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# Challenges faced by orthopaedic trainees during the Covid-19 pandemic – An Irish perspective



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## ABSTRACT

**Background:** The recent SARS-CoV2/COVID-19 pandemic has caused a change in most aspects of our daily lives. Our health systems have had to adjust at an unprecedented rate to accommodate care for patients affected by the virus. As a result there has been widespread disruption to trauma and elective services throughout the Orthopaedic community Worldwide. We discuss the changes facing orthopaedic residents in training and the adaptations that have been made.

**Methods:** We discuss the challenges posed from a reduction in caseload to surgeons in training, teaching activities, patient interaction, workforce reinforcement and support networks in Ireland.

**Results:** A structured deployment of residents has taken place ensuring maximum exposure to operative cases to maintain competency. Teaching activities have been virtualised into a new curriculum that provides trainees with convenient access to a wide range of specialists at defined time periods during the week. Strategies have been employed to reinforce the workforce in anticipation of an acute reduction in staff due to the Covid-19 virus. **Conclusions:** The changes have been rapid and despite many of these adjustments being borne out of necessity, the innovation displayed will almost certainly alter how training is ultimately delivered long after the crisis has ceased.

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## Covid-19 to date

Since the World Health Organisation's (WHO) declaration of the SARS-CoV2/COVID-19 as a pandemic on March 11th 2020, there has been an unprecedented change in the way medical professionals approach their work.<sup>1</sup> The disruption to routine medical and surgical care has affected all specialities to varying degrees and the rapid spread has led to a surge in the requirement of additional staff and resources worldwide. Many countries have been overwhelmed by the pandemic not only due to the mortality rates but also due to the loss in productivity from the high unemployment rates as a result of social isolation.<sup>2–4</sup> As of the date of writing of this article over 3.5 million people across the world have contracted the virus

with the current death rate standing at just below a quarter of a million.<sup>5</sup>

Many of the current workforces have had to employ alternative roles within their hospital, take on additional tasks or change their usual practice. This poses a particular challenge to orthopaedic trainees on the specialist registrar programme (SpR) who rely on a high volume of patient interaction through trauma and elective clinics, procedures and acute management of patients to progress their training. Furthermore, physical teaching, courses and conferences have been cancelled or postponed posing an additional challenge to SpRs looking to broaden their knowledge and skillset.

Despite the mass disruption to normal services across the board, several innovations and adaptations of technology have

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**Table 1 – Summary of issues and solutions employed.**

Issues	Solutions employed
Reduced caseload	<ul style="list-style-type: none"> <li>• Trainees provided with access to trauma cases in private hospitals</li> </ul>
Reduced teaching exposure	<ul style="list-style-type: none"> <li>• Virtual core curriculum weekly meetings</li> <li>• Access to online webinars</li> <li>• Local teaching meetings via video conferencing</li> </ul>
Workforce	<ul style="list-style-type: none"> <li>• Expedited ST3 interviews</li> <li>• Private-only consultants invited to work publicly</li> <li>• Senior trainees allowed to step up as consultants if required</li> </ul>
Patient interaction	<ul style="list-style-type: none"> <li>• Scaling of virtual clinics</li> <li>• Maintenance of physical clinic for post-ops etc.</li> </ul>

served to maintain our dedication to training and treating our patients.<sup>6–9</sup> The late Steve Jobs former chief executive officer of Apple once said, ‘innovation distinguishes between a leader and a follower’. As important as innovation is to the ultra-competitive technology industry, we are now seeing innovation applied to healthcare at lightning pace. Throughout these challenges the resilience and leadership skills among SpRs and consultants has become evident, leaving a mark on healthcare that will remain for months and years to come.

### Orthopaedic specialist training pathway in Ireland & UK

Orthopaedic SpR training in Ireland and the United Kingdom is governed by The Joint Committee on Surgical Training (JCST). They serve as an advisory body to the four surgical Royal Colleges regarding matters related to surgical training as well as overseeing all ten Specialty Advisory Committees (SACs) responsible for the surgical specialties. In turn the SAC oversee the Trauma & Orthopaedic curriculum delivered across 14 deaneries in the United Kingdom and Ireland. In addition they govern the Intercollegiate Surgical Curriculum Programme (ISCP) which is a platform that provides SpRs with the tools required have their performances critically assessed by training consultants. This was released to ensure that the ‘does’ or ‘practical’ aspect of performance described by Miller can be assessed on an ongoing basis throughout an SpR’s rotations.<sup>10,11</sup> Training in Ireland is further governed by the Irish institute of Trauma & Orthopaedic Surgery (IITOS) in collaboration with the Royal College of Surgeons Ireland (RCSI).

The goals of training can be divided into a number of categories. The ISCP facilitates completion of clinical assessments such as case based discussions (CBDs), procedure based assessments (PBAs) and direct observation of procedural skills (DOPs) of which 20 in total are required for each 6-month rotation. A ‘multi-source feedback’ or ‘360° appraisal’ at the end of each year requires colleagues from other disciplines to assess the performance of the SpR, giving alternative perspectives that can improve non-clinical aspects of their performance.

The caseload is important to demonstrate proficiency in performing a spectrum of trauma and elective procedures prior to gaining completion of training certification, recorded using the e-Logbook.<sup>12</sup> This includes 1800 orthopaedic cases throughout training with over 70% being performed as the primary surgeon. Other indicative numbers include for example 80 major joint arthroplasties, 50 arthroscopies, 40 hemiarthroplasties for fracture neck of femurs and 30 intramedullary nails.<sup>13</sup> In Ireland a monthly ‘core curriculum’ program provides SpRs with a day of teaching through lectures, small group discussion and simulation on a core topic that rotates through all 13 training centres on a 2-year curriculum. Orthopaedic Specialists within that core topic are invited to deliver teaching which not only serves to provide trainees with learning opportunities but challenges experienced consultants to maintain and improve their own knowledge. This is a means of ‘reverse mentorship’; a concept championed by Jack Welsh the former CEO of General Electric and has been implemented across a number of industries to large effect.<sup>14</sup> Local teaching in respective units comprises of weekly face-to-face teaching on pre-selected topics. This crisis has led to the escalation of online journal clubs as previously published by this group.<sup>15</sup> The examination trainees prepare for and must pass to complete training is the Fellowship of the Royal College of Surgeons (FRCS) intercollegiate exam delivered by the 4 Royal Colleges in the UK & Ireland in years 4 & 5 of training.

### Challenges facing training and adaptations made

#### Caseload & assessment

There has been an acute drop in the number of elective and trauma cases taking place due to the current pandemic across the world.<sup>16</sup> In light of the requirement for additional hospital resources there has been a near-complete cessation of elective activity across Europe.<sup>16,17</sup> Cases requiring surgical management require to be triaged into ‘essential’ and ‘non-essential’ surgery, with many cases routinely operated on now managed conservatively the ancient skill of moulded casting has become imperative in daily practice.<sup>18,19</sup> The closure of workplaces, schools and cessation of sporting activities has resulted in an unprecedented reduction in trauma cases at a time in the year when rates of trauma begin to peak.<sup>20</sup> As a result, orthopaedic trainees are at risk of a reduction in exposure to cases and deskilling in certain areas. Several changes have been made to combat this including the provision of private healthcare facilities to care for all patients, which is a government temporizing measure to merge all healthcare providers to manage the anticipated ‘covid surge’ (Table 1). This expansion in capacity has allowed many hospitals to facilitate trauma procedures on separate sites, in essence in an attempt to provide a ‘clean’ operating environment free of COVID-19. In response to this the training programme director rapidly authorised SpRs to work in these hospitals to not only maintain continuity of the trauma service but also to avail of the additional learning opportunities. Many trainees now have the option of working with highly

skilled consultants in other hospitals that they may not have had the chance to work with otherwise which has the effect of furthering exposure and networks. From a medico-legal perspective the State indemnity covers all practitioners in private hospitals during this time working on public contracts.

### Teaching

Core curriculum training days have been cancelled in light of the widespread restrictions however there has been a rapid enthusiastic response from consultants to continue this regular teaching through the medium of videoconferencing. Zoom & Microsoft Teams are the primary form of conferencing used, both provide a cloud based platform for video, chat and content sharing.<sup>21</sup> Web-based teleconferencing has risen in popularity in medicine over recent years due to the lower time and costs associated, and we have witnessed a rapid expansion of its applications.<sup>22</sup> Core curriculum teaching sessions now take place weekly during 1-h sessions on a 12-week period rota. Trainees have the opportunity to engage in small-group discussions and view content whilst abiding by social distancing guidelines. There has been an increase in teaching delivered outside of these dedicated sessions, with weekly basic science teaching and increased access to online webinars becoming available.<sup>23</sup>

Our weekly trauma conference meeting has also been virtualised. Members of the department can access the presentation remotely with interaction stimulated seamlessly to teach or solve issues.

The use of simulation has been incorporated by our colleagues in North America on a background of strong evidence supporting its role in training.<sup>24–26</sup> The recent rise of virtual reality simulators and augmented reality may form an integral role in orthopaedic training in future, however further collaboration and development of this technology will be required.

### Patient interaction

A reduction in clinic/office volume has been required to reduce traffic through hospital corridors. The Trauma Assessment Clinic (TAC) is an existing framework developed in recent years that allows consultants remotely assess trauma patients' records and clinical imaging to make rapid informed decisions on their management. This has served to improve clinic efficiency and reduce costs, a model that has gained traction across the country.<sup>27,28</sup> Since the COVID-19 pandemic there has been a rapid scaling of the TAC both locally and nationally. The existing TAC has broadened the indications for referral from peripheral hospitals allowing remote viewing of clinical imaging through the National Integrated Medical Imaging System (NIMIS). This system covers 90% of the imaging from our Emergency Departments.<sup>29,30</sup> This format has been extended to use in the routine trauma clinics, whereby patients who require follow-up obtain imaging in their community radiology department for remote viewing and phone consultation. Clinical examinations can also be carried out via telemedicine, and although this represents a novel phenomenon to both patient & surgeon this is likely to catalyse further work on creating validated examination methods.<sup>31</sup> As a result there has been a

dramatic reduction in the amount of patients requiring physical attendance in clinics, protecting the health of both patients and staff alike. A website for the TAC has been developed and serves as a source of information for patients across the country about their local trauma centre and about the nature of their injury with a 6-step guide to managing their injury provided.<sup>32</sup>

### Workforce

The interview process for national SpR selection was held in advance of the proposed date as we anticipated a "lockdown situation" developing. This required the co-operation of all candidates and examiners and the successful candidates have been allocated to rotations for commencement of training in July, ensuring continuity of the orthopaedic workforce.

The requirement of consultant-based care may increase due to overwhelming of the service, or indeed due to loss of consultants requiring isolation after contracting COVID-19. To combat this the training programme has actively authorized SpRs in their final 6 month rotation to step-up to consultant level if required. In the event of this being required, the orthopaedic services will have the capability of boosting workforce and maintaining the service. Consultants working in private healthcare have also been provided with an opportunity to undertake government contracts for the duration of the pandemic, providing SpRs with additional training and networking opportunities which may not have been pursued otherwise.

### Support networks and resources

Finally there have been many support networks established by the Royal College of Surgeons in Ireland to ensure that trainees can take care of themselves and find assistance if required at any stage. A dedicated 'resource hub' has been implemented as well as a 30-min weekly webinar entitled 'conversations that matter'. This aims to encourage dialogue on the current issues facing healthcare professionals in the surgical specialties promoting learning and insights on the evolving situation.<sup>33</sup>

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### Future of training

It is uncertain what the future holds not just for the orthopaedic community, but society in general. COVID-19 has catalysed changes in every industry across the world and it is difficult to envisage returning to life as it was pre-pandemic. By their nature, sporting events, trips to theme parks and concerts all oppose the current social distancing principles we have learned to abide by on a daily basis. It is anticipated that returning to these events will be on a graduated basis when it is deemed safe by public health authorities, with possible expectations of temperature checks, rules for distancing and heightened security. The future for orthopaedics is equally as uncertain, however the recent drive for innovation may leave lasting effects once the pandemic has ceased. It has been noted that orthopaedic trainees possess a higher rate of 'grit' compared with the general population.<sup>34</sup> This quality has

showcased itself through the dedication of our trainees to their work, the creation of solutions to problems and the showcasing of this innovation through research to share this information.

The scaling of the Trauma Assessment Clinics has proved to be successful in treating acute trauma patients without requiring physical presence at a hospital. This has led to rapid patient care while simultaneously reducing costs. Emerging technology to facilitate these consultations are now being implemented and soon video conferencing with patients in the comfort of their home may become routine. The traditional orthopaedic trauma clinic model with what may seem like hundreds of patients on a daily basis is being challenged during this pandemic, the solutions created are likely to remain once normality has resumed.

The use of online teaching and video conferencing has ensured SpRs are maintaining their competence and knowledge despite the limitations on travel. This may become the norm in future, and would significantly reduce the cost and time associated with travelling for training purposes. In the same category courses and conferences where in some cases thousands of people convene for several days may become a past memory. As Stambough et al. described in their recent paper, the three types of educational approaches for surgeons in training prior to COVID-19 were institutional group education, travel for group education and web-based education.<sup>24</sup> It is expected that an increase in web-based platforms for education will be required post-COVID-19 and in order to do so, these technologies must be developed with trainees' core educational needs in mind. Any surgical specialty however will require a degree of face-to-face activity and despite the move towards technology-based education and patient care, the apprenticeship model of learning will always form the core framework for surgeons in training in harmony with the rapid technological advances.<sup>35</sup>

Bill Gates said at the turn of the century, 'As we look ahead into the next century, leaders will be those who empower others'. For many of us, we find ourselves in unfamiliar roles with dramatic changes to the way we work. The leadership portrayed by all healthcare staff across the world is commendable and by continually challenging our practice, innovating and finding solutions to the current situation we can empower others to make lasting change for the betterment of future generations.

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### Consent

No consent was required for this paper.

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### Authorship statement

All authors contributed to the formulation, writing and editing of the paper.

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### Declaration of Competing Interest

None.

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