Letters

INTRODUCING EXTENDED VENOUS THROMBOEMBOLISM PROPHYLAXIS FOR HIGH-RISK VASCULAR PATIENTS UNDERGOING LOWER LIMB AMPUTATION - A QUALITY IMPROVEMENT PROJECT

Editor,

Venous Thrombo-Embolism (VTE) is an established cause of morbidity and mortality amongst vascular surgery patients undergoing lower limb amputation[1,2]. All-cause mortality rates amongst this patient group are already substantial[3], thus VTE risk reduction may improve outcomes. However, best practice regarding post-operative VTE prophylaxis is unclear[4,5].

National Institute of Clinical Excellence guidelines suggest that vascular surgery patients should receive low-molecular-weight heparin until mobility is *no longer significantly reduced*[1]. However, for many amputees, the reduction in mobility from baseline is permanent, and the optimum duration of VTE prophylaxis is unclear.

The aims of this Quality Improvement Project (QIP) were: -

- to establish baseline practice within Northern Ireland's regional Vascular Surgery Unit regarding VTE risk-assessment and prophylaxis upon discharge
- introduction of a novel VTE risk-assessment proforma
- completion of two Plan-Do-Study-Act (PDSA) cycles to assess use of the proforma.

Prior to this QIP, VTE risk-assessment would be undertaken amongst all vascular patients upon admission, and prophylactic-dose enoxaparin prescribed during the inpatient stay (if indicated). However, there was typically no formal assessment of ongoing VTE risk upon discharge.

The VTE risk-assessment proforma was devised in conjunction with the local Haematology department and approved by the regional pharmacy group. The proforma was designed to facilitate assessment of the risk of VTE development versus the risk of bleeding should anticoagulation be prescribed. Where indicated, prophylactic-dose enoxaparin for thirty days post-operatively was recommended.

Information regarding VTE risk-assessment and prophylaxis upon discharge amongst patients undergoing lower limb amputation was obtained via review of inpatient records and electronic discharge prescriptions. Assessment of baseline practice was conducted throughout August - October 2016. Two subsequent PDSA cycles were conducted at one week and at two months following formal introduction of the proforma (April 2017). Interventions were made in the form of weekly educational seminars for junior doctors and empowerment of the ward pharmacist to encourage proforma use.

Results of the study are demonstrated in **Table 1**. At baseline, none of the patients underwent VTE risk-assessment upon discharge and none received new anticoagulation. One week following proforma introduction, 67% of patients underwent VTE risk-assessment +/- enoxaparin prescription. Two months following proforma introduction, compliance had risen to 80%.

Barriers to using the risk-assessment proforma include lack of staff awareness, which may reflect the rotation- and shift-based working patterns of junior doctors. Due to the single-centre nature of this study with small patient numbers, it has not been possible to determine statistical significance of our results.

In summary, patients undergoing lower limb amputation are generally at high risk for developing VTE due to pre-operative co-morbidities and post-operative immobility. With this QIP, we have introduced a novel VTE risk-assessment proforma and demonstrated acceptable and improving compliance levels at one-week and two-month intervals. We anticipate

Table 1.
Numbers of patients for whom Venous Thrombo-Embolism (VTE) risk-assessment was undertaken upon discharge, and VTE prophylaxis (enoxaparin for 30 days from date of lower limb amputation) prescribed where indicated, is shown.

	Total number of patients undergoing lower limb amputation	Number considered at risk for post-operative VTE	Number already receiving anticoagulation for pre-operative factors	Number receiving risk assessment +/- extended VTE prophylaxis upon discharge	Number managed in accordance with novel proforma
Baseline	17	15	3	0	3/15 (20%)
Cycle I	6	6	0	4	4/6 (67%)
Cycle II	20	20	4	16	16/20 (80%)

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that with increased familiarity of staff with the proforma, all patients will be risk-assessed upon discharge and will receive VTE prophylaxis if indicated. Further work should assess ongoing compliance with the proforma, and explore the impact of extended VTE prophylaxis on morbidity and mortality amongst vascular surgery patients.

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EVALUATION OF COMPUTED TOMOGRAPHY (CT) CHEST AS A SCREENING TOOL FOR COVID-19 IN SURGICAL PATIENTS PRESENTING TO THE ROYAL VICTORIA HOSPITAL EMERGENCY DEPARTMENT- A NORTHERN IRISH STUDY.

Editor,

Coronavirus disease (COVID-19) is an on-going pandemic caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2)[1]. Undiagnosed COVID-19 infection can complicate peri-operative outcomes and increase transmission to staff via aerosol-generating anaesthetic procedures. In the absence of rapid reverse transcriptase-polymerase chain reaction (RT-PCR) testing, it had been recognised that CT chest could play a role in surgical emergencies where awaiting laboratory results would delay patients' management. On 25th March 2020, the British Society of Thoracic Imaging (BSTI) and the British Society of Gastrointestinal and Abdominal Radiology (BSGAR) recommended low-dose CT chest in addition to CT abdomen and pelvis in patients presenting as a surgical emergency[2].

We aimed to evaluate the use of additional CT chest in acute surgical patients presenting to the Emergency Department (ED) of the Royal Victoria Hospital, Belfast.

CT chest, abdomen and pelvis scans requested from ED where the indication was to identify acute surgical pathology were included. Chest x-ray (CXR) and CT images were obtained from Picture Archiving and Communication System (PACS) which were graded according to the BSTI guidelines; normal, indeterminate and classic/probable COVID-19[3]. Patient outcomes were verified from Northern Ireland Electronic Care Record (NIECR).

A total of 100 patients underwent CT chest as part of the national acute abdominal imaging pathway for COVID-19 from 1st March to 2nd May 2020.

Using BSTI CT reporting proforma, no CT chest scans were reported as classic/probable COVID-19. Three were reported as indeterminate, 78 scans were normal and 19 demonstrated other pathology. Interestingly, the only positive RT-PCR case had a normal CT chest.

Table 1.
CXR, CT and RT-PCR results in symptomatic cohort

Symptomatic patients	Report	%	n
CXR	Normal	35	6
	Abnormal	18	3
	Not performed	47	8
CT	Normal	82	14
	Indeterminate	6	1
	Classic/probable	0	0
	Other/non COVID	12	2
RT-PCR	Negative	76	13
	Positive	6	1
	Not performed	18	3

Table 2.
CXR, CT and RT-PCR results in asymptomatic cohort.

Asymptomatic	Report	%	n
CXR	Normal	41	29
	Abnormal	17	12
	Not performed	42	30
CT	Normal	75	53
	Indeterminate	2	2
	Classic/probable	0	0
	Other/non COVID	23	16
RT-PCR	Positive	0	0
	Negative	61	43
	Not performed	39	28

Of the three patients who had indeterminate findings on CT, results did not alter surgical management in any case. The first case was asymptomatic and RT-PCR negative. CT reported patchy areas of ground glass opacification (GGO). The patient was admitted to intensive care for the management of pancreatitis.

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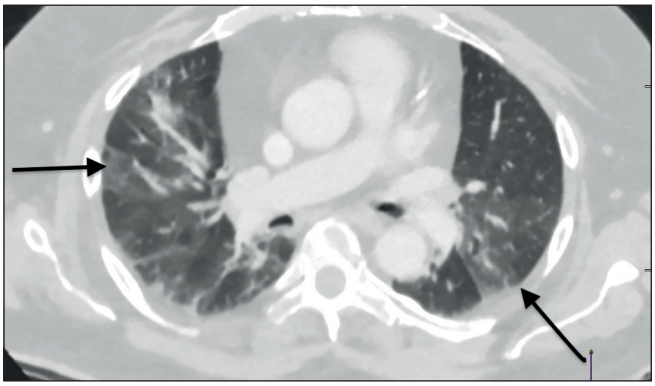
Figure 1.

Example of indeterminate findings on CT chest with ground glass opacification within basal aspects of both lower lobes (arrows).



The second patient was asymptomatic and RT-PCR negative. CT reported dependant lower GGO, equivocal for COVID-19. The patient proceeded to emergency laparotomy for intra-abdominal perforation. CT findings had no bearing on surgical management, however influenced bed management decisions.

The third case was a symptomatic patient with cough and fever, RT-PCR negative. CT reported GGO in the right upper lobe and multifocal consolidation in both lower lobes. The patient was managed conservatively for pancreatitis.

Additional CT chest screening had no impact on acute surgical management in our study. Due to increased radiation exposure, demand on radiology services and low diagnostic yield, BSTI/BSGAR advised that additional CT chest is no longer recommended[4]. Fortunately, we now have improved access to point-of-care testing e.g. LumiraDx SARS-CoV-2 Ag test which provides results within 20 minutes aiding timely surgical management[5].

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"WHY AM I SO YELLOW??" – LATE ONSET SEVERE HYPERBILIRUBINEMIA DUE TO CARBIMAZOLE THERAPY

Editor,

We present the case of a 38 year old male with late onset of severe hyperbilirubinemia 1 year after commencing carbimazole therapy. He had a history of hyperthyroidism, diagnosed in May 2019. His thyroid function tests (TFTs) were difficult to stabilize on carbimazole titration. Therefore, he was switched to block and replace treatment with carbimazole 40 mg and levothyroxine 100 micrograms daily after 3 months. TSH receptor antibodies were strongly positive in keeping with Graves' disease.

He presented to hospital in June 2020 with a 6 week history of jaundice, mild abdominal pain and feeling generally unwell. He had no prior history of liver disease and had a normal bilirubin in March 2020, with mildly cholestatic pattern of liver function tests. On admission, his bilirubin was 129 with a mixed cholestatic-hepatitic pattern of liver enzymes. Prothrombin time (PT) was raised at 15. Ultrasound imaging revealed normal liver structure with no biliary dilatation. Carbimazole was stopped and a full liver screen sent. He initially discharged himself against advice, however, he was re-admitted in July when his jaundice worsened and bilirubin had risen to 459 on repeat bloods with PT of 18.6. He did not have any other evidence of decompensated liver disease. MRCP showed no abnormalities within the biliary tree. Bilirubin continued to rise and liver biopsy was undertaken which revealed features of a mixed cholestatic-hepatitic liver injury, with the cholestatic injury significantly more prominent. It was considered most likely to represent a drug related liver injury. The patient had taken no other prescribed or over the counter medication and no illicit substances. Over time, liver function slowly improved and the jaundice resolved completely. Propylthiouracil was considered inappropriate for treatment given risk of hepatotoxicity and iodine was not practicable due to social circumstances. The patient went on to have a total thyroidectomy.

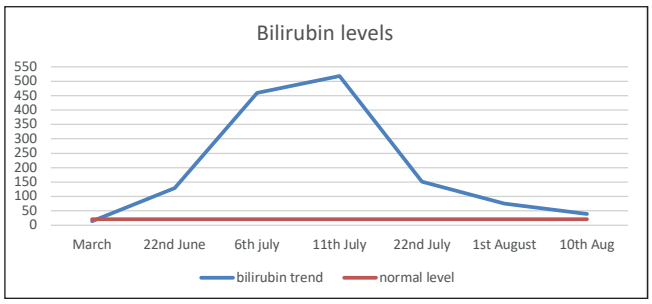

Fig 2: trend of bilirubin levels

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Fig 1: summary of LFTs

	Normal reference ranges	March 2020	June 22nd 2020 (1st admission)	July 6th 2020 (community bloods and readmission)	July 11th 2020 (bilirubin peak)	July 22nd 2020	August 1st 2020	August 10th 2020
Bilirubin (umol/L)	<21	14	129	459	518	151	75	39
ALP (u/L)	30-130	187	266	305	267	267	138	144
AST (u/L)	<40	27	119	123	84	84	35	27
GGT (u/L)	10-71	100	110	Not report-able	Not reportable	52	97	74
ALT (u/L)	<41	35	138	130	88	81	29	16

Discussion:

Methimazole (active metabolite of carbimazole) has been associated with transient, asymptomatic elevations in serum aminotransferase levels, typically during the first 3 months after starting high dose, induction therapy.[1]

It can also cause a clinically apparent, idiosyncratic liver injury. Onset is usually within 2 to 12 weeks of starting therapy and typically causes a cholestatic or mixed pattern of enzyme elevations, without evidence of hepatic necrosis on liver biopsy.[2] Most patients recover on drug discontinuation. There are, however, occasional reports of severe and fatal cases. The proposed mechanism of carbimazole□induced cholestasis is not fully understood.[1]

This patient developed severe hyperbilirubinemia 1 year after starting treatment with carbimazole. His bilirubin level peaked at 518, significantly higher than reported levels in the literature to date. It then began to slowly settle over a period of 4 weeks. Although hepatotoxicity is a rare side effect of antithyroid medication, it can be a significant one. It is important to remember to consider it as a cause of jaundice, with the potential to occur many months after starting treatment. Patient awareness is very important and they should be counselled about the potential side effect and to consult a doctor if they notice jaundice developing. This patient waited for 6 weeks before seeking medical attention, without realising that his medication could be causing this problem.

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FACTORS ASSOCIATED WITH IMPROVED CLINICAL CONTROL IN A DIFFICULT-TO-TREAT PAEDIATRIC ASTHMA COHORT THROUGH THE COVID-19 PANDEMIC LOCKDOWN PERIOD

It is recognised that fewer children attended Emergency Departments (ED) with asthma exacerbations during the COVID-19 pandemic.[1,2] However, it is unclear why. The common triggers of asthma attacks include viral infections, high pollen counts and air pollution. It would seem likely that significant changes in one of more of these would impact on asthma control. There have been no reports, to our knowledge, examining asthma control and medication adherence in a paediatric difficult to treat (DTA) asthma cohort over this period, and comparing it with air pollution and respiratory viral data. The clinical course of, and external influences upon, the Northern Irish paediatric DTA cohort through the pandemic can inform this discussion. The UK

Table 1. Comparison of factors associated with asthma control for the Northern Irish paediatric DTA cohort between corresponding epochs in 2019 and 2020. Air pollution and pollen levels refer to daily levels measured in Belfast over the specified epoch

	1st Feb- 31st May 2019	1st Feb-31st May 2020	p-value
PM_{10} (μg/m³)	16·4 (10·6)	13 (5·6)	<0·01
$PM_{2.5}$ (μg/m³)	52·5 (24)	31·1 (12·9)	<0·01
SO_2 (μg/m³)	4·3 (2·2)	1·3 (0·6)	<0·01
NO_2 (μg/m³)	11 (4·9)	10·9 (7·8)	0·9
Plane tree pollen (grains/m³)	0·4 (1·5)	0·01 (0·1)	0·01
Hazel tree pollen (grains/m³)	1·1 (2·2)	0·4 (1)	<0·01
Ash tree pollen (grains/m³)	2·2 (4·6)	10 (23·3)	<0·01
Grass pollen (grains/m³)	0·4 (1·4)	2·3 (6·8)	0·04
Unscheduled care attendances /per patient*	0 (0,1)	0 (0,0)	0·01
ACT score (out of 25) *	17 (12,19)	20 (15,24)	<0·01
Number of courses of oral steroids/ per patient *	0 (0,1)	0(0,0)	0·01
Adherence (% collections of ICS prescriptions) *	100 (60,100)	100 (50,100)	0·6

Data are presented as Mean (SD) unless indicated.

* Median (IQR). Statistical tests used: Student t-tests and Wilcoxon rank-sum tests for non-parametric data. A p-value ≤0.05 indicated statistical significance.

ICS: Inhaled corticosteroids; ACT: Asthma Control Test; NO_2: Nitrogen dioxide; PM_{10}: Particulate matter less than 10 μm in diameter; $PM_{2.5}$: Particulate matter less than 2·5 μm in diameter; SO_2: Sulphur Dioxide.

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Government recommended that children with severe asthma should 'shield' from COVID-19 infection.[3] To determine if there was evidence of a significant difference from the previous year, the clinical course of the DTA cohort of 51 patients through the epoch February-May 2020 was compared with the corresponding epoch in 2019. Unscheduled care attendances, courses of rescue oral corticosteroids (OCS), a marker of medication adherence (repeat prescriptions), and Asthma Control Test (ACT) scores for the DTA cohort were compared (Table 1). Levels of airborne aeroallergens, air pollution data and prevailing respiratory viruses over the two epochs were also compared.

Unscheduled care attendance data suggested that the cohort presented significantly less to emergency services and received fewer courses of rescue OCS during the pandemic than in 2019. ACT data was better for the 2020 epoch, suggesting that these differences may be on the basis of improved asthma control. No difference in inhaler adherence was observed. This may represent a 'ceiling effect', as sub-optimal adherence is improved and reinforced with remote monitoring at our DTA clinic.[4] Respiratory viral data showed that the number of samples of secretions positive for rhinovirus in 2020, as a percentage of the total number of positive samples, was less than half of that for 2019 [total positive samples: 9940 in 2019 and 12645 in 2020 - and rhinovirus positive samples: 428 (4·3%) v 234 (1·9%)]. There was no consistent pattern for tree pollen levels but there were greater levels of grass pollen in 2020. Air pollution data showed significantly lower levels of atmospheric $PM_{2.5}$, PM_{10} and SO_2 (but not NO_2) during the 2020 epoch.

This data suggests that shielding has been protective through the pandemic, leading to improved asthma control. The viral data may reflect the restricted movement of children, thereby limiting viral spread. Less air pollution is also likely a contributor to fewer exacerbations. Although there were greater airborne grass pollen levels in 2020, children may have been protected from outdoor exposure as a result of shielding indoors.

Once shielding stopped, children were mixing much more, resulting in greater exposure to respiratory viruses. However, schools have tried to implement measures to maintain social distancing and attenuate viral spread. It remains extremely important to optimise adherence, inhaler technique and the use of asthma plans over this period of uncertainty to help to minimise asthma morbidity.

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External data sources
Pollution data: The World Air Quality Index Project
Pollen data: The UK Meteorological office
Respiratory viral data- The Regional Virology Laboratory, Belfast

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PROTHROMBIN COMPLEX CONCENTRATE USE IN BELFAST HEALTH AND SOCIAL CARE TRUST

Dear Editor,

Prothrombin factor concentrate (PCC; Octaplex®), a combination of human coagulation factors II, VII, IX and X, protein C and protein S, is a potent reversal agent for vitamin K antagonists. Along with Vitamin K, it is used in emergency management of bleeding associated with warfarin and direct oral anticoagulants (DOACs).[1] Despite widespread use, there is a lack of consensus about optimal dosing,[2] with current guidelines specifying large ranges for dosing or, in the case of DOACs, no dosing recommendations at all.[3] Lack of clarity complicates development of clear local protocols, making accurate and timely administration more difficult, as highlighted by a serious adverse incident in which delayed administration led to a poor clinical outcome.[4]

This service evaluation aimed to assess current use of PCC in Belfast Health and Social Care Trust (BHSCT), to identify areas for improvement and improve alignment between local guidance and practice on-the-ground.

Two current BHSCT guidelines on management of bleeding while receiving anticoagulants provided audit standards. We sought records of all patients who received PCC within BHSCT between January and June 2016. We designed, piloted and adapted a pro-forma which was then used by Haemovigilance Specialist Nurses. Data were collated in Microsoft Excel and analysed using descriptive statistics to

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Table 1: Key findings

Audit standard	Finding
Patients on warfarin should receive 15 IU/kg PCC if INR<4, 30IU/kg if INR>4	Baseline INR <4: average dose 16.4 IU/kg (24 patients) Baseline INR >4: average dose 29.5IU/kg (9 patients)
Patients on DOACs should receive 40IU/kg PCC	Average dose in patients on apixaban or rivoroxiban (8 patients) 35.6 IU/kg
Patients on warfarin should receive 5mg IV Vitamin K in addition to PCC	Number of patients who received Vitamin K - 38 Dose of Vitamin K administered: 1mg - 1/38 (3%) 5mg - 31/38 (82%) 10mg - 6/38 (16%) No vitamin K administered - 10/48
Patients on warfarin presenting with head injury should receive PCC prior to neuroimaging	Prior to neuroimaging - 1/14 (7%) After neuroimaging - 13/14 (93%)

summarise patients' baseline characteristics, PCC dosing, coagulation assay results and clinical outcomes.

Records were available for 62 of 98 eligible patients. Twenty-nine were female (47%). Ages ranged from 34-95 years, with a mean of 71 years. At time of PCC administration, 44 patients were receiving warfarin (71%), 8 apixaban (13%) and 6 rivaroxaban (10%). One patient was not receiving any anticoagulant (2%); information was unavailable for 3 patients (5%). Average dose of PCC was 1739 IU (range 714-4000 IU). Only 34/62 (55%) patients received doses involving use of whole (500IU) vials. Weight was recorded for 49 patients (79%) but prior to administration in only 18 cases (29%). 18/62 (29%) of weights were estimated rather than measured. Administration of PCC was associated with an average reduction in International Normalised Ratio (INR) of 2.13. The average INR after administration was 1.36. Twelve patients (28%) were deceased by 60 days after administration. Table 1 summarises other key findings.

Most PCC dosing adhered to guidance, although many patients were not weighed prior to administration. Other areas of shortfall were identified, however. In patients with suspected intracranial bleeding, PCC was frequently administered after, rather than prior to, neuroimaging. Vitamin K was often inappropriately omitted during reversal of warfarin. We also found that it was common practice to use incomplete vials of PCC. While not precluded by current guidance, this practice could lead to PCC, at a cost of up to £21,560 per year, being discarded that could potentially improve clinical response if administered. Targeted quality improvement work is now needed to ensure that patients are weighed appropriately, PCC is given prior to neuroimaging in patients with head injury, and vitamin K is co-administered when reversing warfarin. Guidance should be updated to recommend that PCC doses involve use of complete vials. These interventions have the potential to maximise the efficacy and cost-effectiveness of PCC in the treatment of life-threatening haemorrhage.

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REDEPLOYMENT IN A BELFAST COVID CENTRE: PLAYING IT SAFE OR PLAYING WITH FIRE

Editor

The COVID 19 pandemic has provoked the most significant re-purposing of services, capacity and staffing in NHS history,[1] with staff redeployed to unfamiliar roles to meet workforce demands.

In Belfast, the Mater Infirmorum Hospital was designated the COVID centre. Given the acuity of these COVID patients, high levels of non-invasive ventilation were utilised at ward level, most notably continuous positive airway pressure (CPAP). To assist with demand, staff from non-medical specialties (surgery, ophthalmology, psychiatry & OB GYN), were redeployed to the Mater. These staff remained for 7-21 days prior to an exchange of redeployed personnel. Ranging in grade from FY2 to ST4, redeployed staff reported varying experience regarding respiratory medicine and COVID.

Inadequate training of redeployed staff has the potential to generate patient safety issues and anxiety amongst those redeployed. We sought to ascertain the confidence levels of those redeployed to the Mater in January 2021 (3rd surge) in relation to COVID management and CPAP. We explored the level of training and induction these staff received, aiming to identify areas for improvement.

Methods

An anonymous survey was sent to all staff redeployed to the Mater in January 2021 (n=16). Initially this was sent to 8 medical staff deployed from the 1st – 14th January 2021, with a 100% response rate. Notably 50% of staff in this cohort had never previously managed a COVID patient. These staff received 'basic' site induction, with no formal education about COVID management or CPAP. Using this feedback, an improved induction program was formulated for future redeployed staff.

A further 8 staff were redeployed from 15 – 31st January, receiving an enhanced teaching at induction with a practical session on CPAP. They were also given a written guide, including information on pharmacological COVID management including VTE prophylaxis, when and how to initiate CPAP, managing the deteriorating COVID patient and parameters for ICU referral. The same anonymous questionnaire was then used to examine if greater education improved confidence levels in this cohort.

Results

The initial survey revealed none of those redeployed felt confident in managing CPAP. The intervention resulted in an increase in confidence, with 62.5% stating they felt confident/very confident in managing a COVID patient on CPAP, with 37.5% feeling neutral. Crucially, no one indicated they felt concern after the improved induction. Similarly, the enhanced training showed 75% of this cohort felt knowledgeable in the pharmacological management of COVID, an improvement from 25% previously.

Discussion

Redeployment is a time of great uncertainty, noted to generate higher levels of stress and anxiety in redeployed personel.[2] Doctors redeployed to the Mater had out-of-hours commitments admitting acutely unwell patients and were allocated to wards with patients on various forms of non-invasive ventilation. This data highlights the importance of a thorough induction for redeployed doctors to ensure confidence with their new duties. Due to the short duration of redeployment (1-3 weeks), a focused, time-efficient approach is required. Interventions such as written information and practical teaching sessions appear effective in improving the confidence of redeployed staff. We argue this helps mitigate against potential negative effects on wellbeing of those redeployed due to being overwhelmed, whilst allowing the additional workforce benefit to be effective.

One criticism proffered was that the improved training programme was overwhelming for one sitting. Acknowledging this, and appreciating the trade-off between providing a thorough induction and maximising the resource of redeployed staff, a solution may be to provide the written guide to doctors prior to redeployment. Similarly, recording the CPAP session and placing it on the hospital webpage would allow staff to view at their leisure. Lastly, we would like to take the opportunity to thank those staff who volunteered for redeployment to the Mater during the pandemic. You truly have been an invaluable asset.

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CASTING LIGHT ON THE CHALLENGES OF ILLUMINATING ENT EXAMINATIONS DURING THE COVID-19 PANDEMIC

Editor

Protecting healthcare staff from SARS-CoV-2 infection is a crucial element of the Covid-19 pandemic response and personal protective equipment (PPE) is vital in this respect. A high viral load of SARS-CoV-2 virus has been found in the nasal cavity and oropharynx of infected individuals, including patients with few or no symptoms[1]. Examinations of the ear, nose and throat (ENT) have the potential to release aerosols within close proximity of the clinician. Public Health England (PHE) recommend a full-face shield or visor or polycarbonate safety spectacles, as well as a filtering face piece class 3 (FFP3) respirator for aerosol generating procedures (AGP)[2]. ENT UK recommend full PPE for examinations and interventional procedures of the upper aerodigestive tract given that they are potential AGPs[3].

We have found that it is difficult, and not always possible, to use a full-face visor with a headlight for ENT examinations or procedures given that they both attach to the same area on the forehead. We have created protective goggles with an integrated LED light to overcome this problem (Figure 1). An LED light attached by cable to a rechargeable battery pack was sourced from an online retailer and the light was attached to protective goggles. A small hole was made on the top of the goggles to allow the LED light to slot into place and a screw on the light was pushed through the goggle material for a secure attachment. The goggles and LED light can be wiped down after use.

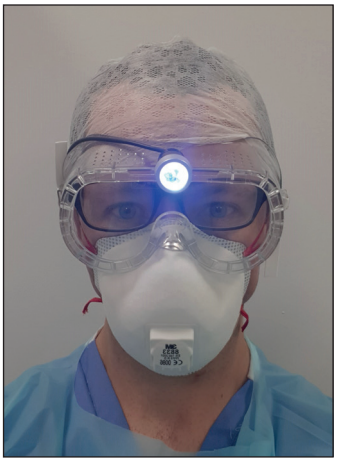

Figure 1:
protective goggles with integrated LED headlight worn with full PPE

Where these protective googles are unavailable, a peritonsillar abscess may be drained using a pen torch and tongue depressor. A tongue depressor is taped onto the end of a disposable pen torch. (Figure 2). This allows for tongue depression and targeted illumination of the peritonsillar area with one hand. We have devised a similar technique for nasal cautery. A silver nitrate stick taped to a disposable pen torch allows for targeted illumination of the nasal septum and simultaneous application of silver nitrate whilst using a nasal speculum in the other hand (Figure 3). Both techniques allow the clinician to use full PPE, including a visor or goggles, without the need for a headlight.

It is crucial that as clinicians we use adequate PPE to protect ourselves during ENT examinations and procedures. We must continue to do this as we return to elective practice whilst the SARS-CoV-2 virus is still in circulation within the community and a vaccine is not yet available. We must use adequate PPE for all patients in an elective setting because we know that people can be infected with SARS-CoV-2 and remain asymptomatic[4]. Current screening measures for detecting SARS-CoV-2 infection in patients are also not completely reliable. Reverse-transcriptase polymerase chain reaction (RT-PCR) performed on nasal and pharyngeal swabs has been reported to have a false negative rate of up to 29%[5].

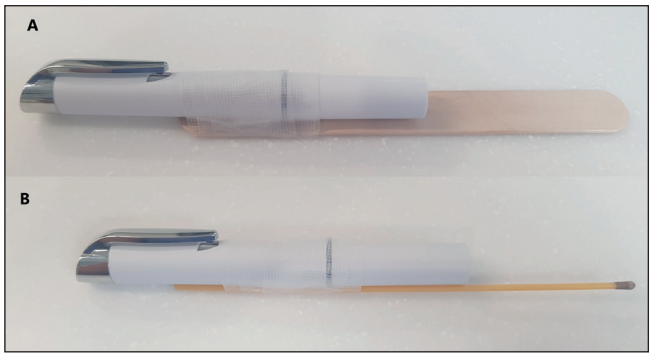

Figure 2:
(a) disposable pen torch attached to wooden tongue depressor for use in draining a peritonsillar abscess (b) disposable pen torch attached to 75% silver nitrate stick for use in nasal cautery

The two techniques that we describe above are inexpensive, easy to set up and allow for adequate use of PPE for ENT examinations and procedures. They are also a potential measure of preserving PPE supplies during a time of potential shortages of PPE for clinicians.

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Erratum:

A Short History of Occupational Disease:
1. Laboratory-acquired Infections. UMJ, 2021:90(1):28-31. Table 2 The risk figure for Brucellosis is 641/100,000 microbiologists NOT 64.1 as stated in the table.

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