst medical students<sup>(5)</sup>.

Some students experienced financial difficulties and unnecessary anxiety because of projects and electives being cancelled. Alternative opportunities were made available<sup>(5)</sup>, for final years this was in the form of the interim F1, for younger students this consisted of volunteering opportunities<sup>(3)</sup>. Many felt this to be a good step from medical student to junior doctor or from pre-clinical to clinical learning. Sadly, this opportunity was not afforded to everyone, such as those who were shielding or were unable to travel, thus disadvantaging such students.

### **New methods**

Pre-clinical teaching has continued to face restrictions of in person activities such as lab-based practical's and anatomy teaching. Online substitutes have received mixed reviews; accessing learning material from anywhere has allowed people who are shielding or have faced travel restrictions to still be involved with their learning. However, watching recorded lectures anywhere at any time is not new technology. There is recognition that new pedagogical innovations must remain engaging in order to be effective<sup>(1)(6)</sup> and this has prompted the introduction of virtual and augmented reality as a means of teaching. HoloLens is an example of such technology being trialled by Imperial College London – it allows simulated doctor-patient interactions for students to learn from.

With the Medical Student Council welcoming medical students as key workers, the clinical teaching environment has returned to what can be deemed a 'new normal'. Unfortunately, hands on practice of some essential skills such as fundoscopy and otoscopy have been restricted to the classroom models only. This has obviously restricted students' ability to gain real patient interaction experience in these areas. Furthermore, students on surgical specialty rotations have found a decrease in learning opportunities as fewer elective surgeries are being performed<sup>(3)(6)</sup>.

Regardless, appropriate safety measures and sufficient PPE in the clinical environment has allowed students to benefit from COVID-19 as a learning experience. Many students found they became valued members of the team as they assisted in regular jobs, thereby freeing up time for other clinical staff. Currently, many hospitals are offering students training to get involved with the national roll-out of the vaccine.

### **A personal insight: How I adapted my learning**

In my experience, where there have been restrictions, such as fewer opportunities to examine patients when placed on a respiratory turned COVID-19 ward, I found new opportunities to replace these. For example, I took part in the routine swabbing of patients and I was able to learn a lot about the clinical presentation and development of COVID-19. Overall, I feel I benefitted from the once in a lifetime experience of being on a COVID-19 ward during a global pandemic.

Recently, I found it difficult to adapt to online lectures; the combination of prolonged hours at a computer with restrictions on sport and social activities have struck down the barrier between academic and personal life<sup>(3)</sup>. To combat the disengagement posed by the online setting I would encourage the use of chat functions to ask questions during lectures and self-tests with a focus on a more active learning style. Podcasts are useful to cover content whilst exercising (which I found vital to maintaining a balanced lifestyle during monotonous lockdown days).

### **Conclusion**

Online teaching methods have been a lifeline to the medical education system during the pandemic. In the future these technologies will supplement the in-person teaching which students and teachers feel is necessary to providing great quality medical education. However, future studies will be needed to fully gauge the impact the pandemic has had on the quality and quantity of clinical experience students will have had during this time as well as to assess the effectiveness of online teaching. Universities and students continue to face new challenges and must adapt to the changing circumstances, nonetheless, COVID-19 must be used as a learning opportunity by all in the medical profession.

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