Teaching and training in Otorhinolaryngology (ORL) during the pandemic and beyond, in the United Kingdom

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INTRODUCTION

The novel SARS-CoV-2 coronavirus (COVID-19) has forced major changes to the delivery of clinical care worldwide. The speciality of Ear, Nose and Throat (ENT) was particularly impacted largely because of the virus' transmission pathway. It is understood that COVID-19 transmission is predominantly airborne from the upper aero-digestive tract.[1-3] COVID-19 can be transmitted by particles smaller than 10µm which have been shown to be the most likely to penetrate the lung tissue and cause infection.[4] This has therefore precipitated a need for personal protective equipment to also protect against air borne transmission particularly when completing aerosol generating procedures. High viral titres have been found in the nasal, oral, pharyngeal and laryngeal areas (collectively known as upper airway) which are commonly examined and instrumented as part of the practice of an ENT clinician or an allied healthcare team.[5]

As a result, the protection and safety of staff, working in close proximity to the upper airway, was a priority.

This led to wide-ranging action to halt the spread of COVID-19, protect the workforce, and allow increased capacity of intensive care areas. Whilst these measures were effective in their aims there were inevitable impacts on ENT services including teaching and training. Here we discuss the issues that arose specifically in medical education and training, with a focus on our experience in the United Kingdom (UK), and how they are being addressed to ensure that these impacts on training are diminished.

Personal Protective Equipment

There was initially a disparity between the provision of appropriate Personal Protective Equipment (PPE) and the need. The British Association of Otorhinolaryngology – Head and Neck Surgery (ENT UK) conducted a survey of 258 ENT surgeons in March 2020 relating to the availability of PPE.[1] in 5 respondents said that PPE was unavailable, even for Aerosol Generating Procedures (AGPs), and FFP2/N95 masks were available to only 27%.[6]

As a result of this survey and feedback from the Association of Otolaryngologists in Training (AOT) clear guidance was released for PPE within the speciality.[6,7] ENT UK also engaged with Public Health England (PHE) to reiterate concerns regarding AGPs and instrumentation of the upper aerodigestive tract. As our understanding developed surrounding the COVID-19 transmission, what constituted an AGP and specific risks related to differing air-flow environments the guidance was adapted and updated.[8]

Clarity regarding what was deemed an AGP was a necessary part of creating guidance for PPE use. Within ENT procedures the consensus is that the primary procedures proven to be aerosol generating are - tracheobronchial suctioning, nasopharyngeal aspirate, nasopharyngeal and oropharyngeal swabbing, emergency front of neck access and any procedure deemed to trigger a cough.[9] Coughing itself has also been defined as an AGP in several studies.[9] Sneezing has also been proven to be an AGP, with a dramatic increase in the distance of droplet transmission with some studies showing transmission of droplets by up to 7 to 8 metres.[10]

Personal Protective Equipment is a broad umbrella term, within the pandemic this has encompassed gloves, apron, eye protection and a facemask. The decision about which facemask is most appropriate has been a subject of discussion and review throughout the pandemic. Respirators are a broad range of masks including Filtering face piece masks e.g. FFP3 and Non-oil masks e.g. N95.The numbers associated with the FFP masks i.e. 1, 2 and 3 reflect the reduction in concentration of the hazardous substance - 4, 10 and 20 fold respectively.[11] In a similar manner, the N95 mask has been shown in test conditions to block transmission of 95% of solid and liquid aerosol particles.[12]

The use of PPE in the form of a fluid resistant surgical facemask for both the patient and staff plus other precautions in the form of the 2m distance rule has been shown to reduce transmission risk by 80% in non-aerosol generating procedures.[4] Studies have shown that an N95 mask is sufficient protection from droplet transmission with a close range cough, however a surgical facemask would be insufficient.[13-16]

Therefore, most recent guidance has shown that the use of an FFP mask with an overlying surgical mask while reviewing patients who may require an AGP is the safest option to minimise time to change equipment and to reduce wastage of PPE.[17]

Stephenson et al created a registry of ENT Surgeons testing positive for COVID-19; where 14.5% of respondents were trainees. 60.3% of 66 entrants, between 3rd April and 2nd July 2020, felt that they had contracted the virus whilst at work. Two respondents required hospital admission and one sadly died, this was widely reported in the media at the time and highlighted the importance of PPE for all ENT clinicians including trainees.[18]

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The COVIDSurg collaborative analysed 1137 consecutive patients undergoing primary surgery for head and neck cancer with a curative intent. 3% of these patients tested positive within 30 days post-operatively. In 3.5% of the procedures members of the surgical team tested positive for COVID-19 and there was an association between cases where patients tested positive too. Infections in staff members were also associated with high community incidence of COVID-19, oral tumour site, use of tracheostomy and with surgical complications. The authors highlighted the importance of PPE and appropriate cross-infection measures to prevent morbidity and virus transmission.[19]

Theatre Utilisation

The emergence of COVID-19 and the associated burden of disease on secondary and tertiary healthcare led to swift action and a multitude of changes in the provision of services. The most severe phenotype of COVID-19 increased the need for Intensive Care and High Dependency beds. Intubated COVID-19 patients were cared for in theatre environments that are usually reserved for elective activity. As elective activity continues, stringent cleaning and fallow times, in addition to increases in pre- and post-procedural checks has led to a decrease in theatre utilisation.

The Federation of Surgical Speciality Associations (FSSA) developed a pan-speciality guide that categorises surgical procedures based on priority. This categorisation is reviewed monthly and helps to guide local prioritisation of operations amongst different specialities. The scale goes from Emergency Procedures to be performed within 24 hours (Priority 1a), such as acute airway obstruction and neck trauma, to procedures to be performed in >3 months (Priority 4) such as Grommets and Septoplasty. [7,20] Whilst this prioritisation has allowed appropriate stratification of surgical cases across specialities it has meant that surgical training is weighted towards emergency procedures and oncological cases that are usually within the Head and Neck. This has meant that trainees have been less exposed to routine rhinology and otology cases especially. The Speciality Advisory Committee for ENT understands that just 30% of index procedures were completed by trainees during the COVID-19 outbreak particularly affecting those operations in the Priority 4 category where a significant number of ENT procedures were categorised.

Delays were not confined to elective work; however, cancer care was also affected despite the higher priority that it was understandably assigned. Maringe et al, using a population-based modelling study examining colorectal, breast, oesophageal and lung cancer, that substantial increases in the number of avoidable cancer deaths were to be expected in the next 6 years because of delays to treatment secondary to COVID-19.[21]

As a result of a reduction in elective and semi-elective operating time procedural and operative based training opportunities have been diminished. Trainees in the UK are required to be involved in 2000 procedural cases during training and there is concern that this may be difficult to attain, and training extensions may be required. Utilisation of virtual reality and digital simulation has been mooted as a potential solution to reduce the impact on trainees who are missing valuable operative experience.[22]

New Training Methods

Reduced exposure to theatre cases has required trainers and trainees to adapt to a new way of educating and learning.

Each case in theatre has increased importance due to this comparative lack in exposure. Sharing these opportunities amongst trainees is important to ensure a broader educational gain from a single case. Good communication between those involved is paramount to ensure specific learning needs are met across the current surgical landscape. ENT is implementing a new curriculum this year which moves away from Workplace Based Assessments (WBAs) to Multi-Consultant Reports (MCRs). As the curriculum develops it will be important to understand, and comment upon, what impact COVID-19 continues to have on a trainee's development.

There have been significant recent developments within cognitive simulation and augmented reality (AR) in the last decade. A recent systematic review demonstrated that AR was favoured, over cadaveric models, in simulation of surgical procedures. There was also no difference or improved surgical performance with AR when compared to traditional teaching methods. The utilisation of such adjuncts is paramount in the modern world where theatre time is reduced.[22,23]

Redeployment

Numerous ENT trainees were asked to work in unfamiliar environments to help with increased workload for medical and intensive care colleagues, increased staff sickness and staff shielding. Whilst this did allow for some trainees to gain exposure to procedural care in the intensive care environment and involvement in management of ventilated patients, including difficult airway, intubations, and tracheostomies, it was not necessarily specific to their individual curriculum aims for their period of training. The areas of redeployment were often areas where COVID-19 was prevalent and as such it was and remains paramount to consider stress and fatigue in trainees that were or are working in such wards.[24]

Remote Consultations

There has been a significant change in the provision of inpatient, but particularly outpatient, consultations during the COVID-19 outbreak. There has been a shift towards remote, either telephone or online consultations, to reduce clinician to patient contact. Recent audits, published by the ENT National Trainee Collaborative in the UK (INTEGRATE), demonstrated that 8.5% of patients presenting to secondary care with epistaxis and 38.5% of those presenting with tonsillitis/quinsy, had telephone follow-up appointments arranged.[25,26]

It was recommended that remote consultations were suitable to triage new referrals, initiate new treatments and discuss results or treatment responses in follow up discussions.[24] Triage tools were developed to aid this process in the field of Head and Neck Surgery to stratify cancer referrals in high and low risk groups for malignancy. Whilst it was clear that

remote consultations had benefits, one of the issues raised was the difficulty of supervision and reduced exposure to examination skills for trainees.[22] Providing appropriate support to trainees who are learning to develop consultation skills in this remote manner is important to ensure their clinical skills and acumen are developing.

International Trainees

The UK benefits from many international graduates who travel to work in the country to gain a new experience and further training within the National Health Service (NHS). Many also enrol in post-graduate courses in surgery which are usually delivered in a face-to-face format. The pandemic has meant that their experiences have been limited in both the hospital environment and in the classroom. Surgical opportunities for this group of doctors have been limited and courses have been moved online. Their opportunity to integrate into the society has also been reduced due to coronavirus restrictions preventing social activities and thereby reducing the valuable experience of working and training in a different country and healthcare environment.

Online Teaching

The use of online platforms has allowed the adaptation of regular trainee teaching with curriculum-based aims to continue. Whilst there are limitations in this virtual environment, feedback has been largely positive, and trainees are now settled into this new way of teaching. Conferences and courses have also been moved online allowing sessions to be recorded and providing a wide resource for the ENT community both nationally and internationally. As such online platforms have allowed a wider range of international speakers, without the previous travel costs, and are likely to continue as the pandemic comes under control. There are now a range of talks for trainees that are freely accessible online in preparation for exams and to develop their breadth of knowledge.

Examinations

COVID-19 has also caused disruption to ENT examinations. There have been delays and cancellations to both MRCS and FRCS sittings which has, as a result, unsettled the usual structured nature to exam preparations and applications to subsequent stages of a clinician's career. Adaptations have been made, including the possibility for some exams to be sat remotely, and for trainees to progress without the required examinations as long as these requirements are completed at a pre-specified later date.

Research

As the COVID-19 pandemic evolved and the risks to ENT clinicians was understood there were numerous research opportunities that were developed, with trainee involvement, in a multitude of areas related to patient and staff safety. As previously mentioned, guidance relating to the management of both epistaxis and tonsillitis/quinsy was audited by INTEGRATE, the national trainee research collaborative in ENT. This demonstrated a shift to out-patient management of these conditions to prevent inpatient contact and increase bed-capacity for COVID-19 patients.[25,26] The association between olfactory dysfunction and COVID-19 has also resulted in numerous opportunities for trainees to develop their research portfolios under the tutelage of their consultant supervisors.

CONCLUSION

COVID-19 has impacted a wide variety of areas related to the attainment of competencies in ENT training. It has required, in some cases, redeployment of these trainees to unfamiliar environments and initially there were concerns regarding provision of PPE. Trainees and their supervisors have had to be flexible and adaptable to a rapidly evolving and ever-changing situation. Some of the enforced changes such as remote consultations and virtual teaching platforms are likely to be integrated in to our clinical and education processes in targeted cases due to successes and positive feedback in these areas. As the COVID-19 situation evolves it may be that these training impacts result in the requirement for supplementary experience prior to progressing to the next stage in a career, and it is important that new and innovative methods for training including digital solutions are embraced to ensure that the next generation is ready for independent practice.

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