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Original Papers

Peritonsillar Abscess at a Dedicated Otolaryngology Emergency Department

Fitzsimons et al describe 53 patients who presented with a peritonsillar abscess. The majority were treated with antibiotics, aspiration, followed by incision and drainage.

Existence of Transvaginal Ultrasound Protocols in Irish Hospitals

Almestehi et al have surveyed the transvaginal ultrasound practices in hospitals throughout the country. The response was 62%. One third had no written protocol, and 64% had no in-house training on its use.

Emergency General Surgery during the COVID-19 Pandemic

O'Callaghan et al describe the patterns for general surgery during the Covid pandemic. There were no significant differences in the admission rates between 2019 and 2020. There was, however, a reduction in the acute procedural activity.

The Development and Rollout of Medical Grab Bags for Resuscitating Critically Unwell Patients with Suspected COVID-19

Harney et al describe the application of a 'grab bag' in the management of unstable patients in the ED. There were 74 episodes of use in a 12 month period. The bag contains sections for the airway, the circulation, and medication.

Factors Influencing Career Choices of Medical Students in Obstetrics and Gynaecology

Stokes et al surveyed 191 students attending a medical career guidance day. 13% visited the obstetrics and gynaecology station. Most were female. Their interest in the specialty was influenced by role models, and their wish to care for vulnerable women.

Evaluation of the Antibody Response Induced by the Pfizer-Biontech COVID-19 Vaccine and the Effect Prior COVID-19 Infection has on the Response Elicited by the Vaccine

Rooney et al assessed 219 participants who had 2 doses of the Pfizer Covid vaccine. They measured their antibody levels at 2 time points. At 6 months the median SARS-CoV-2 IgG levels had decreased by 80%.

Occasional Pieces

An Online NCHD Led Tutorial Program for the MRCPI Part 2 Clinical Examination in Paediatrics

Antenatal Magnesium Sulphate: Preventing Cerebral Palsy in Preterm Infants

Short Reports

The Adequacy of Training Afforded to New Doctors in Caring for Central Venous Catheters

O'Shea have addressed the matter of NCHD training in the management of central venous catheters (CVSs). Among the 159 surveyed doctors, 78% were not confident in their ability to confirm the CVC on x-ray. Almost all felt that they would benefit from further CVC training.

Patients Experience and Preference Regarding Subcutaneous Venous Thromboembolic Prophylaxis Following Robotic Assisted Radical Cystectomy

Abou-Chedid et al examined the anticoagulation practice after a radical cystectomy. Among 80 patients there were reports of pain, bruising, and irritation at the injection site. The patients requested an oral agent where possible.

Novel Method Of Engaging With Vulnerable, Settled Communities during Covid-19

McLoughlin et al describe their interactions with a vulnerable settled community during the Covid pandemic. 576 Covid tests were undertaken, only 2 were positive. 448 infection prevention and control packs were supplied.

Case Reports

Occam's Razor versus Hickum's Dictum: Getting the Diagnosis Right

Davey et al describe a 70-year old man who presented with a stroke. There were two underlying mechanisms at play, giant cell arteritis and paroxysmal atrial fibrillation.

Varicella Zoster Meningoencephalitis

Doyle et al report a case of varicella zoster meningoencephalitis in an immune competent individual. A complete recovery was made following 2 weeks of IV acyclovir.

Cloudy Peritoneal Dialysate in the Absence of Peritonitis

White et al report a patient on peritoneal dialysis whose dialysate fluid became cloudy. Cultures were negative. The cloudiness was due to Lercandipine medication. Calcium blocking agents reduce the contractility of lymphatics leading to lymph exudation.

Poems

Nose Tickles, a.k.a. The Swab by D. Ní Chróinín

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Violence towards Healthcare Staff

J.F.A. Murphy - Editor of the Irish Medical Journal

In the 7 year period 2015-2021, there have been 733 assaults on doctors and 33,342 on nurses in Ireland. Neale Richmond TD described the figures as shocking. He further added that threats, danger, and intimidation of those who keep us healthy is unacceptable beyond words. He called for an urgent audit of hospital security[1].

Its not a new problem. Previously this Journal has reported on assaults on medical, nursing, and paramedical staff[2]. Jenkins et al[3] had studied violence and verbal abuse against staff in 310 EDs in the UK and Ireland. Among the reported injuries were 10 fractures, 42 lacerations, and 505 soft tissue injuries. The commonest perpetrators were the patients themselves followed by family members. The arrest rate was 1:50 and the conviction rate was 1:200.

The impression is that things have not got better. We already know that violence against healthcare staff is four times more likely than among those working in private businesses. Since 2018 there have been 253 studies. The overall patterns are verbal abuse 57%, threats 33%, and physical injury 10%. In the UK, a group of 181 trusts reported 56,435 assaults on staff during 2016-2017.

Rudeness is increasing[4]. When the guardrails of civility and respect are removed things can deteriorate rapidly through the sequence of verbal abuse, threats, and physical injury. Anger is a contagious energy that jumps quickly from one person to another, particularly in a crowded ED. Anxiety and fatigue can be precipitating factors among some patients. At any rate it is a frequently quoted excuse. However attempts to understand dangerous behaviour is quite different from permitting it. Most people in everyday life respond to incivility by trying to ignore the aggressive individual, and by removing themselves from the situation.

Healthcare workers can't do this because they have a professional obligation to the patient's medical care. In many situations the staff feel that have 'to stay there and take it'. They feel that it is part of the job, which clearly should not be the case.

The impact of hostile behaviour on health care workers is immense. It results in increased resignations, loss of morale, and depression. It is difficult to work in environments where there is background risk of physical and psychological harm from members of the public. The high risk areas are ED, Psychiatry, and General Practice but any specialty can affected. A survey conducted by Pulse[5] in the UK found that 34% of GPs reported episodes of assault, while 59% had been threatened. There is a general impression that things have deteriorated since the advent of the Covid pandemic. In general practice, the secretary is frequently the person who takes the brunt of the verbal abuse. Another consideration is that an abusive individual may pay only visit to the ED, while they are likely to visit the general practice on many occasions.

Some GP practices have considered taking a specific line of action. When a patient is repeatedly abusive and aggressive in the surgery, a letter is sent from the practice about their poor conduct. They are requested to reflect on their inappropriate actions. If they fail to comply they may be advised to consider finding another GP, particularly if there has been more than one episode.

Nurses are the group most likely to suffer assault and abuse. The nature of their daily work brings them into close contact with patients and their families over long periods of time during a working shift. When dissatisfaction arises, they are perceived as an easy target for the frustrations of the patient and their families.

One of the existing problems is that data on assaults on healthcare workers is not routinely collected. Most commentators agree that many incidences go unreported. Some sources suggest that fewer than 30% of aggressive incidences are reported by nursing staff.

The HSE has adopted the EU definition of aggression and violence as; any incident where staff are abused, threated or assaulted in circumstances related to their work, involving an explicit or implicit challenge to their safety, wellbeing or health[6]. When one reads this description, one can readily remember or recognise events where this has happened.

Verbal abuse can be equally as distressing as a physical assault, particularly if it is accompanied by a threat. They should be reported. If there is a physical assault, it should be reported immediately.

The HSE document states that lone working is a risk factor. This is where one is working without another colleague nearby. Other situations are work after normal hours, and work and travel in the community. New, inexperienced healthcare workers who have not received the necessary training are also at increased risk.

The IMO at its AGM, May 2019, called for a national officer to be appointed for the delivery of a protocol on staff assaults, and the maintenance of a national register of such incidents. This is an important step in the collection of accurate data. We need a complete national picture if we are going to tackle the problem constructively. Another suggestion is to arrange special clinics for patients with a known history of aggressive behaviour.

The health services in our hospitals, in general practice and in the community need to be aware of any form of aggressive behaviour and aggressive actions towards healthcare staff. The episodes need to be recorded and monitored. Accurate data is required in determining whether the phenomenon is becoming more common. Strategies to protect staff need to be in place in all healthcare facilities. All commentators stress the importance of training staff on how to recognise and cope with difficult patients and threatening circumstances. On a broader level we need further sociological investigation into why there are so many episodes of abuse against healthcare staff during the course of their daily duties.

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3. Jenkins MG, Rocke LG, McNicholl BP, Hughes DM. Violence and verbal abuse against staff in accident and emergency departments: a survey of consultants in the UK and the Republic of Ireland. J Accid Emerg Med 1998;15:262-265.
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5. Three quarters of doctors have been assaulted or threatened at work. Pulse 2019:Jan 18.
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Covid-19 and General Practice: Part 7

Interview with Dr Raymond Walley General Practitioner and Associate Clinical Professor of General Practice, UCD MRCGP FRCGP and member of the IMO / ICGP / HSE Covid-19 GP liaison Committee

Throughout the Pandemic General Practice in Ireland has been at the forefront of the fight against Covid since early 2021. The first cases initially presented in general practice. Practices adapted to a closed-door telephone/triage first engagement.

By the winter of 2022 after several waves of Covid General Practice albeit operating from a closed-door phone/ intercom first engagement approach were operating at full tilt. Face to face consultations after appropriate triage by administrative/nursing staff make up most contacts.

The below list includes the main areas where work continues:

- Covid telephone assessment/testing referrals
- Covid respiratory assessments
- Chronic Disease management
- Ante/per/post-natal care
- Children's immunisation
- Cervical smears
- Phlebotomy
- Minor surgery

The statistics showing the prodigious workload achieved by General Practice are impressive.

The list below includes some of the recent media headlines relating to the vaccination programme:

- Approximately 2.62 million vaccines (across primary and additional courses) have been administered by GPs as of 5th December out of a total of 8.4m.
- GP's have primarily vaccinated all those people over 70 where we have achieved very high uptake on the primary vaccination campaign.
- GPs administered over 73,000 vaccines last week w/c 29th November.

  Over 1,300 practices have received booster deliveries/opted into the booster programme bringing a capacity of 80,000+ per week. Other practices have the option to refer patients to a CVC for vaccination.
- We expect that more than 75% of GPs will continue with the booster programme beyond the over 70s cohort
- GP's have also assisted with housebound patient referrals and identification of medically vulnerable patients where required.
- As of 10th December 2021 - 880,000 flu vaccines have been administered. In the previous winter programme, 70% were provided in General Practice.

Cervical Smear Testing

Over 98% of all samples taken have been taken in the community setting (that is, c.2% are taken in colposcopy). The majority of samples taken in the community are taken by GPs and practice nurses in GP practice settings.

Year	Samples processed
2019	229,176
2020	168,792
2021* [Jan to Aug]	244,643

PCR Testing

Even through the Covid daily slog Covid General Practice was responsible on a regular basis for 5-6000 PCR test referrals daily after consultation. This is in the context of a direct access PCR testing system that was at many times at maximum access. General practice referrals were prioritised in recognition of the severity of the cases that we were likely to be dealing with.

Influenza Surveillance

It should be noted that The General Practice sentinel programme, continues to be a significant tool in monitoring both influenza and influenza like illness as an early warning mechanism for Infectious Disease management by our Public Health Colleagues.

Chronic Disease Management

At the outset of the pandemic a new Chronic Disease Management programme was initiated for the care of patients over 65 years with the following conditions:

- Atrial fibrillation
- Ischaemic Heart Disease
- Congestive Care Failure
- Type 2 Diabetes Mellitus
- COPD
- Asthma
- Cerebrovascular accident
- Transient ischaemic attack

The programme included a protocol led approach including specific investigations and application of the Q-risk programme.

The programme was recognised internationally with a United Nations award in September 2021 - https://www.hse.ie/eng/services/news/media/pressrel/hse-wins-international-un-award-for-tackling-chronic-disease.html

Throughout the pandemic the IMO/ICGP National GP liaison group has met by telephone contact on a weekly basis with high level members of the HSE. It has served as an immediate source of resolution of issues presenting in General Practice and as an early warning system to any concerns for both the IMO/ICGP and our colleagues. The IMO and ICGP secretariat have always shown great leadership and collaboration in the pandemic, and this continues.

The IMO and ICGP has engaged to ensure a regular cascade of information to members changes in Covid-19 algorithms/ educational material/ contract briefings on issues related to general practice care and provision. There has been a recognition of the danger of messaging and information overload in circulating information to GPs and hopefully we have managed this appropriately.

Education and the Media

- Members of the IMO and ICGP National Liaison group have continued to lead on national media communications. This engagement has allowed us to communicate to the public directly General Practice messaging.
- General Practice has become a go to source for accurate informed opinion.
- The ICGP and IMO continued with their regular education webinars and as a resource to all GPS.

It is now the 16th of December 2021 and Ireland's Health Service is facing into a second Christmas in the Covid-19 Pandemic. Ireland lies 10th in the EU/EEA/UK 14-day rate per 100,000 of 1260. Ireland morbidity and mortality rates have thankfully been greatly reduced by its successful Covid-19 vaccine program achieving more than 93% coverage. The infectious delta variant has ensured a stubbornly high rate of infection plateauing at a level of 4600 daily new cases whilst ICU rates have stayed similarly stubborn at 110.

Positivity rates of testing have unfortunately continued to climb since September being 14.7% on December 6th. Omicron is now responsible for 11% of new infections. The WHO has advised that omicron spreads faster and weakens vaccine efficacy. There are concerns with the effectiveness of one and two doses of the vaccines in relation to omicron. NIAC has advised a reduction in the booster gap to three months.

As we head further into December it is early in the Omicron story. General Practitioners and our staff despite the unknowns ahead need to prioritise ensuring that they maintain their good health with some balance of self-care and family life. Our ability to adapt, evolve and innovate as General Practice has been evident over the last 22 months must include personal care.

The challenges that remain in General Practice are:

1. An ageing workforce – 30% over 60 years old
2. Underfunded infrastructure
3. Too small a workforce
4. Underfunded contracts
5. Antiquated out of hours contract

For General Practice to survive, it will require this continued innovation and proactivity which GPs have shown over the last 2 years of the Pandemic, both as individual leaders in their communities and as a collective. It is evident with the chronic care programme how we can be innovators in International Health when resourced. To quote Professor Alan Irvine – ''We need more of these good news stories in Irish Healthcare''.

Rosemary Stevens, a medical historian said if General Practice did not exist, it would have to be invented. It is a testament to our profession that comments like this are made.

Paul Reid, CEO of the HSE has acknowledged the heroic work of General Practice in this message:

"Throughout this pandemic the role played by General Practice has been absolutely superb. There is no way that the HSE could have worked through this pandemic to date but for the leadership demonstrated by GPs. They have put themselves to the forefront of all of the responses throughout, whether this was in terms of Covid testing and referrals, vaccinations and boosters, flu campaigns, or supporting an enhanced community and primary care response to relieve the pressure on hospitals. On behalf of the HSE, I'm truly grateful for this support and response. There is no doubt that the public will now have an ever further respect and understanding of the role played by GPs in healthcare in Ireland".

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COVID-19: An Added Impetus to Ascertain End of Life Wishes

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The start of 2021 was far removed from the beacon of hope we had all hoped it might be. Instead, with rising infection numbers here in Ireland over Christmas to levels much greater than ever anticipated, the 2021 death toll in turn continued to mount. Much focus was rightly cast on those many hundreds who were dying 'of Covid', and the great suffering they experienced. Alongside them however were those dying in hospital 'with Covid'. These were cancer patients, heart failure patients, dialysis patients and many others who had fought a long battle but for whom treatment options had now been exhausted – and whom in the terminal phases of their illnesses had been caught in the crossfire and infected with Covid-19 as it ravaged through our hospital systems.

In palliative care the focus is very much on a holistic model of care. An absolutely central tenet to this is being able to die with dignity, with the support of and surrounded by those we love. This is important not just for the patients approaching the end of their lives but also their family members who, having shared their lives with the patient, place so much importance on sharing their final hours with them. The fundamental human drive to 'be there' for a loved one in their final hours is often overwhelming, indeed it is a real and concrete action where one can otherwise often feel helpless. Across multiple hospitals and healthcare settings in Ireland, we have seen so many examples of this virus depriving patients and families of the possibility of performing this one great final act of love. Circumstances for example where cancer patients contract Covid-19 in hospital and partners, who had hitherto been allowed in to provide daily care and support, had to then themselves isolate at home. Circumstances where large families can spend only short intervals of time on an individual basis with parents to say their final goodbyes. Circumstances where vulnerable elderly siblings are torn between the risk of entering high risk hospital facilities and the desire to see their brother one last time. For those patients who have been battling a terminal disease or malignancy for many years with their partner or families by their side, it can feel particularly cruel to be deprived of their support in the final hours or days.

Especially in these times it is important for palliative healthcare providers, and indeed healthcare providers in general wherever the context is appropriate, to go the extra mile to present alternative care options to patients who may be in their final days, weeks or months. The majority of deaths in Ireland still occur in a hospital setting[1] - while this may be necessary for some (i.e. those with more complex care needs) and others may prefer this setting, it is vital that we do our utmost to engage with all patients with terminal illnesses and endeavour to obtain what their wishes may be. This entails having an open and sensitive conversation about places and ceilings of care and ensuring appropriate documentation of same.

The long overdue role out of the provisions of the Assisted Decision Making Act 2015[2] ("the Act") would greatly assist all healthcare providers in facilitating this – and most notably the roll out of those provisions that pertain to Advanced Healthcare Directives ("Directives"). Although the concept of these Directives is accepted in Irish courts, there is much uncertainty around their operation at present in Ireland. Such uncertainty can present tremendous difficulties to healthcare providers especially in acute or emergency settings – when such documents are often not accessible or where there may be many questions as regards their legitimacy or enforceability. So often in the face of such uncertainty, doctors will err on the side of caution and choose to admit and/or treat as applicable – the uncertainty coupled with the irreversibility often associated with choosing alternative options leaves many with little in the way of real choice.

The existing provisions of the Act do in fact provide for certain requirements around the content, witnessing and registration of directives but much of the finer details are to be set out in subsequent ministerial regulations. What we need from these regulations is a system which provides us firstly with a uniform and standardised template for such Directives, together with very clear safeguarding guidelines around how these Directives become legally enforceable. Perhaps more importantly, a centralised database where all such properly executed Directives can be accessed at any time by healthcare professionals would assist hugely in ensuring such directives are respected, most particularly in acute care settings. With the above in place, doctors would be provided with much greater certainty that the wishes which they are reading are the true and authenticated wishes of their patient. In turn, this would allow them to make decisions with confidence to respect those wishes, however irreversible those decisions may be.

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Exeter® vs Summit® Stems in Total Hip Arthroplasty at 5 Year Follow Up

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Abstract

Aims

The cemented Exeter® stem is currently considered the gold standard in hip stem prostheses due to its excellent revision rates and patient satisfaction. This study seeks to determine whether the uncemented Summit® stem has a comparable revision rate and functional performance.

Methods

817 consecutive patients undergoing a primary total hip replacement (THR) were retrospectively selected in a 32-month period from January 2012 to August 2014. Patients were divided into two groups depending on the stem type implanted. The clinical outcomes of each group were compared using all-cause revision data and with SF12 and WOMAC scores taken pre-operatively, at two years and at five years post THR.

Results

The likelihood of revision was almost identical (p=1.00). Exeter® had a 1.89% revision rate and Summit® had a 1.78% revision rate. Summit® stems had slightly higher SF12 and WOMAC scores recorded on average at each time point however these were not significantly different at five years (p=0.1633 for SF12, p=0.7605 for WOMAC).

Conclusion

Exeter® and Summit® hip stem prostheses have similar clinical outcomes and patient satisfaction scores at five years post THR. This large cohort study demonstrates that the uncemented Summit® stem has an excellent profile when compared to the gold standard cemented stem in THR's.

Introduction

Often considered as the procedure of the century, total hip arthroplasty has revolutionised the management of hip osteoarthritis since the 1960's[1]. In more recent times, there has been ongoing debate about the benefits and risks of different fixation methods of components used in this procedure.

Cemented femoral stems, and in particular, the Exeter® V40 prosthesis are currently considered the gold standard stem prostheses in primary total hip replacement (THR)[2–5]. A recent systematic review by Moskal et al. published in 2016 suggested that there is a significant role to play for cementless stems in THR, especially in younger patients who demonstrate improved outcomes compared to cemented prostheses. However, older patients are at a higher risk of revision when cementless stems are used[6]. A prospective multicentre study by García-Cimbrelo et al. in 2018 of 485 patients receiving a Summit® stem, with a follow-up range of 2.5-6 years, found that the Summit® stem provided excellent clinical results and had good radiographic outcomes and low revision rates[7].

This retrospective cohort study seeks to compare the clinical outcomes of the Exeter® cemented stem and the Summit® cementless stem at a minimum of five years.

Methods

Eight hundred and seventeen patients who underwent primary THR between January 2012 and August 2014 were included in the study. All data was gathered from the prospectively-collected arthroplasty registry in our institution. All procedures were performed by high-volume fellowship-trained hip arthroplasty surgeons. The surgeons in the study used either Summit® or Exeter® stems exclusively. Patients were divided into two groups based on whether they had an Exeter® V40 femoral stem prosthesis or a Summit® femoral stem prosthesis implanted at the time of the primary procedure.

The Exeter group consisted of 423 patients with a cemented femoral stem (Exeter V40, Stryker Orthopaedics, Michigan, United States) including 216 males and 207 females with a mean age of 68.07 (25-91, σ=10.80). The commonest acetabular component in this group was the uncemented Trident® cup (n=305) followed by the cemented Rimfit® cup (n=100). Eighteen patients had different acetabular components inserted. The Summit® group consisted of 394 patients implanted with a cementless femoral stem (Summit® Tapered Hip System, DePuy Synthes, Johnson & Johnson, Warsaw, Indiana, United States) including 203 males and 191 females with a mean age of 62.92 (19-90, σ=12.76). The uncemented Pinnacle® acetabular component was used in almost all cases (n=392).

The inclusion criteria for this study were: 1: Patients undergoing primary THR. 2: Procedure performed between January 2012 and August 2014. 3: The femoral stem was either an Exeter® V40 or a Summit® Tapered Hip System.

Exclusion criteria for this study were procedures outside of this date range, incomplete datasets, indication of hip fracture fixation or conversion of a dynamic hip screw to a THR.

Patients were assessed pre-operatively, two years post-operatively and at five years post-operatively using the Short Form 12 (SF12) and Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC) health questionnaires. The SF12 is a 12 question multiple choice questionnaire which assesses the patients' own perception of their general health, activities of daily living and wellbeing[8]. WOMAC is used to more specifically evaluate the physical function, stiffness and pain of hip and knee joints in patients with osteoarthritis[9]. SF12 and WOMAC scores were recorded up to five years post primary THR for all patients.

Data collection was performed by examining theatre logbooks, operative notes, and the Irish National Orthopaedic Register (INOR) database for revision data of the primary THR's which may have occurred up to the time of review. The reason for the revision was also verified using theatre logbooks, operative notes and the INOR database. The review was carried out in compliance with audit guidelines and General Data Protection Regulation (GDPR) legislation at our institution.

Stata IC 13.1 for Mac (College Station, Texas, USA) was used for data analysis. Numerical data was presented as mean ± standard deviation and compared by t-test for 5-year SF12 and WOMAC outcomes. Fisher's exact test was used to compare categorical revision rate data. As there were no significant predictors of revision among the measured parameters, there was no indication for multivariate analysis. Therefore, a univariate analysis was used to assess the impact of stem type on revision rates. A Kaplan-Meier curve was generated to compare the survival rates of both femoral stem prostheses over a 5-year period using all-cause revision as the point of failure. A p-value of <0.05 was considered to be statistically significant.

Results

Demographics

The Summit® group had a marginally younger age profile than the Exeter® group with a mean difference of 5.15 years (62.92 v 68.07). Both groups were comparable regarding all other demographic parameters. There was a slight male preponderance of 51.06% in the Exeter® group and 51.52% in the Summit® group.

Revision Rates

The overall revision rate was 1.89% for the Exeter® stem and 1.78% for the Summit® stem at a minimum of five years with no statistically significant difference on univariate analysis (p=1.00). Mean time to revision for Summit® stems was 19.7 months compared to 31 months for Exeter® stems. The commonest indication for revision was periprosthetic fracture (n=8), followed by instability (n=2), infection (n=2) and limb length discrepancy (n=2).

Most of the 8 peri-prosthetic fractures occurred early, with 3 of the Exeter® and 2 of the Summit® fractures occurring less than 6 months post-operatively. All of the remaining peri-prosthetic fractures in both groups occurred >2 years post-operatively. One Exeter® and one Summit® stem were revised for pain of unspecified origin. When analysing the impact of gender, operating surgeon, articulation bearing type, hybrid or uncemented fixation type and acetabular component type on revision rates, we found that no variable was predictive of revision.

Table 1. Demographic data for Exeter & Summit stems.

	Exeter	**Summit**	**Cumulative**
Total	423	394	817
Gender Male/Female	216/207	203/191	419/398
Mean Age	68.07	62.92	65.59
Revised	8 (1.89%)	7 (1.78%)	15 (1.84%)
Revision Indication			
Dislocation	2	0	2
Periprosthetic Fracture	4	4	8
Infection	1	1	2
Limb length discrepancy	0	2	2
Other	1	0	1
Mean time to revision	31 months	19.71 months	25.56 months

Functional Outcomes

SF12 and WOMAC scores were recorded for both prostheses at fixed time intervals preoperatively, then again at 2-years and 5-yeas postoperatively. At the 2-year time point, the Exeter® group had a 35% attrition rate and by the 5-year time point the attrition rate was 59%. The Summit® group showed similar rates of attrition at 35% and 51% respectively. The SF12 and WOMAC scores for both implant groups were comparable in their trend from preoperative to five years postoperatively (Figures 1 & 2). A two-sample t-test with equal variances comparing the results of the Exeter® and Summit® 5-year SF12 scores from 171 and 192 patients respectively with a 95% confidence interval returned a p-value of 0.1633 showing that there was no significant difference between the two groups. Likewise, a two-sample t-test with equal variances for the difference between the WOMAC scores for the two groups returned a p-value of 0.7605. Therefore, the WOMAC scores were not significantly different between the groups. Boxplot analysis in figure 2 and figure 3 of SF12 and WOMAC scores for both groups at each time point illustrate very similar means, medians and interquartile ranges for both scores at all time points.

Figure 1. SF12 boxplots for Exeter® & Summit® stems at pre-op, 2-year & 5-year time points.

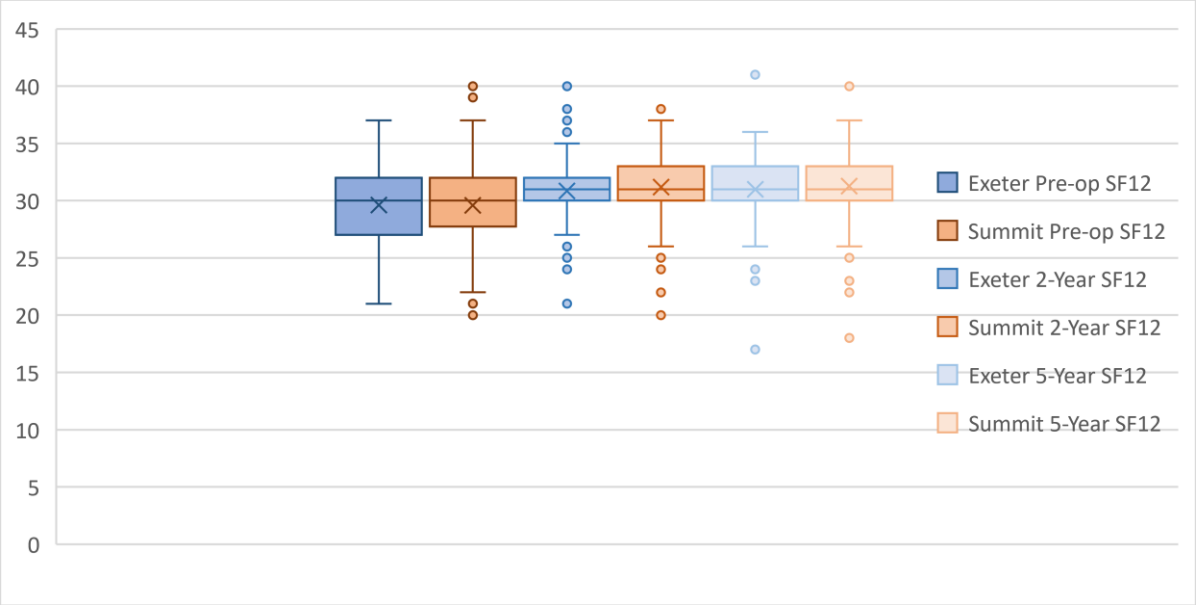
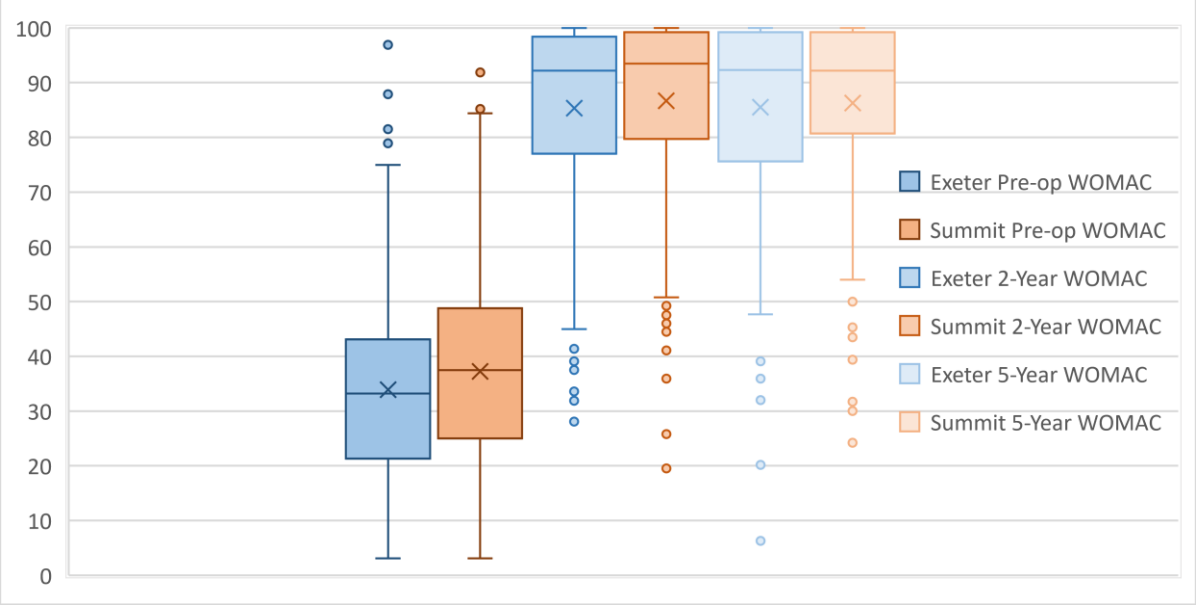


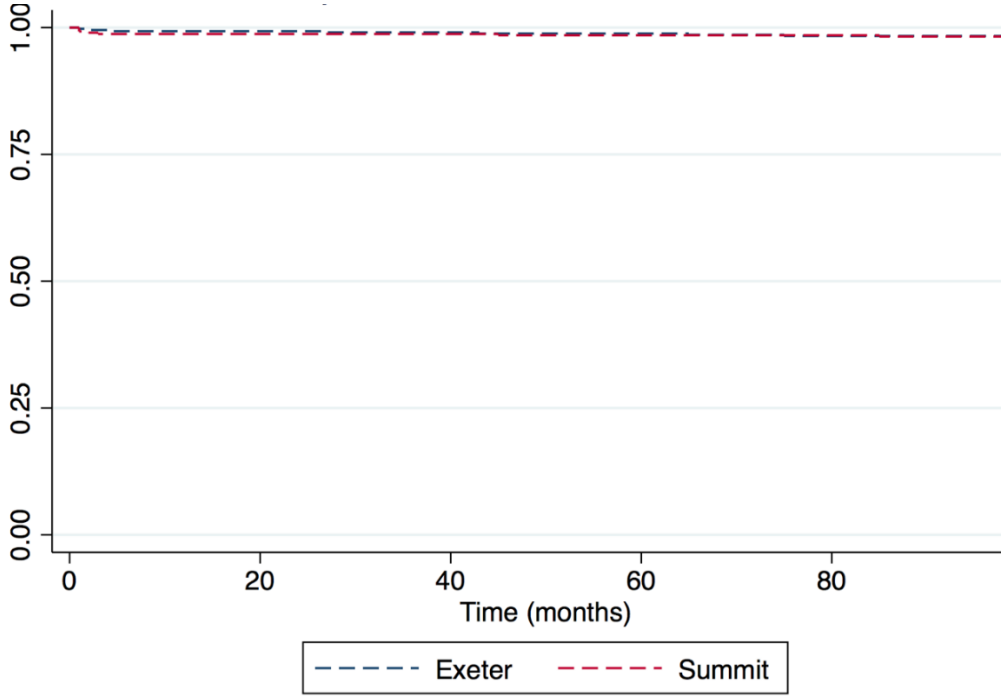
Figure 2. WOMAC boxplots for Exeter & Summit stems at pre-op, 2-year & 5-year time points.



Kaplan-Meier Survival Estimate

The Kaplan-Meier survival estimate based on the patient data provided in this study displayed a near-identical result for both the Exeter® and Summit® stems (Figure 3). The graph represents a survivorship exceeding 98% for both prostheses at a minimum of 5 years.

Figure 3: Kaplan-Meier survival estimates for Exeter & Summit stems at a minimum of five years.



Discussion

The Summit stem currently has no large-scale comparative population study of its clinical outcomes over a long-term period. The largest studies relating to outcomes of the Summit® stem in the current literature included 80 Japanese patients with a follow up period ranging from 48 to 66 months as well as a prospective study relating to radiographic and clinical outcomes in the Summit® stem exclusively of 485 patients with a follow-up period of 2.5 to 6 years[7,10]. This study included 394 patients receiving a Summit® stem implant and followed up to a minimum of five years in comparison with 423 patients who received a cemented femoral Exeter® V40 stem, to determine the viability of the implant against a well-known gold standard prosthesis in primary THR. We therefore present a large cohort of Summit® stems over the longest recorded follow-up period in the literature to date.

The outcomes were very similar between the two stems. The lack of statistically significant difference demonstrates that the clinical outcomes as perceived by the patients in both the Exeter® and the Summit® group were comparable. This correlates with the overall revision rates for both stem prostheses with a 1.89% and a 1.78% revision rate for the Exeter® and Summit® groups respectively. The Fisher's exact test p-value of 1.00 effectively confirms the null hypothesis that patients in either group were equally likely to require a revision procedure irrespective of the femoral stem they had implanted.

Kaplan-Meier survival estimates for both stems were essentially the same. The cumulative survivorship estimates remained at >98% at five years postoperatively for both prostheses.

Considering the potential advantages and disadvantages of using cemented or uncemented stems is now an important exercise considering that the comparative results of each group were nearly indistinguishable. Cemented stems are generally thought of as having better short-term outcomes with less pain. This may be a consequence of earlier solid fixation of the stem to bone secondary to interdigitation of the cement mantle into the cancellous bed[11,12].

However, there is no risk of bone cement implantation syndrome with uncemented prostheses. This is a desirable characteristic in patients with a fragile cardiorespiratory status[13].

Cementless stems may also have a greater risk of peri-prosthetic fracture, particularly in elderly populations[6]. However, with improving technology and surgical techniques, cementless stems may have better outcomes in younger patients even though they are a more active population[14].

Studies of joint registry data have shown that both Exeter® and Summit® stems perform well when compared to other cemented and cementless stems respectively, with significantly more data available on the Exeter® stem as it has been in use for a much longer period of time[15,16].

In 2006, Yates et al. argued that although the cost of the cementless femoral stem component may indeed be higher, it is likely that the reduction in equipment and materials used in the cementing process and the operative time delay for cementing may counterbalance the initial outlay of the cost of the stem[17]. Others disagree with this view and believe the additional cost cannot be justified[18]. Reducing theatre time as a whole by removal of the cementing step of the procedure may also provide cost-saving benefits to the health system as a whole by running more efficient theatres which may be able to complete extra cases with the time saved. This also has the added benefit of reducing patient waiting list times[19].

The performance of the cementless implant may be improving over time as more recent studies tend to have better patient outcomes and lower revision rates for cementless stems than was previously described in the literature[20]. In 2009, a study by Hooper et al. assessing the New Zealand national orthopaedic register with over 42,000 THR's concluded there is a significantly lower revision rate for cementless stems with a lower risk of prosthesis infection in the under 65 age bracket but there is also a significantly higher revision rate for cementless stems in older age groups[21].

The limitations of this study include that this is a medium term study which followed patients for five years who have hip implants which are likely to have a life-expectancy of 20-25 years[22]. The two stems were also not implanted by the same surgeon. The patients included in the study were also not randomised to their cohort stem.

The Exeter® and Summit® stems have comparable clinical outcomes, revision rates and patient satisfaction at a minimum of five years. Based on the results of this medium-term study, both types of stems should be considered thoroughly when deciding on which type of stem prosthesis to use due to their comparable results and risk profile. Further comparative investigation over a longer time frame is underway in our institution and may provide insight into long-term outcomes when comparing cementless and cemented stems.

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Declaration of Conflicts of Interest:
The authors have declared that no competing or financial interests exist.

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Teleconsultations in Orthopaedics – The Patient Perspective

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Abstract

Aim

COVID-19 presents challenges in ensuring gold standard patient care in hospital settings. This study aimed to assess the effectiveness of telephone consultations as a modality for delivery of orthopaedic outpatient clinics, as measured by levels of patient satisfaction.

Methods

N = 100 orthopaedic trauma patients who received a teleconsultation were retrospectively surveyed. The survey included specific questions related to patient satisfaction scored with a Likert scale, as well as free-form questions facilitating expansion of patient opinion. The responses were quantitatively and qualitatively assessed.

Results

In 98% (n=95) of cases respondents were either satisfied or very satisfied with telephone consultations irrespective of age group, condition or length of time since commencement of symptoms. Nearly half of all respondents (47%, n=45) would choose teleconsultation again. The provision of clear information and the convenience of teleconsultation were noted as drivers of satisfaction.

Discussion

Teleconsultation was associated with a high satisfaction rate and may prove an effective tool in delivering remote patient care particularly in less complex cases not requiring physical examination or updated imaging. Further work addressing patient beliefs and expectations regarding telemedicine will be beneficial.

Introduction

The Midland Regional Hospital Tullamore is a regional service for orthopaedics providing care to a population of approximately 400,000. The emergence of Covid 19 in early 2020 challenged the service with the cancellation of all elective outpatient clinics on safety grounds. A skeleton trauma outpatient service continued to operate for patients deemed in urgent need of face to face intervention. To address the needs of the remaining orthopaedic outpatients, virtual clinics were set up with patient care being managed by telephone. A virtual fracture clinic in MRHT has already found to be acceptable to patients [1,2] Patients in receipt of the virtual fracture clinic present with simple stable fracture patterns. In contrast, patients who normally attend outpatient clinics have more complex fractures, are postoperative, or present with chronic musculoskeletal conditions. There is limited evidence regarding patient satisfaction with telephone review among this cohort. As patient satisfaction is recognised as key in the successful delivery of healthcare [3,4], analysis of patient satisfaction with these virtual clinics was sought.

Methods

All patients due to attend orthopaedic outpatient clinics on a return visit from 25th March 2020 onwards were screened for suitability for phone call review. Exclusion criteria included patients who required intervention such as X-ray, removal/change of cast, change of dressings or those who may have difficulty communicating over the phone. Telephone clinics were conducted by non consultant hospital doctors and clinical specialist physiotherapists assigned to the orthopaedic team. Digital imaging was available to the clinician as well as access to clinical notes pertaining to previous consultations in the orthopaedic clinic. As a convenience sample, the first 100 patients who received a telephone consultation from the orthopaedic team were contacted by a researcher 7-14 days later. This researcher was not involved in any of the original phone consultations. A patient satisfaction questionnaire was administered over the phone. A number of questionnaires were considered for use but were deemed not suitable either due to complicated language or not meeting the specific needs of our service[3,5–10].

Following a review of the literature on determinants of patient satisfaction, a questionnaire was designed to capture feedback regarding the recent telephone consultation. Patients were asked to respond- using a Likert scale - to questions regarding the interpersonal skills of the clinician, time given to the consultation and overall satisfaction with the telephone review. Patients were also asked to indicate whether all their concerns were addressed and whether they would opt for phone review in the future. Finally, they were given an opportunity to further expand or explain their responses around satisfaction.

Results

The first 100 patients who received a telephone consultation week commencing March 25th 2020 were assigned to the study. Three patients were excluded -1 patient had suffered a bereavement and wasn't in a position to partake, 1 patient was unwell and 1 patient had moved away from home with no means to contact. The resulting convenience sample was 97.

Demographic Data

The age range of the 97 patients who participated in the satisfaction survey is shown in Fig. 1. English was the first language of 96% (n=97). Fifty five percent (n=53) had initially presented with an upper limb problem, 39% (n=38) had a lower limb problem and 6% (n=6) reported spinal symptoms. Thirty three percent (n=32) had had surgery for their condition which included fracture fixation and joint replacement. Sixty seven percent (n=65) had symptoms that were being managed conservatively. The time since onset of symptoms or injury is presented in Fig 2.

Fig 1. Age Range (n=97)

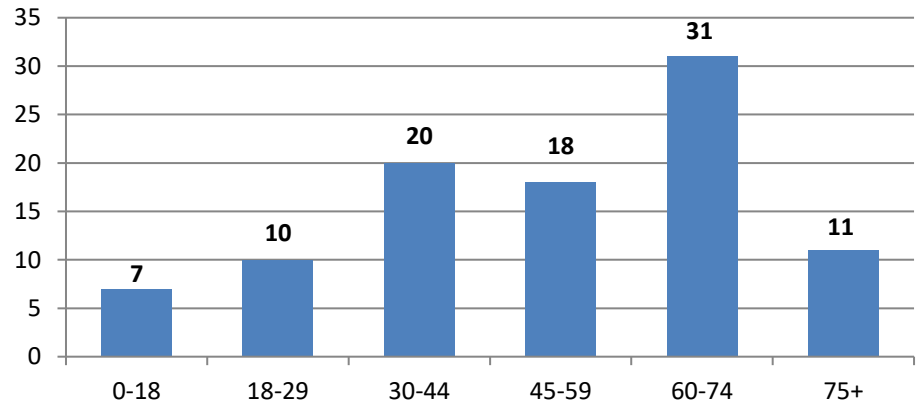
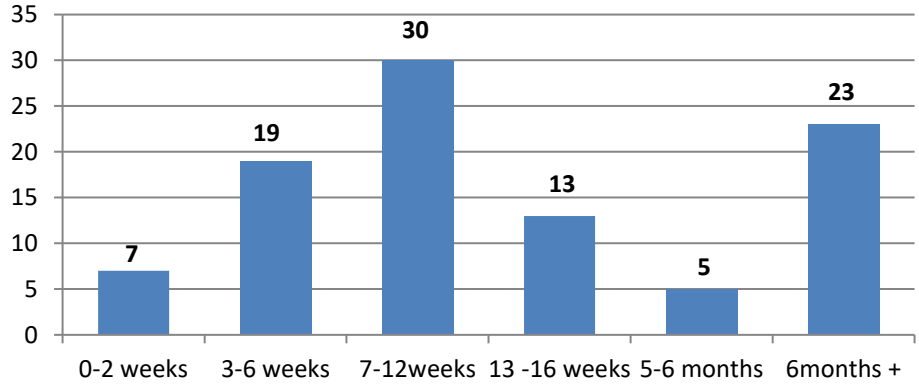


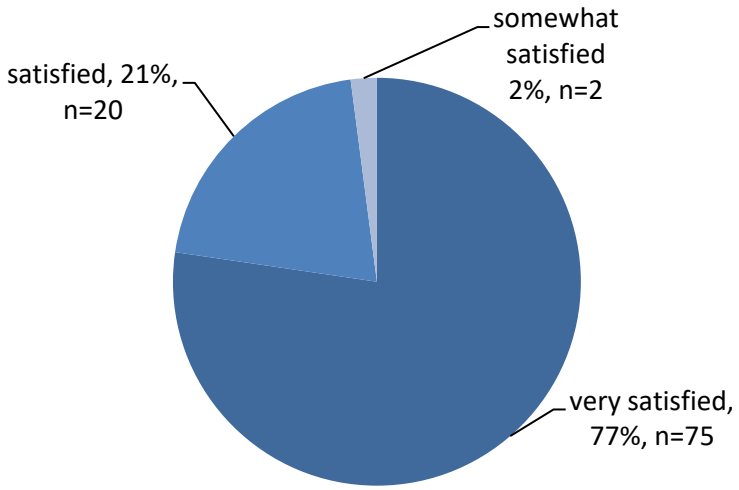
Fig 2. Time Since Injury (n=97)



Outcome of calls

Sixty six percent of patients (n=64) were discharged after phone review. Thirty four percent (n=33) required a follow up appointment in orthopaedic trauma clinic. No patients required further phone call reviews or video calls. Most respondents were either satisfied (21%, n=20) or very satisfied (77%, n=75) with their overall consultation by telephone. Two percent (n=2) were somewhat satisfied. This was independent of any demographic factors including age. See Fig 3.

Fig 3. Overall satisfaction with telephone consultation (n=97)



Interpersonal skills of the clinician

Ninety nine percent of patients (n=96) contacted rated the politeness and friendliness of the clinicians as being excellent (84%, n=81) or good (15%, n=15). One respondent rated politeness and friendliness of the clinician as 'fair'. All respondents reported the clinicians as being excellent (82%, n=80) or good (18%, n=17) at giving the patient enough time to describe their problem in their own words.

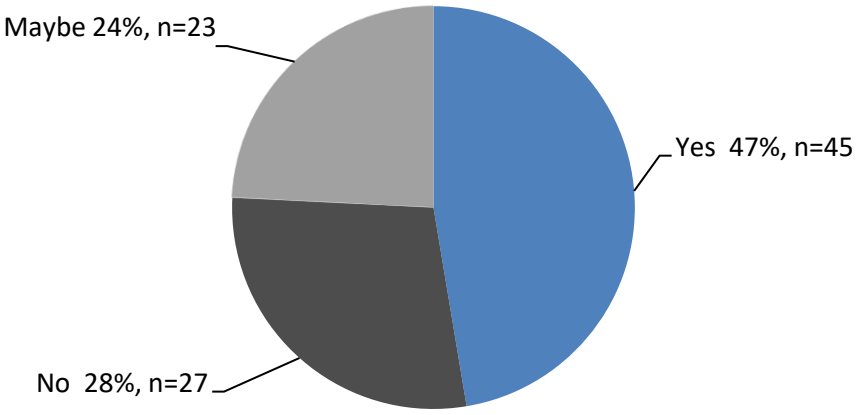
Patient understanding

The majority of respondents (94%, n=91) reported understanding their treatment plan following telephone review. Two patients (2%) did not understand the treatment plan, while three (3%) were unsure. Data was omitted from one questionnaire. The majority of patients (93%, n=90) did not have any concerns that were not addressed during the telephone consultation.

Preference for future consultations

When patients were asked whether they would choose telephone consultation in the future, the largest cohort of respondents (47%, n=45) would choose telephone consultation again, 29% (n=27) would not choose telephone review in the future and 24% (n=23) were unsure. Data was omitted from two questionnaires. See Fig 4.

Fig 4. Would you choose Telephone review in the future? (n=95)



Qualitative data

Patients were invited to add further comments at the end of the telephone interview. Eighty five patients (88%) chose to respond. Responses were recorded verbatim. A number of themes emerged.

Drivers of patient satisfaction

Study participants reported that giving and receiving information was paramount to satisfaction with consultations. It was important to patients that questions were answered. Patients also valued 'being listened to', 'being given time' and 'being understood'.

Advantages of telephone consultations

The theme of convenience was dominant when patients expanded on advantages of telephone consultation. The lack of waiting time compared to outpatient appointments was valued. Study participants appreciated not having to drive and not having to take time off work. Three expressed the belief that they had a greater opportunity to ask questions during a telephone call than at an outpatient clinic. They felt they were given more time and felt relaxed due to being at home.

Advantages of Outpatient clinic consultations

The theme of reassurance was universal among patients who preferred outpatient clinic consultations over telephone consultations. Patients who expanded on the theme of reassurance mentioned X ray or physical examination as being important to them. One patient would have been reassured by consultant review. The value of 'face to face' interaction was frequently mentioned. Some study participants reported that they found it easier to discuss issues and recall questions in person, rather than over the phone. One patient reported technical issues with the quality of the phone line as being a reason why they would choose an outpatient clinic appointment over telephone in the future. One patient reported hearing difficulties, and one patient reported language difficulties as a reason for choosing clinic appointments in the future. Five patients reported that while they were happy to receive a telephone consultation during a pandemic, that they would prefer an outpatient clinic visit in different circumstances.

Using a combination of OPD appointments and telephone consultation in the future

Twenty patients (24%) who chose to add a comment at the end of the survey expressed the opinion that a combination of telephone review and attendance in the outpatient department would be preferable going forward. They felt that the first appointment should be an outpatient appointment with subsequent appointments being suitable for phone review. In addition they believed that more complex conditions should be seen in the outpatient department with less complex cases being suitable for telephone review.

Discussion

The main finding of this study is that 98% (n=95) patients were either satisfied or very satisfied with telephone consultation. This high satisfaction rate is in line with previous studies of telephone consultation in the orthopaedic setting[1,2,11]. Earlier research on patient satisfaction indicates that the patient-clinician relationship is an important contributor to patient satisfaction[4,8,12–17]and so it was in this study. Participants reported that being given an opportunity to ask questions and receive clear information was extremely important. Themes that emerged as being drivers of satisfaction were; 'being listened to', 'being given time' and 'being understood'. Satisfaction was high across all age groups and contrary to previous studies of patient satisfaction[18,19], we did not find a positive relationship between increasing age and satisfaction. Consistent with earlier studies on telemedicine[7,12] the 47% (n=45) of our study who would definitely choose a telephone consultation in the future cited reasons such as 'efficiency', 'lack of waiting time' and 'not having to take time off work'.

Interestingly, despite the high satisfaction ratings, a significant percentage of those surveyed (28%, n=27) would prefer face to face appointments rather than telephone consultation in the future and 24% (n=23) were unsure. This is consistent with a previous survey of virtual fracture patients in MRHT[1] where 28% (n=9) would prefer face to face follow up. In contrast, a recent study of a similar cohort of patients in the UK [11] found that 94% of patients would opt for phone review again. Previous experience, trust and patient expectation have been recognised as drivers of patient satisfaction[4,13,15,16,20,21].The role of these factors in patient satisfaction is demonstrated in this study. The predominant theme among our cohort of patients who would prefer an outpatient clinic appointment in the future was reassurance; with physical exam, examination by a consultant and X-Rays cited as important. Patients felt that face to face appointments were suitable for initial appointment and complex injuries with telephone review being more suitable for follow up and more minor injuries.

There are a number of strengths and limitations attached to this study. Telephone review has the advantage of excellent response rates and is more widely accessible to patients who may have difficulty with the written word. It is more anonymous than a face to face interview. Despite this, there may be some risk of the patient saying what is socially acceptable rather than what they really feel. In line with recommendations by Blozik et al 2014[3] ; review of the teleconsultation occurred within 2 weeks of initial consultation so that the findings were not altered by memory issues or the course of the medical condition. One weakness identified in earlier studies is that while patients were asked about their satisfaction, no attempt was made to get to the root of their satisfaction which was at least partially addressed in this study by the open question[22]. The lack of a suitable, recognised and validated questionnaire is a well recognised limitation in studies of patient satisfaction. Extensive literature review around drivers of patient satisfaction in the clinical setting[4,13–17,20,21], close study of previous satisfaction questionnaires[3,5–10] and team review of this questionnaire tried to address this weakness. Finally we acknowledge that these telephone clinics were conducted at a height of a pandemic which has an effect on the external validity of satisfaction ratings. Further research in non pandemic times would clarify this.

In conclusion, telephone consultation has proved itself to be a useful tool in the follow up of a general cohort of orthopaedic patients in the Irish setting. Levels of satisfaction were high irrespective of age group, condition or length of time since commencement of symptoms. Communication skills of the clinician including good listening skills and a solid knowledge to facilitate clear answers to questions is identified as paramount to successful consultation and this should be considered in the rollout of further clinics.

This study indicated areas for further research. In particular the finding that despite high satisfaction ratings, a significant cohort of the study population would prefer face to face consultation in the future should be further explored. Clear information for patients at the start of their care journey regarding appropriate follow up may increase the percentage of patients who wish to avail of telephone consultation in the future.

Declaration of Conflicts of Interest:
The authors declare no conflicts of interest.

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Comparison of Colonoscopy and Flexible Sigmoidoscopy for Investigation of Young Patients with Low-Risk Rectal Bleeding

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Abstract

Aims

To determine the yield of significant pathology in under 50s with low-risk rectal bleeding and ascertain the optimal endoscopic investigation for this age group.

Methods

Data were retrieved on patients who had lower gastrointestinal endoscopy for rectal bleeding between September 2017 and September 2019 at South Infirmary Victoria University Hospital, Cork, Ireland. Patients with other bowel symptoms, weight loss, anaemia, colitis or colorectal cancer were excluded, leaving 709 with 'low-risk' rectal bleeding.

Results

Two patients (1%) 30-39yrs had colorectal cancers and 12 (7%) had adenomatous polyps, 42% (5/12) being high risk polyps. There were no cancers in patients 40-49yrs but 23 (13%) had adenomatous polyps, 39% (9/23) being high risk. No patients <30yrs had adenomatous polyps or colorectal cancer. This compared to 10 patients (3%) $\geq$ 50yrs with colorectal cancers and 58 (21%) with adenomatous polyps, 43% (25/58) being high risk. Colonoscopy had an adenoma detection rate of 20%, which was significantly higher than flexible sigmoidoscopy at 7% ($p < 0.001$). Also, 15% (49/333) of patients who had colonoscopies had adenomatous polyps proximal to the splenic flexure, likely to go undetected on flexible sigmoidoscopy.

Conclusion

Colonoscopy is the preferred investigation modality for 30-49 year olds with low-risk rectal bleeding, given their high rate of significant pathology.

Introduction

Colorectal cancer is the third most frequent invasive cancer worldwide,[1] as is the case in Ireland where it makes up 11% of all cancers in females and 14% of all cancers in males[2]. The overall incidence is decreasing worldwide, however there is a growing incidence in younger populations[1,3], with colon cancer increasing by 0.8% per year in Ireland in those less than 50 years of age (under 50s) in the decade leading up to 2014[2]. Rectal bleeding can be an early symptom of colorectal cancer; however, it is most commonly due to benign anal pathology,[3] particularly in younger age groups where overall incidence in Ireland of colorectal cancer in under 50s is only 0.32-0.38%[2]. This leads to controversy regarding the most appropriate investigation for low-risk rectal bleeding in under 50s, with national guidelines varying from rigid sigmoidoscopy in a rapid access outpatient department clinic to flexible sigmoidoscopy or colonoscopy in an endoscopy suite[3]. The current Irish guidelines[3] (set in 2014) for investigation of isolated rectal bleeding, advise flexible sigmoidoscopy (limited examination of the large bowel) for under 40s and sigmoidoscopy, colonoscopy (complete examination of the entire large bowel) or CT colonography, as appropriate, for those over 40 years of age. Whilst colonoscopy is the most comprehensive investigation, the relatively low yield of sinister pathology found in under 50s must be compared with the invasiveness, potential procedural risks and morbidity due to bowel preparation[4-6]. Multiple Irish centres are currently breaching their waiting list targets[2] due to constrained endoscopy resources compared to demand, making it of further importance to target the scarce resource for the most appropriate patient population. The data used to establish the Irish guidelines[3] did not include studies comparing the effectiveness of colonoscopy versus flexible sigmoidoscopy and the latest Irish GI (Gastrointestinal) Endoscopy Quality Improvement Report (2018) has suggested hospitals consider increasing flexible sigmoidoscopy numbers where appropriate to reduce colonoscopy waiting lists.[7] Thus, the aim of this study was to determine the yield of sinister pathology in young patients with low-risk rectal bleeding and compare effectiveness of flexible sigmoidoscopy with colonoscopy.

Methods

This study included patients who had flexible sigmoidoscopy or colonoscopy at South Infirmary Victoria University Hospital, Cork, Ireland between September 2017 and September 2019. The data were collated from the in-house endoscopic reporting system (Unisoft) and extracted using 'The Auditors Tool Kit'. Ethics approval was granted by the Clinical Research Ethics Committee of the Cork Teaching Hospitals, which is nationally recognised by the Department of Health.

Of the 3604 lower GI endoscopies completed in the study period, 1159 patients had rectal bleeding as a procedural indication (Figure 1). Patients with other bowel symptoms (excluding perianal pain or constipation), weight loss, anaemia, lower GI endoscopy within the last 5 years or a personal history of inflammatory bowel disease or colorectal cancer were excluded. Also excluded were patients who had a first-degree relative with colorectal cancer that would indicate a need for lower GI endoscopy before the age of 50yrs[8]. The remaining 709 patients made up the study population which were deemed patients with 'low-risk' rectal bleeding.

Flexible sigmoidoscopy involved patients receiving a phosphate enema 30 minutes prior to the procedure, and the endoscope was advanced until the image was obscured by faeces. The intent of flexible sigmoidoscopy was to examine the distal colon, with the splenic flexure being the common maximum depth reached. The intent of colonoscopy was to reach the caecum, and prior to the procedure patients received full bowel preparation and diet restrictions to allow examination of the entire colon.

Information was recorded on patient demographics, symptoms, procedural indications and findings of the procedure. Identified pathology was managed according to local policy, with small polyps removed, advanced complex polyps not suitable for simple polypectomy referred to specialists and tumours biopsied. The location and size of all pathology was documented. This data was anonymised, stratified by age and histopathology was retrieved in all cases. For this study 'significant pathology' was defined as adenomatous polyps and colorectal cancer. Adenomatous polyps were further divided into high risk and low risk polyps as per the 2013 Post-polypectomy Colonoscopy Surveillance European Society of GI Endoscopy guidelines[9], upon which the Irish National GI endoscopy guidelines are based[10]. Hospital policy was if adenomatous polyps, colorectal cancer or colitis were found on flexible sigmoidoscopy, patients would proceed to colonoscopy at a later date, but the results of those subsequent colonoscopies are not included in this report.

The statistical analysis was performed using Pearson's chi-squared test.

Results

Of the total patients referred for lower GI endoscopy in this study period, 32% (1159/3604) had rectal bleeding as a symptom, with 61% (709/1159) categorised as 'low-risk' rectal bleeding (Figure 1).

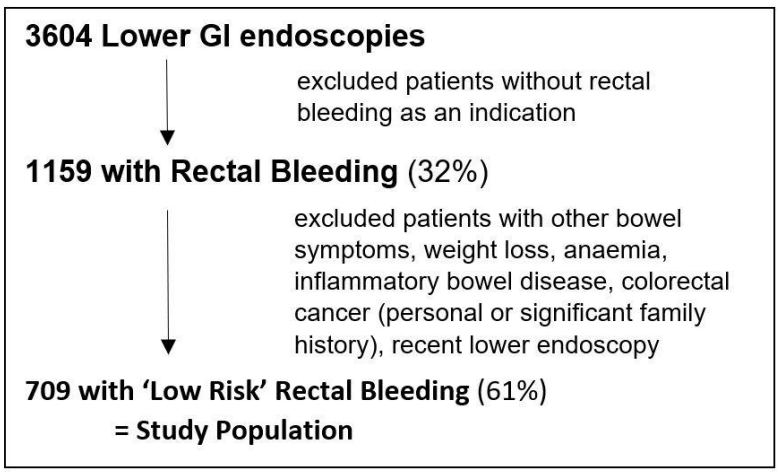

Figure 1: Study profile and exclusion criteria.

Across all age groups, no pathology was found in only 14% of the study population, while significant pathology was identified in 15% (Table 1). Benign anal pathology (69%), which included haemorrhoids, fissures, fibroepithelial polyps, skin tags and mucosal prolapse, was the predominant pathology, followed by diverticulosis (21%), hyperplastic polyps (9%) and colitis/proctitis (4%).

Note that some patients had dual pathologies, thereby resulting in the sum of all pathologies exceeding the total number of patients.

The incidence of pathology increased as age increased with 18% having no pathology in the 20-39yrs cohort, 15% in 40-49yrs and 10% in the ≥50yrs group (Table 1). This difference is significant ($p < 0.01$) between under 50s and ≥ 50yrs. All patients < 30yrs had no 'significant pathology'.

Table 1: Pathology found on Lower GI Endoscopy.

	Age group (yrs)					
	0-19 *(n=3)*	20-29 *(n=65)*	30-39 *(n=182)*	40-49 *(n=177)*	≥50 *(n=282)*	Total *(n=709)*
No Pathology	0	12 (18)	32 (18)	26 (15)	27 (10)	97 (14)
Benign Anal Pathology	1 (33)	51 (78)	135 (74)	125 (71)	179 (63)	491 (69)
Diverticulosis	0	2 (3)	7 (4)	26 (15)	111 (39)	146 (21)
Colitis/Proctitis	2 (67)	1 (2)	8 (4)	6 (3)	8 (3)	25 (4)
Hyperplastic Polyps	0	3 (5)	11 (6)	22 (12)	28 (10)	64 (9)
Adenomatous Polyps	**0**	**0**	**12 (7)**	**23 (13)**	**58 (21)**	**93 (13)**
Colorectal Cancer	**0**	**0**	**2 (1)**	**0**	**10 (4)**	**12 (2)**

The data shown are the number of patients followed by (%).

Fifty-three patients (50%) with significant pathology also had coincident benign anal pathology (Table 2). The proportions with dual pathology were similar across age categories.

Table 2: Patients with Significant Pathology and coincident Benign Anal Pathology.

	Age group (yrs)					
	0-19	20-29	30-39	40-49	≥50	Total
Adenomatous Polyps + Colorectal Cancer	0	0	14	23	68	106
Number with coincident Benign Anal Pathology	0	0	7 (50)	14 (61)	32 (47)	53 (50)

The data shown are the number of patients followed by (%).

Of patients 30-39yrs, two (1%) had colorectal cancers and 12 (7%) had adenomatous polyps, 42% (5/12) of these being high risk polyps (Table 3). There were no cancers in patients 40-49yrs but 23 (13%) had adenomatous polyps, 39% (9/23) of these being high risk. In the patients ≥ 50yrs, 10 had colorectal cancers (3%) and 58 (21%) had adenomatous polyps, 43% (25/58) being high risk.

In under 50s, 97% (130/134) of colonoscopies achieved caecal intubation with 80% (107/134) also attaining ileal intubation and 4 (3%) were incomplete. Of the flexible sigmoidoscopies in under 50s, 20% (58/293) reached the splenic flexure, 15% (45/293) the descending colon, 23% (66/293) the sigmoid descending colon junction and 4% (13/293) just the sigmoid colon. Whilst 38% (111/293) of the flexible sigmoidoscopies reached beyond the splenic flexure.

Pathology proximal to the splenic flexure could potentially be missed by flexible sigmoidoscopy alone. Of patients with adenomatous polyps detected on colonoscopy, 53% (10/19) of < 50yrs and 80% (39/49) of $\geq$ 50yrs had polyps proximal to the splenic flexure (Table 3). One of seven colorectal cancers detected with colonoscopy was proximal to the splenic flexure. Sigmoidoscopy detected 5 colorectal cancers. The adenoma detection rate (proportion of patients who had at least one adenomatous polyp detected) was significantly higher with colonoscopy, which had a rate of 20% compared to 7% with sigmoidoscopy ($p < 0.001$). The higher adenoma detection rate with colonoscopy is consistent in both under 50s (14% colonoscopy vs 5% sigmoidoscopy; $p < 0.01$) and $\geq$ 50yrs (25% colonoscopy vs 11% sigmoidoscopy; $p < 0.01$)

Table 3: Significant Pathology in Flexible Sigmoidoscopy versus Colonoscopy.

Age group (yrs)	Lower GI Endoscopy	Colorectal Cancer	Adenomatous Polyps			
			Total Polyps	ADR*	High Risk Polyps	Proximal to SF**
17-29	Flexible Sigmoidoscopy *n=63*	0	0	0	0	
	Colonoscopy *n=5*	0	0	0	0	0
30-39	Flexible Sigmoidoscopy *n=150*	2 (1)	6	4%	2 (1)	
	Colonoscopy *n=32*	0	6	19%	3 (9)	3 (9)
40-49	Flexible Sigmoidoscopy *n=80*	0	10	13%	6 (8)	
	Colonoscopy *n=97*	0	13	13%	3 (3)	7 (7)
≥50	Flexible Sigmoidoscopy *n=83*	3 (4)	9	11%	3 (4)	
	Colonoscopy *n=199*	7 (4)	49	25%	22 (11)	39 (20)
Total	Flexible Sigmoidoscopy *n=376*	5 (1)	25	7%	11 (3)	
	Colonoscopy *n=333*	7 (2)	68	20%	28 (8)	49 (15)

**Adenoma Detection Rate **Proximal to Splenic Flexure*
The data shown are the number of patients followed by (%).

Discussion

Worldwide the number of lower GI endoscopies performed has increased significantly over the years[1]. The latest Irish National GI Endoscopy Quality Improvement Report from 2018 showed a 46% increase since 2005 in the number of elective lower GI endoscopies performed with an estimated annual cost of €50million for these procedures[3,7]. Despite this, access to lower GI endoscopy remains constrained as demand is increasing at an even higher rate, resulting in difficulty meeting waiting list targets[2].

The 2018 report suggested that hospitals could reduce waiting times by performing more flexible sigmoidoscopies and it highlighted that Ireland currently has no guidelines regarding when flexible sigmoidoscopy could be used as an alternative to colonoscopy[7]. Along with requiring more hospital resources, colonoscopies also have higher procedure morbidity (including bowel preparation), and procedural risks in comparison to flexible sigmoidoscopies[4-6], making it important to weigh up the risk of disease in the population you are assessing.

Current Irish guidelines[3] are not specific which modality to use to investigate those over 40 years of age with isolated rectal bleeding, advising flexible sigmoidoscopy, colonoscopy or CT colonography, as appropriate, which leads to variations between institutions and endoscopists.

In Ireland, the number of colorectal cancers in the 30-50 age group has increased from 182 in 2010 to 202 in 2015, but the incidence in patients under 30yrs remains low[2]. These numbers are reflected in this study, where no significant pathology was found in patients < 30yrs, but two rectal cancers and 35 adenomatous polyps were discovered in patients aged 30-50yrs who presented with low-risk rectal bleeding. This indicates that all rectal bleeding should be considered potentially serious in this age cohort.

The overall adenoma detection rate in our Irish study was 8% in under 50s compared with 21% in patients $\geq$ 50yrs ($p < 0.001$). The rate in the younger age group is lower than a comparative 2004 US study[11] (n=223) investigating rectal bleeding in patients under 50yrs which had an adenoma detection rate of 12%, but they only used colonoscopy. An interesting aspect of our study is the comparison between colonoscopy and flexible sigmoidoscopy where the adenoma detection rate in under 50s with colonoscopy was 14% compared to 5% with flexible sigmoidoscopy ($p < 0.01$). A similar result was reported by researchers from Iran[12] in 2018, where colonoscopy detected 14% and flexible sigmoidoscopy 10%, however they examined fewer patient numbers (n = 120).

In under 50s, 53% of those with adenomatous polyps on colonoscopy had polyps proximal to the splenic flexure, which may have been missed if they only had flexible sigmoidoscopies. A similar Brazilian prospective study[13] in 2019 of 187 young patients with rectal bleeding found 19% of patients had adenomatous polyps on colonoscopy, with 31% having polyps exclusively proximal to the splenic flexure. In addition, a 2018 Singaporean retrospective study[14] of 361 patients found adenomatous polyps in 13% of patients with almost half (49%) proximal to the splenic flexure. This emphasises the importance of colonoscopy given the rates of proximal disease in young people presenting with rectal bleeding.

The majority of adenomatous polyps were incidental findings and would not explain the patients rectal bleeding which prompted the investigation. Their removal theoretically decreases the risk of colorectal cancer in the future[1,15]. Adenomatous polyps are potentially precancerous and patients with these polyps are at higher risk of future polyps and colorectal cancer[1,5], therefore there is benefit in early identification, resection and future monitoring. The European Society of Gastrointestinal Endoscopy recommends population-based screening programs for ages 50-75 using faecal immunochemical testing (FIT), followed by colonoscopy for positive results.

It bases this recommendation on evidence provided by four Randomised Control Trials that showed an overall reduction of colorectal cancer mortality by 24% with screening using faecal occult blood testing (FOBT), and FIT is 2 to 3 times more sensitive than FOBT[15]. Because of the increasing incidence of colorectal cancer amongst younger people, the United States Preventive Services Task Force have updated their recommendations in 2020 to advise screening begins at age 45[15,16].

In this study exactly half of the patients with significant pathology also had benign anal pathology. This aligns with a large 2010 Netherlands cross-sectional study[17] of 1910 patients with haemorrhoids where >70% were found to have additional disease, 35% having concurrent polyps. This suggests that an outpatient department evaluation alone is insufficient, as anal pathology explaining rectal bleeding could mask more serious proximal pathology.

In conclusion our single-centre study suggests colonoscopy should be the preferred modality for evaluation of low-risk rectal bleeding in patients in the 30-49yrs cohort given the high rate of significant pathology encountered. The higher cost and potentially increased patient morbidity associated with colonoscopy are outweighed by the benefits of increased identification and management of a potentially fatal pathology.

Declaration of Conflicts of Interest:
The authors have no conflicts of interest to declare.

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Prescribing Patterns of Medicinal Cannabis for Epilepsy

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Abstract

Aims

Evidence for the use of medicinal cannabis in epilepsy has emerged in recent years. Data on the prescribing practices of medicinal cannabis for epilepsy has not been collected to date in Ireland. This project aims to survey prescribers of medicinal cannabis for epilepsy in Ireland in 2019.

Methods

We sent an anonymous survey to all adult and paediatric consultant neurologists in the Republic of Ireland in 2019. The survey included questions regarding the product prescribed, indication, estimated efficacy, and adverse effects.

Results

62 consultant neurologists were surveyed with 23 respondents (37%). Five (23%) of the respondents had prescribed medicinal cannabis. The most common indication was Lennox-Gastaut syndrome (3) followed by Dravet syndrome (2) and Focal Epilepsy (2). Four (80%) of the prescribers had ceased a prescription; reasons cited included: side-effects (2), lack of effect (2) and cost (1). Side effects noted included drowsiness (2), lethargy (1) and nausea (1). Efficacy was estimated at 'no improvement' by 2 prescribers, 'mild improvement' by 2 prescribers; 1 prescriber noted 'significant improvement'.

Conclusion

Our survey revealed a small number of medicinal cannabis prescribers for epilepsy in the Republic of Ireland, suggesting a limited clinical exposure in the country to date. Resurvey at future intervals is recommended as product availability and familiarity increases, to guide clinical use and prescription programs.

Introduction

The utility of medicinal cannabis has come to represent an area of growing interest in the medical literature.[1] Cannabinoids derived from the cannabis plant include Tetrahydrocannabinol (THC) and cannabidiol (CBD).[2] THC is the psychoactive component of the cannabis plant whereas CBD does not have psychoactive properties at typical doses.[2]

Historically, medicinal properties of the cannabis plant have been described for the treatment of convulsions.[10] Accounts exist of its medical use from a range of cultures including Assyria, India and sources from China which date as far back as 2700 BC.[10] In addition, European physicians in the nineteenth century described its use in the treatment of convulsive disorders.[11]

More recently, evidence for the use of medicinal cannabis has emerged in the treatment of epilepsy .[3] This includes two recent placebo-controlled trials that studied the use of CBD as adjunctive therapy in two paediatric epilepsy syndromes.[4,5]

In 2017, Cannabidiol was studied as an adjunctive treatment in children with Dravet Syndrome, also known as Severe Myoclonic Epilepsy of Infancy.[4,12] This trial demonstrated a >50% reduction in seizure frequency among 43% of patients who received cannabidiol, as compared to only 27% of the placebo group.[4] A similar trial in 2018 considered the use of cannabidiol in patients with Lennox-Gastaut syndrome, again as an adjunctive treatment.[5] This found a median percentage reduction of seizure frequency from baseline of 43.9% in the cannabidiol group versus 21.8% in the placebo group.[5] Adverse effects of cannabidiol noted in both studies included diarrhoea, reduced appetite, somnolence, pyrexia and liver function test derangement.[4,5]

Lennox-Gastaut syndrome accounts for 4% of all childhood epilepsy with a incidence of 2 in 100, 000.[20,21] Dravet syndrome is estimated to have an incidence of 1 per 15, 700 births.[22]

In Ireland, in 2017, a report by the Health Products Regulatory Authority (HPRA) found that there was 'at best, a moderate benefit for cannabis in a small number of conditions and conflicting evidence, or no evidence at all, in a large number of other medical conditions.'[15] The report went on to state that 'the effectiveness and safety of cannabis in large numbers of medical conditions is simply not proven' and 'there is not currently evidence that cannabinoids are an effective treatment in epilepsy'.[13,15]

However, the report recommended that should a policy decision make medicinal cannabis available it should remain limited to a particular set of medical circumstances.[15] One of the conditions highlighted included 'severe, refractory (treatment-resistant) epilepsy that has failed to respond to standard anticonvulsant medications whilst under expert medical supervision'.[13,15]

As a result, in 2019 the Irish government signed legislation to allow for the operation of a pilot Medical Cannabis Access Programme for a duration of five years.[6] Eligible patients were considered to be those, under the care of an appropriate specialist consultant, with Dravet syndrome or severe drug-resistant epilepsy. Other conditions within the Access Program include spasticity associated with Multiple Sclerosis, and intractable nausea and vomiting secondary to chemotherapy. Although this scheme is not yet operational, physicians are able to prescribe other CBD products, as well as THC-containing products if a ministerial licence is granted, but at personal cost to the patient. A ministerial licence is required if there is more than 0.2% THC content, as the product can no longer be classified as a dietary product, and falls under the drugs of misuse act 1977.[7]

Data on prescribing practices for medicinal cannabis products in epilepsy have not been collected to date in the Republic of Ireland. We aimed to collect data on the prescribing practices, as well as estimated clinical efficacy, tolerability and adverse effects.

Methods

We sent an anonymous survey to all consultant adult and paediatric neurologists in the Republic of Ireland in 2019. The survey comprised ten questions and included questions regarding the product prescribed, indication, estimated clinical efficacy, tolerability issues and adverse effects.

Results

62 consultant neurologists were surveyed with 23 respondents giving us a responder rate of 37%. (Figure 1) Of the respondents, 19 (83%) were adult neurologists while 4 (17%) were paediatric neurologists. (Figure 2)

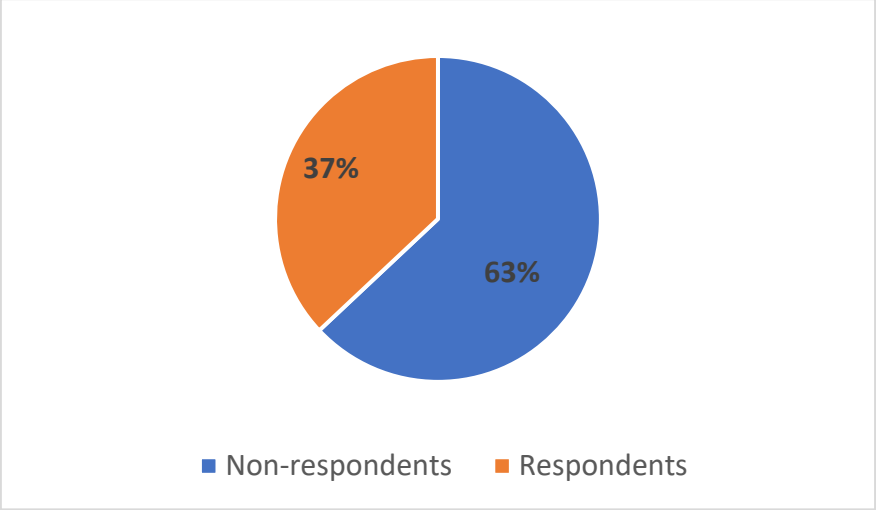

Figure 1: Respondents (%)

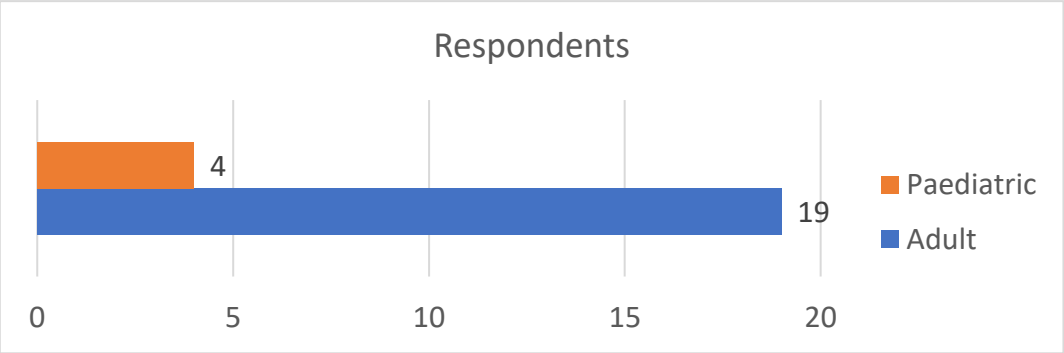

Figure 2: Proportion of adult and paediatric neurologists among respondents

	Practice	Prescriptions	Product	Indications	Estimated efficacy	Side effects	Sourcing
Prescriber 1	Adult	2	CBD & THC + CBD	LGS	No Improvement	Drowsiness	Netherlands
Prescriber 2	Adult	2	THC + CBD	Focal Epilepsy	Mild improvement	Nil	Netherlands
Prescriber 3	Adult	15	CBD & CBD + THC	Dravet Syndrome, LGS, SGE	Mild Improvement	Nausea	Ireland
Prescriber 4	Paediatric	10	CBD & CBD + THC	Dravet Syndrome, LGS, DRE	Significant Improvement	Drowsiness, weight loss, thrombocytopaenia, LFT derangement	Unspecified
Prescriber 5	Adult	Unsure	CBD & CBD + THC	Focal Epilepsy	n/a	Constipation	Ireland

***Acronyms**: LGS: Lennox Gastaut Syndrome; SGE: Symptomatic Generalised Epilepsy; DRE: Drug-resistant Epilepsy*

Table 1: Side effects recorded by prescribers

Five respondents (23%) prescribed medicinal cannabis products. (Table 1) At least 27 patients in this group were prescribed medical cannabis products for Epilepsy in 2019. The clinician with the highest number of medicinal cannabis prescriptions had prescribed to 15 patients, accounting for a majority of all prescriptions in our survey. Four prescribers had prescribed pure CBD products. All prescribers had prescribed products containing both THC and CBD, at some point. The most common indication was Lennox-Gastaut syndrome (3) followed by Dravet syndrome (2) and Focal Epilepsy (2). Four (80%) of prescribers had ceased a prescription. Reasons cited included: side-effects (2), lack of effect (2) and cost (1). In the case of 5 patients (19%) reimbursement was received via the Primary Care Reimbursement Service (PCRS).

Estimated Efficacy & Side effects

Efficacy was estimated at 'no improvement' by 1 prescriber, and 'mild improvement' by 2 prescribers. One prescriber noted 'significant improvement'. Side effects noted by the prescribers included drowsiness (2), lethargy (1) and nausea (1). Other side effects reported included constipation (1), Liver Function Test (LFT) derangement (1), weight loss (1) and thrombocytopaenia with concomitant Sodium Valproate use (1). Interaction with Clobazam causing somnolence was also noted.

Sourcing

Product sourcing was specified by four of the five prescribers. Two prescribers noted medicinal products sourced in Ireland, and an additional two prescribers sourced medicinal cannabis products in the Netherlands (Transvaal Pharmacy).

Discussion

Our survey revealed a relatively small number of prescribers of medicinal cannabis for epilepsy in the Republic of Ireland in 2019. The responder rate is likely a consequence of participation bias and may not be a true reflection of the proportion of Irish neurologists who prescribe medicinal cannabis in epilepsy. However, the numbers are lower than expected given the intense public attention to this treatment over the last few years.[13]

Surveyed clinical outcomes were modest, with mild or no improvement noted by the majority of prescribers, suggesting limited usefulness in clinical practice. However, a study of this nature is not powered or designed to assess the true clinical efficacy of these products. As noted, the efficacy of cannabidiol as an adjunctive treatment in cases of Dravet syndrome and Lennox-Gastaut syndrome has been robustly demonstrated through placebo-controlled clinical trials.[4,5] Outside of these clinical trials, there is a paucity of evidence for the efficacy of medicinal cannabis in a wider range of epilepsy syndromes.[16] In experimental studies, positive anticonvulsant effects have been demonstrated using cannabinoids in rodent models of acute seizures.[17]

Side effects recorded by prescribers are listed in Table 1. Known interactions were observed between medicinal cannabis products, Clobazam and Valproate, highlighting the importance of specialist input in assessing for drug interactions.

The most common adverse effects associated with cannabidiol use include somnolence, decreased appetite, diarrhoea, pyrexia, fatigue, and vomiting.[14]

Cannabidiol, through modulation of Cytochrome P450 enzymes, has been shown to interact with many commonly-prescribed anti-epileptic medications.[8] Levels of Clobazam and N-desmethylclobazam, its active metabolite, have been shown to increase in response to increasing doses of CBD.[9] This is postulated to be the mechanism responsible for an increased risk of sedation when CBD and Clobazam are co-prescribed.[8] Interactions between CBD and Valproate are also described, in particular an elevated risk of liver function test derangement.[8] This is the most common reason for discontinuation of cannabidiol therapy. [14]

The above interactions also highlight the importance of medicinal cannabis prescriptions occurring under specialist guidance. Products containing cannabidiol are commercially available in health food shops or possible to order on the internet. Where patients source these products in non-medical settings, the quantity of cannabidiol can be variable or inaccurate in these formulations.[2] The European Union mandates that the content of THC in such products cannot exceed 0.2%.[18] Furthermore, the quantity of cannabidiol is typically much lower than the doses used in clinical trials.[2] Despite this, the potential still exists for interaction with other anti-epileptic medications.[8] This is of concern particularly in circumstances where the supervising consultant is unaware of patient's use of such products.

Four prescribers had ceased a prescription due to lack of efficacy and side-effect concerns. Cost was also noted as a reason for ceasing a prescription. Financial barriers and inequity of access to such products are suggested by the relatively low number of patients who received PCRS reimbursement. Despite difficulty in accessing such products, interest remains high in the potential benefits of medicinal cannabis among patients with epilepsy, as demonstrated by a recent nationwide survey in Australia.[19] In this survey patient interest in medicinal cannabis products was highest among those with medication-refractory epilepsy and those searching for a therapy with a more favourable side effect profile than conventional anti-epileptic medications.[19]

One of the primary strengths of this study is in the accrual of previously uncollected data within the Republic of Ireland. This will be of value for future researchers, especially should the practice of medicinal cannabis prescriptions become more widespread. An additional strength is the invitation of all consultant neurologists on the Republic of Ireland to participate in the survey. This will allow for comparison with any future interval survey of prescribing patterns. Such work would inform on how levels of physician engagement with medicinal cannabis for epilepsy changes over time.

Our limitations include the low number of medicinal cannabis prescribers in the Republic of Ireland. This remains nonetheless informative as it allows us to conclude that in 2019 there are a very small number of prescribers of medicinal cannabis for epilepsy. An additional limitation is that as this study was designed to collect preliminary data on prescribing practices for medicinal cannabis in epilepsy, we are unable to reach any conclusions on the clinical efficacy of these products. Although we noted side-effects reported by clinicians, we are unable to reach any conclusion on the prevalence of these adverse effect upon the wider patient population. Data on subspeciality interest in epilepsy was not collected.

Additionally, our study only included adverse effects and clinical response reported by clinicians which may be at variance with those reported by patients. We did not collect doses of medicinal cannabis prescribed. Future studies may expand upon our work in order to assess the impact of the Medicinal Cannabis Access Scheme once it becomes fully operational and as access to these products expands. These findings represent a preliminary survey of data on prescribing practices of medicinal cannabis for epilepsy in the Republic of Ireland.

Our study reveals a small number of prescribers of medicinal cannabis for epilepsy, suggesting limited clinical exposure in the country to date. Surveyed clinical outcomes were modest, with mild or no improvement reported by the majority of prescribers. Side effects such as drowsiness and nausea led to discontinuation in some patients.

Future research is needed to monitor the clinical uptake and patient response to medicinal cannabis project as the Irish government's Medicinal Cannabis Access Programme becomes operational. Ongoing survey of the use of cannabis-based products in Ireland will aid in monitoring evolving practice as well as to guide clinical use and prescription programs.

Declaration of Conflicts of Interest:
Neither of the authors have conflicts of interests to disclose.

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Eosinophilic Granulomatosis with Polyangiitis

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Abstract

Aim

Eosinophilic granulomatosis with polyangiitis (EGPA) is a rare, small-to-medium vessel vasculitis presenting most commonly with upper and lower airway symptoms and a peripheral blood eosinophilia (PBE)1. EGPA is highly variable in clinical expression and can be diagnostically challenging as the syndrome slowly evolves over time.

Methods

The aim of this study was to determine the American College of Rheumatology diagnostic (ACR) criteria score[2] in a cohort of patients with EGPA and to describe their treatment and clinical outcomes.

Results

The mean age at diagnosis was 53 ± 12.2 years with an average time in clinic of 1.1 years prior to diagnosis. All patients had ≥4 ACR criteria. All 15 had sinusitis and 14 (93%) lung infiltrates, asthma and >10% PBE. 7 patients (47%) had mono/polyneuropathy and two (13%) had a positive biopsy. One patient had a stroke. 9 patients (60%) remained in remission with a prednisolone/ methotrexate combination, two (13%) prednisolone alone, two patients (13%) with azathioprine, one patient required prednisolone and mepolizumab to attain control and one unstable patient on prednisolone /methotrexate due to start mepolizumab repatriated to eastern Europe.

Conclusion

Clinicians should be aware of the possibility of EGPA in a patient with unstable adult-onset asthma and sinusitis and significant PBE.

Introduction

In 1951, Churg and Strauss first described a syndrome of asthma, 'fever and eosinophilia' with co-existing 'cardiac failure, renal damage and peripheral neuropathy[1]. This syndrome later became known as Eosinophilic granulomatosis with polyangiitis (EGPA) in 2012, in keeping with new nomenclature.
EGPA is a multisystem disorder characterised by necrotizing small and medium vessel vasculitis[1]. Its annual incidence is low with 0.5 – 4.2 cases per million[3] and usually arises in people aged 40 to 60 years with a mean age of 49 years at diagnosis[4] with no sex preponderance.

EGPA presents most commonly as a trilogy of asthma, chronic rhinosinusitis and prominent peripheral blood eosinophilia (PBE)[5] where there are > 10% eosinophils in the total white cell count. Skin, lung, and peripheral nerve involvement can also be seen. Organs, such as the heart, gastrointestinal tract, and kidneys can be affected in severe disease, and this is associated with higher mortality rates[6].

A genome-wide association study in 676 EGPA cases and 6809 controls, stratifying patients by antineutrophil cytoplasmic antibody (ANCA) status revealed EGPA comprises two genetically and clinically distinct syndromes. Myeloperoxidase-positive (MPO+) ANCA EGPA is an eosinophilic autoimmune disease sharing certain clinical features, and an HLA-DQ association, with MPO+ ANCA-associated vasculitides, while ANCA-negative EGPA may instead have a mucosal/barrier dysfunction origin[7]. Approximately 30-40% of patients are ANCA positive[4].

No single diagnostic criteria for EGPA has been universally agreed. One commonly used diagnostic approach for EGPA is the American College of Rheumatology (ACR) criteria[2] (Table 1). This was developed in 1990 and outlines 6 criteria which, if there is ≥4 criteria present, has a diagnostic sensitivity for EGPA of 85% and a specificity of 99.7%[2].

The diagnosis of EGPA can be very difficult to make as the disease often evolves very slowly over years. The features that trigger the diagnosis would be a persistently high PBE, severe persistent rhinosinusitis and lung infiltrates. These patients should have a bronchoscopy and lavage to exclude infection and also to send for a differential cell count (pulmonary eosinophils are normally <2% of the normal lavage cell count; >25% is definite pulmonary eosinophilia)[8].

The aim of this study is to determine the diagnostic ACR score[2] in a cohort of patients with EGPA, their treatment and clinical outcomes. Additionally, each patient's five factor score (FFS), which aims to evaluate prognosis at diagnosis, was calculated[6].

Methods

We performed a retrospective case review of individuals with a diagnosis of EGPA attending our respiratory clinic in Galway University Hospitals between January 2009 and September 2019. These patients were identified from electronic patient records using the search terms "Churg-Strauss" and "eosinophilic granulomatosis" and "granulomatosis with polyangiitis".

Information surrounding their diagnosis, ACR score, previous radiological and biochemical investigations, current treatment regime and clinical outcomes was obtained using Evolve, an electronic database.

Results

We identified 15 paients, 8 (53%) females. Table 2 outlines basic patient demographics and Figure 1 the ACR diagnostic criteria. One patient had a stroke with a full recovery. All patients had ≥4 criteria present and were initially commenced on prednisolone 40-60mg as monotherapy to induce remission. Two patients (13%) stayed in remission with prednisolone alone. 9 patients (60%) went into remission and remain so on a combination of prednisolone and methotrexate therapy (7.5 mg - 20mg daily). One patient developed mild anaphylaxis with the 1st dose of methotrexate and was switched to azathioprine and remains in remission in combination with prednisolone. One patient achieved remission with prednisolone and azathioprine combination and was then slowly weaned off prednislone. Two patients were not stable on prednisolone and methotrexate. One was switched to mepolizumab 300mg/4 weeks 10 months ago and since then has had excellent control. The other patient repatriated to Eastern Europe before starting mepolizumab. 10 patients had a five factor score of zero, with five of our patients scoring one at diagnosis. All were alive at 4.7 years (range 1.4 years - 8.7 years) follow-up.
For our cohort, 66% had an FFS score of 0 when calculated; only 5 patients had a score of 1 and no patient had a score of $\underline{>}$ 2.

Table 1: Criteria for the American College of Rheumatology classification of EGPA by Masi et al. [2]

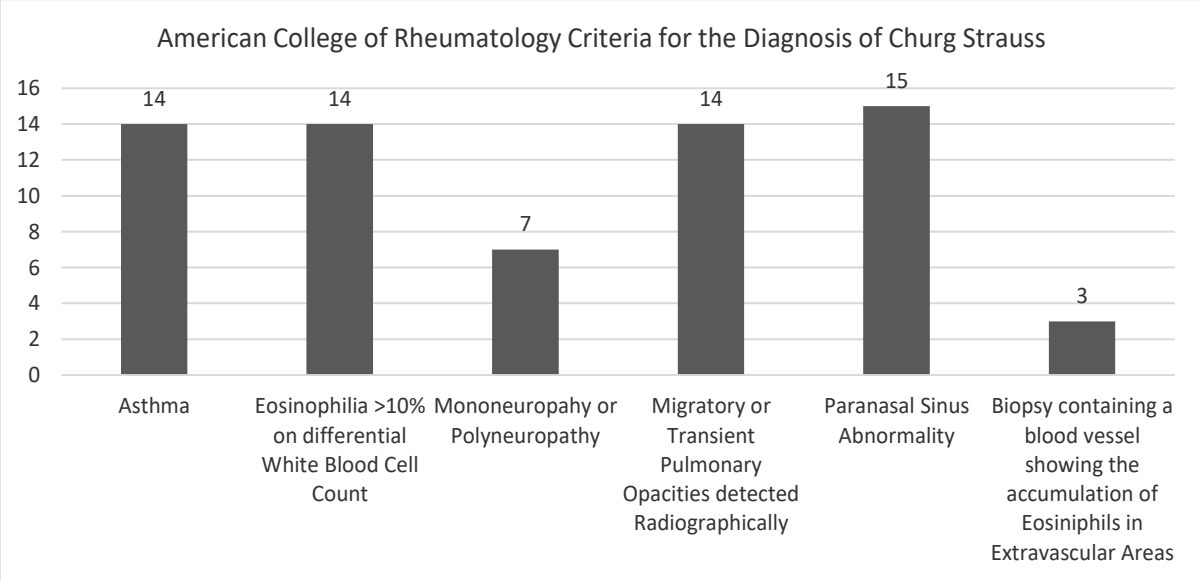
Criterion	Defintion
Asthma	History of wheezing or diffuse high pitched rales on expiration
History of allergy	Eosinophils > 10% on peripheral White Cell Count
Mono/polyneuropathy	Development of mononeuropathy, multiple mononeuropathy or polyneuropathy
Pulmonary infiltrates, non-fixed	Migratory of transitory pulmonary infiltrates on radiographs (not including fixed infiltrates)
Paranasal sinus abnormality	History of actue or chronic paranasal sinus pain or tenderness or radiographic opacification of the paranasal sinuses
Extra-vascular eosinophils	Biopsy including artery, arteriole or venule showing accumulation of eosinophils in extra-vascular areas

Table 2: Basic data of Patients with EGPA

Characteristic	N = 15
Sex, women, n	7
Age (year) ± SD	55.8 years ± 11.2
Age (year) at diagnosis ± SD	53 ± 12.2
Mean time in Clinic pre-diagnosis (year) ± SD	1.1 years ± 1.5
Race/ Ethnicity	14 Irish 1 Eastern European
Mean FEV1 ± SD	2.4 Litres ± 0.8
Mean FEV1/ FVC ratio ± SD	63.5% ± 9.3%
ANCA -positivity	4 (26.7%)

Abbreviation: SD, standard deviation; FEV1, forced expiratory volume in the first second; FVC, forced vital capacity; ANCA, anti-neutrophil cytoplasm antibodies.[1]

Figure 1: ACR criteria present in our population.



Discussion

All patients in this study satisfied the ACR criteria[2] for diagnosis of EGPA. The prevalence of EGPA in this single centre study suggests a national prevalence higher than that reported in the international literature. EGPA may take a long time to evolve, many organs may or may not be affected and a clear diagnosis may be difficult to achieve. Given its heterogenous presentation, and our lack of clear understanding of the interplay between the eosinophilic and vasculitic processes, significant controversy surrounding its diagnosis exists. Therefore, the ACR criteria developed as a diagnostic tool in 1990, are still widely employed which has a high estimated sensitivity (85%) and specificity (99.7%)[2]. In 1994, the Chapel Hill Consensus Conference (CHCC) proposed names and definitions of common vasculitides including EGPA[9]. Between 2009 and 2013 a EGPA European Consensus Task Force was established to produce recommendations for the definition, diagnosis, investigations and management of EGPA[10]. In 2012, the CHCC revised their 1994 definitions and EGPA was defined as a sub-group of ANCA-associated vasculitis although 60% of patients with EPGA are ANCA negative[4].

Most commonly, EGPA initially develops as asthma, of varying severity, and rhinosinusitis. This is known as the 'prodromal allergic phase'. Asthma is found in approximately 95% of individuals with EGPA, does not show typical variation with seasons, and may precede the systemic disease manifestations for many years or decades. Several of our patients, however, appeared to have an abbreviated allergic/ eosinophilic phase of only 2-3 months. Chronic rhinosinusitis and nasal polyposis affect approximately 50% of EGPA patients and commonly recurs following surgical intervention, if not on active systemic treatment.

The 'eosinophilic phase' follows the allergic phase and is characterised by the PBE with organ involvement, including lung (66%), heart and gastrointestinal involvement. Cardiac and gastrointestinal involvement can lead to significant morbidity and mortality. Cardiac involvement is a documented adverse prognostic factor and can lead to impaired systolic function from eosinophilic infiltration of the endocardium, pericardium or valvular dysfunction. Rarely patients may get a mural thrombus[11]. Gastrointestinal involvement most frequently affects the small bowel causing unexplained abdominal pain, and in rare cases upper gastrointestinal haemorrhage[5].

As per the ACR criteria, PBE >10% is considered significant[2]. The degree of eosinophilia correlates with disease activity and high blood values are suggestive of higher disease activity. The 2 main differential diagnoses are asthma and allergic bronchopulmonary aspergillosis (ABPA). In ABPA the PBE can be in the same range as EGPA and similar lung infiltrates (ground glass opacities and bronchiolitis) may be found, which is eosinophilic on lavage[12]. However, ABPA is partially an Immunoglobulin (Ig) E driven process with massive activation of IgE (typically > 1000 u/L[12]) and there are elevated aspergillus IgE and IgG antibodies. In advanced ABPA, high resolution computed tomographic imaging reveals a typical upper and middle lobe proximal bronchiectasis[12].

The vasculitic phase occurs with clinical manifestations directly related to small-vessel vasculitis. Constitutional symptoms such as fever, weight loss and fatigue are often the first symptoms[5].

Peripheral neuropathy, either mononeuropathy or polyneuropathy, is a cardinal feature of this phase and is seen in 70% of individuals[5], as the delicate vasa vasorum are very susceptible to ischaemic injury. This may present as asymmetric foot or wrist drop, sensory disturbance or neuropathic pain. The mononeuropathy may progress and become a symmetric or asymmetric polyneuropathy[5]. Renal vasculitis is seen in approximately one quarter of patients. Severity ranges from microscopic haematuria or proteinuria to rapidly progressive glomerulonephritis[13]. Vasculitic rashes can occur during this phase and primarily affects the lower limbs[13] as the inflamed small vessels rupture under the force of gravity.

EGPA usually responds to moderate doses of glucocorticoid therapy leading to remission. None of the patients in our cohort required high-dose intravenous methylprednisolone to induce remission. A study in the 1970's showed the 5-year-survival had increased to 62% when compared to the pre-corticosteroid era, prior to the 1950's, when EGPA was invariably fatal[14]. Patients with EGPA who are older at presentation or have evidence of cardiac, GI, CNS or renal involvement, or absence of ENT manifestations have a poorer prognosis and often benefit from initial adjunctive Cyclophosphamide therapy[19,20] although IL-5 inhibitors are often now used with good effect in this setting[15–18]

There is no current consensus regarding the remission-inducing and maintenance therapies in EGPA[5]. Combinations of glucocorticoids and immunosuppressant agents including methotrexate, azathioprine and cyclophosphamide are typically required in most cases to maintain remission[19]. In a randomised trial of Methotrexate versus Cyclophosphamide for remission maintenance, the efficacy in preventing relapses of the two study drugs was comparable, and both treatments led to improved outcomes and overall survival[20]. Interleukin 5 (IL-5) promotes the maturation, proliferation and survival of eosinophils in the bone marrow[21]. Up-regulation of IL-5 in EGPA[22] suggests a role for anti-IL 5 therapy in treatment. In the largest trial to date, the anti- IL-5 antibody, Mepolizumab, has demonstrated efficacy in remission-induction and maintenance in patients with refractory or relapsing EGPA[23]. Additionally, withdrawal of mepolizumab has led to flares of EGPA[24].

In a randomised trial of patients without poor prognostic factors, the 5-year survival rates was between 97% and 100%[25]. The Five-Factor Score (FFS), is a tool to assess prognosis of EGPA at diagnosis[6]. Four factors are significantly associated with higher 5-year mortality, namely age >65 years, cardiac symptoms, gastrointestinal involvement, and renal insufficiency (creatinine >150 mmol/L) whereas rhinosinusitis/nasal polyps are associated with a better prognosis[6]. Based on the FFS, 5-year mortality rates are 9% for those with a score of 0, 21% for those with a score of 1 and 40% for those with a score of $\geq$2[6].

Despite improved mortality rate with treatments, a significant degree of morbidity is associated with this condition. Disease-related organ damage including heart failure, chronic neuropathy and renal impairment, can hugely impact on quality of life. Immunosuppressive treatments can also contribute to morbidity as they are associated with side effects, an overall increased risk of severe infections and with the development of malignancies[5].

The prevalence of EGPA appears to be high in Ireland compared to the international literature. The ACR criteria appear to be a good guide for diagnosis in patients affected. In patients with asthma, persistent rhinosinusitis and PBE, with or without lung infiltrates one has to have index of suspicion for the disease. In our cohort, moderate doses of corticosteroid were adequate to induce remission and, in the majority, we have achieved stable remission employing methotrexate or an IL-5 inhibitor.

Declaration of Conflicts of Interest:
There are no conflicts of interest to declare.

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Peritonsillar Abscess at a Dedicated Otolaryngology Emergency Department

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Abstract

Aim

Peritonsillar abscess (PTA) is the most common suppurative complication of acute tonsillitis. It requires urgent specialist treatment due to the risk of progression to airway compromise. We aimed to review referral pathways to a dedicated otolaryngology emergency department (ORL-ED), identify causative organisms and discuss COVID-19 implications.

Methods

A retrospective review of patients presenting to the ORL-ED between January 2018 and December 2019 was undertaken. Data extracted included demographics, referral source, treatment, microbiology results and length of stay. Statistical analysis of seasonal variation of presentation and causative organisms employed Chi-Square and Fisher's Exact Test, respectively.

Results

There were 53 PTA presentations. 51 were admitted accounting for 44.3% (51/115) of ED admissions. The median patient age was 31 years (IQR 20-40yrs). GP referral accounted for 48/53 (90.6%). There was no statistically significant seasonality ($\chi 2=5.94$, $p=0.11$) in presentation. Microbiology samples were available for 44 patients. Streptococcus was identified in 19/44 (43.2%) patients. 85% (45/53) of patients received Co-amoxiclav.

Discussion

PTA is a perennial condition with diverse causative organisms. Antibiotic choice should reflect this. The majority of patients are referred from primary care, emphasising the role of the GP in initial diagnosis and the importance of clinical education in this regard.

Introduction

Peritonsillar abscess (PTA) is the most common suppurative complication of acute bacterial tonsillitis. Its annual incidence in Ireland is reported between 10-17/100,000 people[1,2]. The palatine tonsils are located in the lateral oropharynx in a fossa between the palatoglossus anteriorly and the palatopharyngeus posteriorly. A potential space exists between the tonsil's fibrous capsule and the superior constrictor muscle which forms part of the tonsil bed[3]. Spread of infection from the superior pole can result in a collection of pus in this space to form a peritonsillar abscess (or Quinsy)[4]. Needle aspiration and/or incision and drainage with antibiotics are the mainstay of treatment. This may be augmented with corticosteroids with some evidence to suggest that this provides quicker pain resolution[5,6].

Patients with PTA present with worsening sore throat, more pronounced on the affected side. Dysphagia and odynophagia may result in drooling of saliva. Ipsilateral referred otalgia can be experienced via the glossopharyngeal nerve (CNIX). On examination, trismus may be present due to inflammation of the pterygoid musculature. Inspection of the oropharynx reveals a unilateral erythematous soft palate swelling with medial displacement of the affected tonsil and deflection of the uvula to the contralateral side[4,7].

Direct spread of infection from PTA can lead to a wide range of complications including descending mediastinitis, necrotising fasciitis, retropharyngeal abscess and parapharyngeal abscess. Lemierre's Syndrome (LS), characterised by thrombophlebitis of the internal jugular vein and a typically anaerobic bacteraemia, can occur through haematogenous spread of infection. Further systemic sequelae of LS can result from sepsis and septic emboli. Although rare, LS in the setting of peritonsillar abscess tends to affect young adults (median age of 21 years in one review article[8]). The wide range of complications associated with PTA carries an increased mortality. The presentation of PTA and its complications often occur simultaneously[8]. However, early recognition of PTA is essential in order to safely and effectively manage any associated airway obstructive symptoms and prevent progression to respiratory arrest. Hence referral to a clinical setting staffed by clinicians trained to manage emergent airway obstruction is imperative when managing a patient presenting with PTA.

Evaluation of the microbiology of PTA reveals a wide variety of bacteria. Group A beta-haemolytic streptococcus (GAS) is often reported as the most commonly identified bacteria, yet it is only isolated in up to 40% of PTA samples[1,9]. Furthermore, a negative culture is obtained in up to a third of samples[9]. This leads some to question the value of routine analysis of PTA specimens[10,11] especially given the fact that patients are frequently much improved by the time results become available[2].

GAS is transmitted through person-to-person contact via infected upper respiratory tract droplets. Corollary to this, one may anticipate a reduced incidence of PTA secondary to the use of face-coverings and social distancing measures implemented in response to the current COVID-19 pandemic.

In this study, we reviewed the presentations of patients with a diagnosis of PTA to a dedicated Otolaryngology Emergency Department (ORL-ED) in Dublin City over a 2-year period. This ED sees approximately 10,000 patients per annum and operates both an emergency GP referral pathway and self-referral service. We aimed to evaluate how patients presented (i.e. GP or self-referral), identify causative organisms and examine the seasonal variation of the condition. In addition, we will discuss considerations of PTA in the time of COVID-19.

Methods

A retrospective chart review of all patients who presented with PTA to the Otolaryngology emergency department at the Royal Victoria Eye and Ear Hospital, Dublin between January 2018 and December 2019 was undertaken. Demographic data (age and gender), month of presentation, referral source (GP or self-referral), previous PTA, culture results, treatment and length of stay were recorded. Diagnosis of PTA was clinically based on the aspiration of pus. Aspiration samples were sent for culture and sensitivity at the discretion of the treating surgeon.

Analysis of seasonal variation of presentation and isolated pathogen employed Chi-square and Fisher's Exact tests respectively (IBM SPSS Statistics Version 26). Statistical significance was set at $p<0.05$. Seasons were defined as follows: Winter = Dec, Jan, Feb, Spring = Mar, Apr, May, Summer = Jun, Jul, Aug, and Autumn = Sept, Oct, Nov.

In line with the Data Protection Commission and Department of Health in Ireland regulations, ethical approval was not required, as this was a retrospective chart review.

Results

There were 115 admissions for all conditions via the emergency department in the study period. Peritonsillar abscess accounted for 51 (44.3%) of these admissions while a further two patients were treated for PTA, but declined admission. In 90% (48/53) of cases, patients first attended and were subsequently referred by their General Practitioner (GP) (Figure 1). There were 50 individual patients, with three suffering a second PTA during the study timeframe. The median age at presentation was 31yrs (IQR 20-40) with a male-to-female ratio of 1.65:1. The average length of stay per admission was 1.35 days (s.d. 0.62 days). Table 1 provides an overview of descriptive data on the cohort.

The majority of PTA presentations occurred in Autumn and Winter months (34/53, 64.1%). The lowest number of presentations occurred during the Summer months (8/53, 15.1%). However, the variation in the seasonal incidence of PTA was not statistically significant ($\chi^2=5.94$, $p=0.11$).

Figure 1: Referral from General Practitioner.

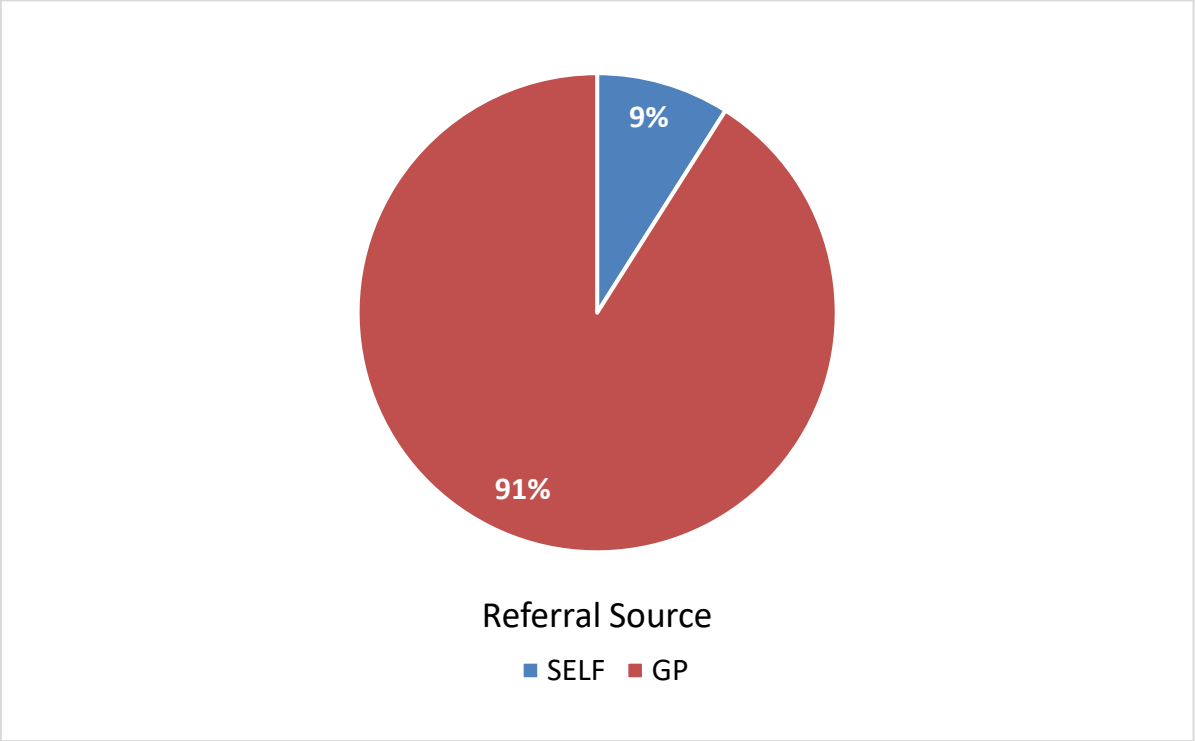

Table 1: Overview Descriptive Data	
Gender (N=53)	
Male	33 (62.3%)
Female	20 (37.7%)
Median Age (IQR)	31yrs (20-40)
Season (N=53)	
Winter	14 (26.4%)
Spring	11 (20.8%)
Summer	8 (15.1%)
Autumn	20 (37.7%)
GP Referral Letter	48 (90.6%)
Previous Quinsy	15 (28.3%)
Mean LOS (s.d.)	1.35 days (0.62)
Treatment	
Aspiration + I&D	51 (96.2%)
Aspiration	2 (3.8%)
IV Antibiotic	52 (98.1%)
Steroid Given	23 (43.4%)

All 53 cases of PTA were diagnosed on the basis of an aspiration of pus. On review, 44/53 had culture and sensitivity of pus samples performed. Table 2 highlights the breakdown of isolated bacteria from abscess samples. A positive culture was obtained in 35/44 (79.5%) samples. Streptococcus was the single isolate in 19/44 (43.2%) of aspirate samples of which 16 (36.4%) were Group A beta-haemolytic streptococcus (GAS). Isolation of GAS did not differ across seasons (p=0.437, Fisher's Exact Test). GAS was isolated 6 times in Autumn, five in Spring, three in Winter and twice in Summer. Anaerobes were cultured in 10 samples; 8 Mixed Anaerobes, one Bacteroides and one F. Necrophorum. The two polymicrobial samples consisted of S. Anginosus with H. Influenza or Bacteroides.

Table 2: Isolated Bacteria	
Sample Available	44
No Growth	9 (20.5%)
Streptococci	19 (43.2%)
Anaerobes	10 (22.7%)
Normal Flora	4 (9.1%)
Polymicrobial	2 (4.5%)
No Sample Available	9

The majority (51, 96.2%) of patients were treated with aspiration, followed by incision and drainage of the abscess. The other two patients were treated with aspiration alone. All patients received antibiotics. Intravenous (IV) antibiotics were administered to the 51 patients who were admitted. Of the patients who declined admission, one received a single dose of IV antibiotics followed by a course of oral antibiotics. The other patient declined IV and was prescribed a course of oral antibiotics. No (zero) patients suffered further complications of PTA.

Co-amoxiclav 1.2grams TDS was most commonly prescribed (45/53, 84.9%). In addition, 23 (43.4%) patients received at least one dose of IV corticosteroids, mainly in the form of dexamethasone.

Discussion

Peritonsillar abscess is a common emergency presentation to Otolaryngology services. Previous studies have shown that the yearly incidence in Ireland is between 10-17/100,000[1,2], while other jurisdictions have demonstrated a rate as high as 37/100,000[12] (by comparison, the incidence of appendicitis is estimated at 113/100,000 per year[13]). The common nature of PTA as an emergency presentation to an Otolaryngology service is also demonstrated in our review, as PTA was the most common cause for admission (44.3%) of hospital admissions from the dedicated Otolaryngology Emergency Department, in our institution.

The General Practitioner plays an integral role in the diagnosis and early management of PTA. Of the 53 PTA presentations over the 2-year period, ~ 90% of patients had first attended and subsequently been referred by their GP. This trend highlights the importance of clinical suspicion and accurate identification of patients presenting with symptoms and signs suggestive of PTA in order to ensure timely referral to a hospital setting capable of managing all aspects of emergency airway obstruction. Patients in our study group frequently presented with pain, odynophagia, muffled voice and trismus. Secondary otalgia may be experienced as a result of irritation of the glossopharyngeal nerve (CNIX). Clinical examination usually reveals a unilateral soft palate swelling, medial displacement of the affected tonsil with deviation of the uvula to the contralateral side. Patients frequently present with tonsillitis to a primary care setting [14,15]. It is therefore important for the GP to be able to accurately differentiate simple uncomplicated tonsillitis from PTA. GPs should be familiar with the aforementioned clinical signs of PTA and with the available local specialist services. Suspicion of PTA, failure to improve of oral antibiotics, airway concern, and/or trismus warrants immediate referral to the nearest appropriate centre. We emphasise the need to include this clinical upskilling as part of ORL specific continuous professional development, in the primary care setting [16].

The seasonal variation in the incidence of PTA has been widely reported, with many claiming to have identified a trend, however there is no consensus as to when PTA is most common[17]. Most (20/53) of our patients presented during the Autumn, with the fewest (8/53) presentations occurring during the summer months. However, the seasonal variation in our cohort was not statistically significant. While our study size is small (n=53), the absence of seasonality has been observed in larger samples (n=1,620)[17]. This highlights the need for general and emergency physicians to remain vigilant of PTA throughout the year.

A diverse range of bacteria were isolated from 44 pus samples in our study. In keeping with previously published data, GAS was most commonly isolated (16/44) in our study[1,9]. Regarding the seasonality of GAS-positive PTA, we found no difference throughout the year. This contrasts with Klug et al. (2014)[17] who did not identify an overall seasonal variation in incidence of PTA, but did find GAS-positive PTA was more prevalent in winter and spring compared to summer. However, this was a larger review of 1,620 cases which may account for the difference.

The value of routine microbiology assessment in PTA treatment is often questioned, as patients typically are much improved by the time results are available. Indeed, this was the case in our study. No patients had their antibiotic regimen altered following culture findings. Nevertheless, analysis of pus samples hold value in understanding pathogenesis of PTA and informing best treatment at a population level. It is best practice to send samples for culture and sensitivity analysis.

Considering PTA in the context of the current coronavirus (SARS-CoV-2) pandemic poses a number of questions. Firstly, it is not unreasonable to expect the incidence of PTA to fall as a consequence of widespread use of facial coverings and social distancing measures implemented to address aerosol transmission of COVID-19.

Early reports suggest an almost 50% decrease in PTA presentations at the beginning of the pandemic[18,19]. This may reflect a true reduction in incidence, but may be also result from patient reluctance to attend the hospital-setting during the pandemic. Further research is required in order to address these changing trends.

Secondly, inspection of the oral cavity and aspiration of PTA is associated with generation of an aerosol and spread of respiratory droplets. This poses a significant risk of coronavirus transmission should the patient be infected. All clinicians undertaking an oropharyngeal examination or aspiration of a PTA must wear appropriate personal protective equipment (PPE), which in this instance includes an FFP2 mask, goggles, long-sleeve waterproof gown, surgical gloves, and appropriate hand hygiene[20,21]. PTA specific guidelines were published at the outset of the pandemic by the Irish Otolaryngology Society. The recommendations were an initial 24 hour period of conservative management with hospital admission and administration of intravenous antibiotics. Incision and drainage of the PTA was only to be undertaken after 24 hours of conservative management, if the patient failed to improve clinically. However, it is again reasonable to practice primary surgical treatment (i.e. aspiration, and incision and drainage) especially given the widespread uptake of COVID-19 vaccination. Nevertheless, there still exists a risk of COVID-19 infection, in particular with new variants that may be more transmissible[22]. Clinicians should remain vigilant of this risk and we recommend the continued use of appropriate PPE as outlined above, including an FFP2 mask, when treating patients with PTA.

The specific limitations of this study include the sample size and retrospective data collection. The emergency department caters for patients ≥14 years old, therefore our data does not represent the occurrence of PTA in the paediatric population. Patients who were treated in our institution for PTA could have attended other institutions with subsequent episodes of PTA, we do not have this information. Similarly patients may have proceeded to scheduled tonsillectomy as definitive management for recurrent presentations of PTA at other institutions, we do not have this data.

In conclusion, the causative organisms in peritonsillar abscess are diverse. Antibiotic choice must accurately reflect this finding. The majority of patients in our review were referred from primary care, emphasising the role of the GP in the initial diagnosis. It is therefore imperative that ENT education and skills training is a core competency of the GP training program. The emergence of COVID-19 and its transmission through aerosol-generating procedures has necessitated a re-evaluation of the treatment approach to this common Otolaryngology emergency. Appropriate PPE should be worn when assessing and managing patients with PTA.

Declaration of Conflicts of Interest:
No conflicts of interest to declare.

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Existence of Transvaginal Ultrasound Protocols in Irish Hospitals

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Abstract

Aim

This survey aimed to explore the existence of local protocols relating to transvaginal ultrasound (TVUS) practice, TVUS training and competency assessments among obstetrics and gynaecology (OBGYN) departments in Irish hospitals

Methods

A cross-sectional survey was designed, and an online questionnaire was sent to 61 managers of OBGYN departments in Irish hospitals. The questionnaire involved 18 closed-ended questions with text sections to allow participants to write additional comments. Descriptive, statistical and content analyses were used.

Results

Of 61 managers, 38 responded to the survey (a 62% response rate). One third of the respondents (32%) confirmed an absence of written protocols for TVUS practice. While the majority (64%) confirmed an absence of in-house training programmes for TVUS practice, the remainder confirmed their reliance on training methods delivered by university programmes. Moreover, 56% of the respondents stated that competency assessment methods for TVUS did not exist within their departments.

Conclusion

A lack of TVUS systematic training programmes was identified within Irish OBGYN departments as well as with assessment methods for ensuring competency in TVUS practice. The study therefore highlighted the importance of developing standardised protocols for clinical TVUS training. Furthermore, should protocols explicitly developed for TVUS practice be warranted within departments that regularly perform TV scans.

Introduction

Ultrasound scanning is the primary imaging modality in obstetrics and gynaecology (OBGYN) that has become fundamental to clinical practice and requires a certain level of proficiency with maximum skills acquisition[1]. To provide best practice in ultrasound leading to high quality patient safety, healthcare practitioners are required to follow practice protocols that have been developed based on clinical guidelines[2,3]. As optimum training is the major factor that could contribute to best practice in ultrasound[1,3], international ultrasound societies recommend between 100 and 500 supervised scans as essential requirements before being considered competent to perform independent ultrasound scans in OBGYN[3-7]. Furthermore, assessing a practitioner's competency for optimum practice in ultrasound has been further highlighted in recent years as an essential step used to meet professional standards for delivering best healthcare to patients[8,9]. Currently there is discussions within Irish hospitals on how best to deliver maximum healthcare services to their patients in all clinical sectors. For example, the Irish Health Service Executive (HSE) 2020 vision and strategic plan highlighted the aim of achieving maximum patient care by assuring a competent workforce in healthcare[10]. This could include all hospital types that provide OBGYN services in the Irish healthcare system. As transvaginal ultrasound (TVUS) is a vital diagnostic tool within OBGYN services, ensuring competent practice by healthcare professionals is critical. Therefore, this survey aimed to explore the existence of local protocols relating to TVUS practice, TVUS ultrasound training and competency assessments among OBGYN departments of hospitals in the Republic of Ireland (ROI).

Methods

A cross-sectional survey was conducted in 2018 among the Irish hospitals which provide OBGYN services (n = 52) (i.e. 41 HSE hospitals of which 20 are university teaching hospitals, seven private hospitals and four private clinics). An email with a web-link to a self-administrated questionnaire, using SurveyMonkey, was sent to 61 managers of OBGYN departments (40 GYN departments involving two private clinics, 19 maternity units and two OB private clinics). The questionnaire consisted of 18 closed-ended questions with free text sections to allow respondents to provide additional information. The questions were devised to explore the departments' demographics, the existence of departmental protocols, availability of ultrasound training programmes, the presence of competency assessments, and views of respondents about the minimum supervised scans required for training.

Descriptive statistical analysis was used; and Pearson's Chi-Square and Fisher's exact tests were employed with results considered statistically significant if $p \leq 0.050$. These tests were employed to examine whether there was an association between the department type (GYN or OB) and the existence of each of TVUS protocols, training programmes, competency assessments and requirements to practice clinical TVUS. The textual comments of the respondents were analysed using simple content analysis[11]. Ethical approval was granted for this study with reference number: LS-E-18-52-Almestehi-Moran (University College Dublin).

Results

Of 61 managers, 38 responded, resulting in a 62% response rate (Table 1). However, two respondents did not complete the last eight questions leading to 36 respondents that completed the survey (completion rate: 95%). These two responses were included within the descriptive analysis of the first ten questions, but excluded when the statistical tests were employed. No significant association was found between the department type (GYN or OB) and the existence of each of TVUS protocols, training programmes, competency assessments and requirements to practice clinical TVUS (Table 2).

Table 1. Demographics of the departments included in this study.

Characteristics	Number of departments n=38 (100%)
Department	
▪ GYN	24 (63%)
▪ OB[a]	14 (37%)
Hospital Classifications	
▪ HSE hospitals[b]	34 (89%)
▪ Private hospital	2 (5%)
▪ Private clinic	2 (5%)
Hospital Type	
▪ General and maternity hospital	20 (53%)
▪ General hospital	14 (37%)
▪ Maternity only hospital	4 (10%)
GYN ultrasound scans per month	
▪ No scans	5 (13%)
▪ < 100 scans	11 (29%)
▪ 100-200 scans	20 (53%)
▪ > 200 scans[c]	2 (5%)
OB ultrasound scans per month	
▪ No scans	23 (61%)
▪ < 500 scans	7* (18%)
▪ 500- 1000 scans	5 (13%)
▪ > 1000 scans[d]	3 (8%)
TV scans per month	
▪ No scans	2 (5%)
▪ < 50 scans	10 (26%)
▪ 50-100 scans	17 (45%)
▪ 101-200 scans	4 (11%)
▪ 201-300 scans	3 (8%)
▪ > 300 scans[e]	2 (5%)

Table 1. (Continued) Demographics of the departments included in this study.

Characteristics	Number of departments n=38 (100%)
TV scans per month for departments that demonstrated lack of TVUS protocols	n = 10 (100%)**
▪ < 50 scans	2 (26%)
▪ 50-100 scans	5 (45%)
▪ 101-200 scans	2 (11%)
▪ 201-300 scans	1 (8%)
Professions who perform TVUS scans in the departments	n = 380 (100%)
	173 (45%)
▪ Medical doctors	154 (41%)
▪ Radiographers	53 (14%)
▪ Midwives	

*GYN: gynaecology; OB: obstetrics; HSE: Health Service Executive; TV: transvaginal; TVUS: transvaginal ultrasound; [a] Including 12 maternity units and two private clinic; [b] Including 20 departments of University Teaching hospitals; [c] Up to 350 scans; [d] Up to 3,500 scans; [e] Up to 500 scans; *Including one GYN department of 350 GYN scans and 70 OB scans performed per month; **Of 38 departments, 25 departments had TVUS protocols, two departments do not perform TV scans, ten departments had no TVUS protocols and one department-respondent missed the relevant question.*

Table 2. Existence of protocols, training programmes, assessment methods and qualification requirements for TVUS practice in OBGYN departments of Irish hospitals

Question	Answer	GYN	OB	Total	P value
Do you have a written protocol specifically for TVUS?	Yes	18	7**	25 (68%)	0.15
	No	5	7	12 (32%)	
	Total	23	14	37 (100%)	
Do you have a specific training programme in your hospital for staff training in OBGYN/TVUS scanning?	Yes	7	6*	13 (36%)	0.50
	No	15	8*	23 (64%)	
	Total	22	14	36 (100%)	
Do you follow specific steps such as using a competency checklist tool, in relation to ensure that trainees are competent in TVUS?	Yes	7	9*	16 (44%)	0.056
	No	15	5*	20 (56%)	
	Total	22	15	36 (100%)	
Does your department require that practitioners have a specific qualification to practice TVUS?	Yes	14	12**	26 (72%)	0.25
	No	8	2	10 (28%)	
	Total	22	14	36 (100%)	

*The table shows the association between the department characteristics (OB or GYN) and respondents' answers. GYN: gynaecology; OB: obstetrics; TVUS: transvaginal ultrasound; *Including one private clinic; **Including two private clinics.*

Protocols

Thirty-five respondents (92%) confirmed that departmental ultrasound protocols existed and were developed based on various guidelines (Table 3). Twenty-five respondents (68%) confirmed that the department has specific written protocols for TVUS practice (Table2). However, 32% of the departments confirmed the absence of TVUS protocols (Table 2); numbers of TVUS scans performed within these departments are displayed in Table 1.

Training

Twenty-three departments (64 %) have no specific training programme (Table 2). However, out of 13 respondents who confirmed the existence of a training programme, eight reported that the training occurs within a university graduate programme and three stated that the training is performed under supervision without indicating a specific programme. Two respondents did not comment.

Supervised scans

Nearly half of the respondents referred to 50 supervised scans or less as minimum requirements for TVUS ultrasound training (Table 4).

Competency

Sixteen respondents (44%) confirmed that they follow specific steps in assessing trainees' skills (Table 2). Based on the content analysis, eight managers (22%) evaluate the skills of their trainees through certificate programme assessments, four (11%) through a competency checklist and another four (11%) through ensuring that the trainees follow the departmental protocols.

Qualifications

Twenty-six respondents (72%) confirmed that their departments require qualifications for TVUS (Table 2). Based on the content analysis, 21 respondents reported that a university certificate in ultrasound (Masters, MSc, Higher Diploma or Graduate certificate) is essential for TVUS practice.

Table 3. Frequency of Guidelines selected by the 38 respondents.

Guideline	Frequency of selection	Percentage of the total responding departments (n = 38)
BMUS	20	52.6 %
IIRRT	11	28.9 %
RCR	7	18.4 %
ISUOG	6	15.8 %
AIUM	4	10.5 %
ASUM	1	2.6 %
EFSUMB	1	2.6%
No guidelines	7 (4 follow local protocols & 3 do not have protocols)*	18.4 %

**Based on the respondents' comments*

BMUS: The British Medical Ultrasound Society; IIRRT: The Irish Institute of Radiography and Radiation Therapy; RCR: The Royal College of Radiologists; ISUOG: The International Society of Ultrasound in Obstetrics and Gynecology; AIUM: American Institute of Ultrasound in Medicine; ASUM: Australasian Society for Ultrasound in Medicine; EFSUMB: European Federation of Societies for Ultrasound in Medicine and Biology.

Table 4. Views of the respondents on the number of TV-OB ultrasound scans required under supervision.

Supervised scans (GYN)	GYN n (%)	OB n (%)
Not applicable	1 (2.8%)	16 (44.4%)
At least 10 supervised scans	4 (11.1%)	2 (5.6%)
At least 25 supervised scans	3 (8.3%)	1 (2.8%)
At least 50 supervised scans	12 (33.3%)	6 (16.7%)
At least 100 supervised scans	10 (27.8%)	9 (25%)
At least 200 supervised scans	3 (8.3%)	1 (2.8%)
At least 500 supervised scans	0 (0%)	1 (2.8%)
Depends on individual*	3	0 (0%)
Total	36 (100%)	36 (100%)

**Based on the respondents' comments*

Discussion

Responses were obtained from OBGYN departmental managers in Irish hospitals and the majority of respondents were from HSE hospitals and University Teaching hospitals. The response rate was 62%, which gave an acceptable validity to the survey results. However, as two respondents skipped the last eight questions of the survey, the response rate to these questions reduced to 59%. Both rates are comparable, and slightly higher than the average response rates (57.5%) in general healthcare professional surveys[12]. The number of departments approached in this survey is greater than the number of units contacted in previous, relatively, similar surveys as they included 19[13] and 21[14] maternity units in Ireland. To the researcher's knowledge, the current study is the first survey which provides information about current trends for clinical training and practice in OBGYN-TV ultrasound in ROI hospitals.

The existence of scanning protocols for ultrasound practice in OBGYN was confirmed within 92% of the departments. These were developed based on different guidelines (Table 3). This result is promising as the value of employing a practice protocol relies on meeting consistency between international guidelines and organisational agreement to deliver appropriate healthcare services[15,16]. However, regarding the existence of protocols that are specifically written for TVUS practice, nearly one third continued of the responses (32%) confirmed that such protocols are not available in their departments although TV scans are regularly performed in these departments (Table 1). Interestingly, the literature highlighted that when an ultrasound scan is driven by a specific protocol, the scanning time decreases, promoting efficient practice and thus improving patient-care quality[17]. However, maintaining practice efficiency with optimum care quality is becoming more challenging with the continued increase of clinical workloads in diagnostic imaging[18]. Clinical workloads have increased even after reducing out-patient service during the current outbreak of COVID-19 − a recent survey has reported that 46% of radiography departments in Ireland have experienced an increased time per examination due to infection control needs[19]. This issue could be further complicated when the examination is invasive such as TVUS scanning, and an absence of practice protocols could potentially reduce service quality. The HSE operational plan of 2018 emphasised the necessity to provide high quality service and recommended, in times of high service demands, the employment of available resources with maximum efficiency[20]. Therefore, maximising the efficiency of TVUS practice could be attained by following protocols that are written specifically for TVUS. Availability of TVUS protocols could ensure the delivery of high-quality standards to patients especially within busy departments.

The majority of respondents (64%), including 15 GYN departments, seven maternity units and one private OB clinic, confirmed that no training programme is available for OBGYN or TV ultrasound. Even of those who confirmed the availability of such a programme (36%), their comments showed that no systematic programme was available within the departments but that training was relying on either university programmes or direct supervision. It cannot be argued that practitioners within these departments were not receiving adequate training on performing ultrasound scans; however, the results could show a shortage of clear strategies in which practitioners could be trained.

According to the Education Committee of the International Society of Ultrasound in Obstetrics and Gynaecology (ISUOG), systematic training in ultrasound can endorse an efficient learning process, and therefore can reflect positively on the competency of the practitioner and the accuracy of ultrasound scanning[3]. Furthermore, the Irish HSE report of the acute hospital operational plan has stated that one of the priorities of HSE hospital groups is to run systematic in-house training for clinical staff which could contribute to meeting the aim of developing the national workforce that delivers optimal point of care[21]. Achieving this aim may require time; however, drawing the attention of the stakeholders to the current findings could facilitate the inclusion of ultrasound training within future plans. Significantly, it has been shown that receiving insufficient ultrasound training could negatively affect the outcome of the service as ultrasound scans are highly operator dependent and require adequate time for training[22].

In this survey, nearly half of the respondents suggested that 50 supervised scans or even less would be the minimum training for GYN and OB ultrasound. This number of supervised scans is lower than the minimum requirements recommended for OBGYN ultrasound training by international guidelines. Various guidelines in ultrasound practice provide recommendations in the amount of training required by a healthcare practitioner before starting independent ultrasound practice. For example, the ISUOG recommends supervised training involving at least 100 obstetric scans and 100 gynaecological scans[3]. The Royal College of Radiologists (RCR) recommends that the trainee must perform at least 30 sessions of ultrasound in obstetrics and gynaecology within six months, each session involving three to eight supervised scans as a minimum[5]. The European Federation of Societies for Ultrasound in Medicine and Biology (EFSUMB) recommends a minimum of 300 scans in gynaecology and a minimum of 500 scans in obstetrics and all under supervision[4]. The American Institute of Ultrasound In Medicine (AUIM) recommends that at least 300 scans must be completed under supervision for each of obstetrics and gynaecology[6,7]. As a considerable number of responses in this survey have not met the minimum training requirements, standardising a local protocol for training is a crucial priority, and HSE has highlighted the importance of starting to develop national protocols using the framework for developing policies, procedures, protocols and guidelines[23].

The survey results provide insights into some elements that could be considered for a standardised Irish training protocol in OBGYN and TVUS ultrasound. The results show that the highest number of healthcare practitioners who perform TVUS among the 38 departments were medical doctors (45%), followed by radiographers (41%) and midwives (14%). Based on the respondents' comments, radiographers and midwives are usually required to complete a degree or certificate qualification in ultrasound (Masters, Higher Diploma, Graduate Certificate), in addition to clinical training to perform OBGYN and TV ultrasound scanning. However, doctors are not required to hold the same qualification, i.e. a postgraduate certificate in ultrasound. It is common practice that competency in ultrasound is assessed within certification programmes, leaving those who are not taking the programmes to train without assessments[1].

Although the international guidelines provide the required amount for minimum training to reach a competent level in ultrasound practice, recent literature has highlighted the importance of employing valid and reliable competency assessments, especially for those who rely only on clinical training[8.9.24]. Developing skills in ultrasound practice could vary from one trainee to another, depending on the trainee's learning aptitudes and on the cases that the trainee scans[25]. Therefore, assessing ultrasound skills using a competency checklist tool could facilitate improvements in the quality of training, enhancing trainee performance and ensuring patient safety[9]. In this survey, less than half of the departments (44%) assess the competency of trainees in performing TV scanning, the majority relying on assessments within a graduate programme and only four departments employing a checklist for assessment. These results could drive Irish protocols to include assessment methods that contribute to ensuring a competent level of ultrasound practice among medical trainees.

In conclusion, the findings highlighted the importance of developing standardised protocols for TVUS training. A lack of training programmes was identified among the departments as well as of assessment methods for ensuring competency in ultrasound practice. The existence of practice protocols that are developed based on international guidelines was recognised; however, the presence of protocols designed specifically for both transvaginal ultrasound practice and training should be warranted.

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The authors declare that they have no conflicts of interest.

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Emergency General Surgery during the COVID-19 Pandemic

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Abstract

Aims

The global COVID-19 pandemic has impacted upon the delivery of surgical services worldwide. This study investigated its impact on emergency general and vascular surgical activity at a tertiary level hospital in the mid-west of Ireland.

Methods

Data was retrospectively sourced from the Hospital-In-Patient Enquiry (HIPE) national data collection service from March 1st through May 31st of 2019 and 2020.

Results

Records of 1303 patients admitted acutely to general and vascular surgical on-call teams during the two study periods were reviewed. There was no significant difference in the weekly admission rate between 2019 and 2020 (mean 42.15 vs. 49.92). The overall procedural intervention rate decreased from 47.44% [278] in 2019 to 32.01% (209) over the same period in 2020 (OR 0.52, p <0.0001), largely due to a significant decrease in the number of patients undergoing operative intervention (37.88% [222] vs 22.66% [148]). There was a significant decrease in the proportion of patients undergoing surgery for appendicitis (94.87% [112] vs 60.58% [64]). Length of stay for patients admitted in 2020 was shorter than for those in 2019 (mean 7.2 vs 15.5 days).

Conclusion

In contrast to recently published data, we found no decrease in acute surgical presentations, though there was a significant reduction in acute procedural activity.

Introduction

The global COVID-19 pandemic has impacted upon the delivery of surgical services worldwide. While the profound effect of pandemic precautions on elective surgery is well described[1], the relationship between such measures and emergency surgery is relatively unexplored. In an effort to contain virus spread, the Irish government introduced national lockdown restrictions beginning on March 12th with school closures and restrictions on large gatherings. On the 24th of March, almost all businesses were closed, and on March 27th all non-essential travel was restricted. Since then, the country has been subject to various levels of restrictions regarding travel, social interaction and economic activity, with a significant impact on daily life.

Medical professionals both in Ireland and elsewhere have raised concerns that fear of contracting COVID-19 in hospital and the fear of overburdening healthcare systems as a result of messaging from public health bodies may be discouraging people from seeking healthcare for non-COVID illnesses[2-4]. Emergency department presentations decreased by 29% in March 2020 compared to March 2019 in the United Kingdom[5]. Emergency departments in Italy noted a 50% reduction in presentations from February 21st to April 3rd in 2020 compared with 2019 data[6], a 54% reduction in presentations with abdominal pain.

A 73-88% decrease in attendances was noted across Italian pediatric emergency departments in March 2020[7]. In Ireland, Temple Street Children's University Hospital recorded a 51.45% decrease in overall attendances in March and April of 2020 vs 2018 and 2019 data, including a 27.3% reduction in 'surgical' presentations[8]. For international comparison, there was a significant decrease in acute surgical presentations to an Italian emergency department during the height of the pandemic[9].

Furthermore, concerns regarding limited operating theatre capacity, ventilator capacity, personal protective equipment availability and the risk of viral dissemination led to the introduction of significant practice changes in several jurisdictions[10]. Non-operative management was emphasized where possible, and laparoscopy was initially discouraged in most circumstances[10].

This study sought to explore whether the COVID-19 pandemic has resulted in reduced numbers of emergency surgical admissions to an academic teaching hospital in the mid-West of Ireland. Primary outcomes were the number of emergency surgical admissions from March 1st through May 31st, 2020 compared to the same period in 2019. Secondary outcomes included the rate of change for each diagnosis, the rate of operative intervention, the rate of diagnosis-specific operative intervention, and length of stay.

Methods

This retrospective observational cohort study is reported according to the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement. This study was undertaken in an academic tertiary referral hospital admitting acute adult and pediatric surgical patients in the Mid-West of Ireland.

Data was retrospectively sourced from the Hospital-In-Patient Enquiry (HIPE) national data collection of health and social care services. The HIPE database is coded by trained personnel according to the Australian Classification of Health Interventions (8th edition) and the International Classification of Diseases, 10th revision, Australian Modification (2013). Data was sourced on all non-elective inpatient episodes for patients admitted under the care of a consultant general or vascular surgeon from March 1st through May 30th of 2019 and 2020. HIPE data was manually cross-referenced with emergency theatre and endoscopy suite logs as well as IR procedure logs. Discrepancies and additional cases not captured by HIPE data for emergent general and vascular surgical admissions were added manually.

Data was fully anonymized prior to analysis. Variables included age, gender, admission date, primary diagnosis, primary procedure code applicable, and discharge date. Statistical analysis was performed using GraphPad Prism software (GraphPad Prism version 8.4.2 (464) for MacOS, GraphPad Software, La Jolla California USA, www.graphpad.com). Normally distributed data were analyzed by comparing means using non-paired t-tests. Non-normally distributed data were analyzed using the Mann-Whitney *U* test. Categorical variables were compared using the $\chi 2$ test. Data is presented as mean (range) unless otherwise specified. A p-value of <0.05 was determined to be statistically significant. This study is adequately powered to detect a 10% difference in weekly admission rates with an α of 0.05 and power of 80%.

Results

A total of 694 patients were admitted from March 1st – May 31st in 2020 compared to 609 patients over the same period in 2019. Of these, 41 patients in the 2020 cohort and 23 patients in the 2019 cohort were transferred to the care of other services (e.g. urology, gynaecology, etc.) shortly after admission and were not included, leaving 653 and 586 patients respectively for analysis. Baseline demographics are outline in table 1 below.

General Surgery	**2019**	**2020**	***p*-value**
Total (N)	515	601	
Female (%)	238 (46.2%)	304 (50.5%)	0.1498
Mean age (range)	44 (0.2 - 93)	44 (0.1 - 100.9)	0.82
Mean length of stay (range)	6.7 (1 - 86)	4.4 (1-49)	**<0.0001**
Vascular	**2019**	**2020**	***P*-value**
Total	71	52	
Female	19 (26.76%)	14 (26.92%)	> 0.99
Mean age (range)	68 (29.5 - 98.9)	68 (15.1 - 93.4)	0.79
Mean length of stay (range)	15.5 (1-64)	7.2 (1-32)	**0.0003**
Totals	**586**	**653**	

Table 1: Baseline demographics and length of stay for all patients admitted emergently under General *and Vascular surgery, March 1st – May 31st, 2019 and 2020.*

There was no significant difference in the total weekly general and vascular admission rate for between the 2019 and 2020 cohorts (mean 42.15 vs. 49.92, p = 0.18, figure 1). There was no significant difference in mean weekly emergency general surgery admissions (36.69 vs 45.92, p = 0.0844), or mean emergency vascular admissions (4 vs 5.46, p=0.09).

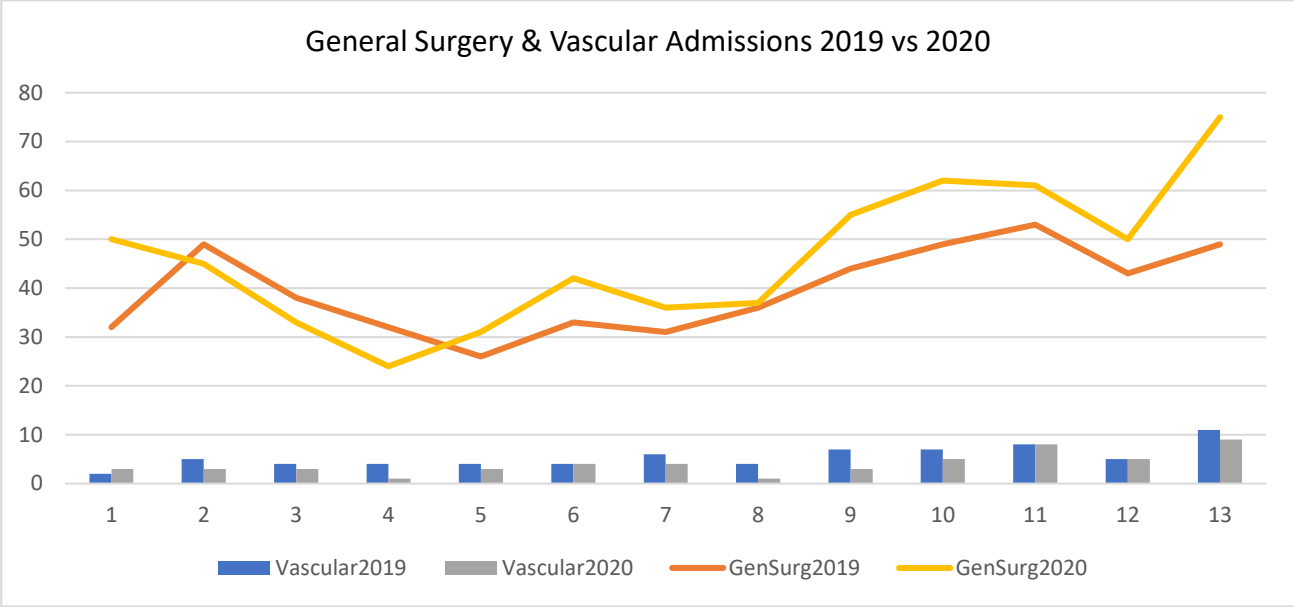

Figure 1: *Trends in general and vascular surgery admissions March – May 2019 and 2020.*

Table 2 outlines the relative change in overall admission numbers, and incidence rates for the ten most common discharge diagnosis codes.

Diagnosis	**Total Admissions 2019 (%)**	**Mean Weekly Admission Rate 2019**	**Total Admissions 2020 (%)**	**Mean Weekly Admission Rate 2020**	**Difference in means 2020 vs 2019 (95% CI)**	**p**
Appendicitis	117 (20.0%)	9.00	105 (16.1%)	8.08	-0.92 (-4.05 - 2.21)	0.55
Unspecified abdominal pain	66 (11.3%)	5.08	81 (12.4%)	6.23	+1.16 (-1.27 - 3.60)	0.33
Cholecystitis	33 (5.6%)	2.54	34 (5.2%)	2.62	-0.01 (-1.17 - 1.15)	0.99
Head Injury	25 (4.3%)	1.92	68 (10.4%)	5.23	**+2.97 (1.06 - 4.88)**	**0.004**
Diverticulitis	33 (5.6%)	2.54	21 (3.2%)	1.62	-0.91 (-2.06 - 0.25)	0.12
Acute Pancreatitis	18 (3.1%)	1.38	28 (4.3%)	2.15	+0.75 (-0.25 - 1.75)	0.5
Diabetic foot ulcer	25 (4.3%)	1.92	16 (2.5%)	1.23	-0.69 (-1.58 - 0.19)	0.12
GI bleeding	27 (4.6%)	2.08	16 (2.5%)	1.23	-0.77 (-1.56 - 0.02)	0.055
Intestinal Obstruction	31 (5.3%)	2.38	14 (2.1%)	1.08	**-1.29 (-2.44 - 0.14)**	**0.03**
Gastritis	8 (1.4%)	0.62	26 (4.0%)	2.00	**+1.39 (0.46 - 2.31)**	**0.005**

Table 2*: Mean weekly admission rates for the ten most common discharge diagnoses, March – May 2019 vs 2020.*

A significant increase in head injury admissions was observed from March – May of 2020 compared to 2019 (mean weekly admission rate 5.23 vs 1.92, p=0.0004). Further analysis of these cases revealed an increase in head injuries secondary to falls (mean weekly admission rate 1.23 vs 3.00, p=0.338) and road traffic accidents, though neither increase was statistically significant (mean weekly admission rate 0.08 vs 0.38, p = 0.07). There was, however, a statistically significant increase in head injuries secondary to alleged assault (mean weekly admission rate 0.08 vs 1.077, p = 0.003) and a 4-fold increase in head injuries secondary to road traffic accidents, though this increase was not statistically significant (mean weekly admission rate 0.08 (2019) vs 0.38 (2020), p = 0.07, see supplementary data). A significant decrease in weekly admissions for intestinal obstruction was observed in 2020 (mean 1.08 vs 2.38, p = 0.03), while weekly admissions with a diagnosis of gastritis increased (mean 2 vs 0.62, p =0.005).

The overall procedural intervention rate decreased from 47.44% (278/586) March – May 2019 to 32.01% (209/653) over the same period in 2020 (OR 0.52, 95% CI 0.41 – 0.65, p <0.0001). While there was no significant difference in patients undergoing endoscopy (7.17% [42/586] vs 7.35% [48/653], OR 1.03, 95% CI 0.67 – 1.56, p 0.91) or interventional radiology (IR) procedures (3.75% [22/586] vs 2.45% [16/653] OR 0.64, 95% CI 0.33 – 1.25, p = 0.19), there was a significant decrease in the number of patients undergoing operative intervention (37.88% [222/586] vs 22.66%, [148/653] OR 0.48, 95% CI 0.38 – 0.61, p <0.0001). Table 3 shows the operative/endoscopic/IR procedural rates for the ten most common discharge diagnoses between March and May in 2019 compared to the same period in 2020.

There was a significant decrease in the proportion of patients undergoing surgery for appendicitis (94.87% [112/117] vs 60.58% [64/104] OR 0.08, 95% CI 0.04 – 0.19, p <0.0001) while there was no significant difference in intervention rates for the remainder of the 10 most frequent discharge diagnoses. The overall length of stay for patients admitted from March - May of 2020 was shorter than for those in the 2019 cohort (mean 7.2 days vs 15.5 days, p=0.0003).

A total of 294 (48.8%) admissions underwent PCR testing for SARS-CoV-2. Of these, 7 were positive (positivity rate 2.44%). Of these positive patients, four underwent procedural intervention; three underwent surgical procedures (incision and drainage of abscess, temporary ileostomy and repair of an obstructed/strangulated hernia) while one patient underwent emergent biliary stenting in the endoscopy suite.

	2019					2020						
	Surgery	IR	Endoscopy	Total Procedural Intervention	No Intervention	Surgery	IR	Endoscopy	Total Procedural Intervention	No Intervention	Procedural intervention 2019 vs 2020, Odds Ratio (95% CI)	P
Appendicitis	111	1	0	112	5	63	1	0	64	40	**14 (5.43 - 33.84)**	**<0.0001**
Unspecified Abdominal Pain	0	0	3	3	63	1	0	6	7	76	0.52 (0.14 - 1.98)	0.5131
Cholecystitis	4	1	4	9	24	0	1	2	3	30	3.75 (1.00 - 13.73)	0.11
Head Injury	2	0	0	2	24	2	0	0	2	66	2.75 (0.41 - 18.00)	0.31
Diverticulitis	5	1	2	8	26	2	1	3	6	16	0.82 (0.25 - 2.79)	0.76
Acute Pancreatitis	0	2	2	4	14	0	1	2	3	25	2.38 (0.56 - 10.30)	0.41
Diabetic Foot Ulcer	16	3	0	19	7	11	1	0	12	4	0.91 (0.25 - 3.45)	>0.9999
GI Bleeding	2	2	10	14	14	2	0	8	10	6	0.60 (-18 - 1.96)	0.53
Intestinal Obstruction	14	1	2	17	15	4	2	1	7	8	1.29 (0.39 - 4.53)	0.76
Gastritis	0	0	1	1	7	0	0	5	5	21	0.60 (0.05 - 4.36)	>0.9999

Table 3: Surgical, IR and endoscopic intervention rates for the ten most common discharge diagnoses.

Discussion

This is the largest study to date of the impact of the initial stage of the Covid-19 pandemic on emergency general and vascular surgical activity in an Irish setting. There are several notable findings. Firstly, we demonstrated no significant decrease in the rate of admissions for emergency general/vascular surgery from March through May of 2020 as compared to the same period in 2019, despite stringent lockdown measures imposed during this period. This stands in contrast to several other recent publications from Irish surgical units showing a significant decrease in emergency admissions across various specialties[11-13]. This suggests that variations in presentation pattern may not be predictable based on the introduction of lockdown restrictions alone, and that observed decreases in acute presentations elsewhere may not be replicated at a local level, across various subspecialties or populations. The implication for work force planning of this finding should be noted, as reassigning surgical non-consultant hospital doctors to other services (for example, acute medical teams) to deal with future surges may leave acute surgical services short-staffed to deal with high emergent admission volumes.

Secondly, in keeping with guidelines issued by governing bodies around that time, we observed a statistically significant reduction in overall procedural intervention rate 2020. This was mainly driven by a decrease in operative interventions, with IR and endoscopic procedures carried out on emergent general surgical admissions largely similar. The only significantly different diagnosis-specific intervention rate was observed for patients with acute appendicitis, with a significant increase in non-operative management; we have previously published our appendicitis experience elsewhere[14]. While the impact of the current global pandemic on elective surgery has been well explored[1], further studies will be required to analyze the impact of non-operative management of emergent surgical conditions on future presentations. An increase in recurrent presentations for surgical conditions such as appendicitis will need to be factored into recovery plans for delivery of surgical care.

There was a significant increase in the number of head injuries admitted to the general surgical teams. A substantial increase in falls and assault accounts for most of this overall increase. Examining the Irish literature on this topic, Fahy et al noted a 21% overall decrease in radiographically proven trauma[13]. Interestingly they demonstrated an increase in falls from greater than 2 metres (specifically ladders) during lockdown, and an overall 17% increase in domestic activity trauma, which would be in keeping with our findings. By contrast, O'Connell et al demonstrated a 70% reduction in head injury admission in their cohort from a similar period[11]. It is important to note that our data concerns patients admitted with head injury without other major skeletal trauma and does not address orthopedic admissions. Additionally, head trauma needing urgent neurosurgical intervention would usually be transferred immediately after appropriate workup and stabilization in the emergency department, and thus would likely not be captured here.

There was also a significant increase in the number of patients admitted with gastritis during this time period. We speculate that this may have been secondary to increased domestic alcohol consumption which has been reported during the initial stages of the pandemic[15, 16], though our study did not record data related to alcohol intake. We also found a significant decrease in intestinal obstructions, in contrast with other studies which identified reduced physical activity and and dietary changes during the lockdown period as potential contributors to increased intestinal obstruction rates[17].

Finally, we demonstrated a significant reduction in length of hospital stay during our study timeframe. A considerable reconfiguration of hospital infrastructure occurred during this period, most notably with the creation of a temporary 'field hospital' where patients with low acuity presentations were transferred in order to maintain main site capacity. This, coupled with the significant reduction in operative intervention, helps to explain the shorter length of stay observed.

This study encompasses a detailed review of the largest acute surgical cohort published to date in Ireland during the Covid-19 era. As such, we feel that it reflects the 'real-world' acute general and vascular surgical experience. Our 3-month study period straddles the beginning of the COVID-era restrictions and details the significant impact on urgent admission and procedural activity in a university hospital.

This is a retrospective study and is therefore subject to the usual biases of such studies. We focused on emergent admissions to the general and vascular services only, as presentations to our acute surgical assessment unit (ASAU) that deemed suitable for discharge home by the ASAU team were not brought to the attention of the on-call team. Capturing this 'presentations' data accurately is difficult, and thus we are unable to comment on overall presentation rates. This data pertains to general and vascular surgery admissions in a tertiary-level academic hospital in the mid-West of Ireland which is the central hub of a 4-hospital referral network for acute surgical conditions and thus the external validity of our findings may not be generalizable to other settings or populations.

In conclusion, that trends in emergent general/vascular surgical admissions and procedural activity during pandemic conditions are likely not predictable or generalizable across specialties or populations. Future bed capacity and work force planning during times of crisis should consider a possible continuation or increase in emergent surgical presentations.

Ethical Approval:
Local IRB ethical approval was obtained prior to commencement of the study.

Declaration of Conflicts of Interest:
The authors declare that there is no conflict of interest.

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The Development and Rollout of Medical Grab Bags for Resuscitating Critically Unwell Patients with Suspected COVID-19

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Abstract

Aim

To optimise preparation for and reduce the stress of managing critically ill patients with suspected COVID-19 in the Emergency Department at Cork University Hospital using locally designed medical grab bags.

Methods

Grab bags were designed by Emergency Department staff to contain equipment necessary for resuscitation of unstable patients requiring isolation. Content was iteratively refined to reflect current clinical guidance. 12 months post rollout, staff were surveyed on their experience of the bags using a 5-point Likert-type scale. Agreement was defined as at least 70% of respondents rating an indicator as "agree" or "strongly agree". Data were analysed using SPSS.

Results

Eighty-five grab bags were produced with seventy-four used in twelve months. Twenty-six staff members replied to the survey. Sixteen (61.53%) used the bags more than five times, while one respondent (3.84%) had never used the bags. Agreement was reached that grab bags helped staff members feel prepared to, reduced the stress of, and minimised delays in treating unstable patients with suspected COVID-19. Staff agreed that grab bags contained sufficient equipment, however ten members (38.5%) felt that the bags contained excess equipment.

Conclusion

The introduction of Primary Assessor Grab Bags at CUH ED was observed to optimise staff preparedness for and reduce the stress of treating critically unwell patients in isolation.

Introduction

The COVID-19 pandemic was declared by the World Health Organisation (WHO) in March 2020[1] and has posed unprecedented challenges for healthcare workers[2]. Early reports on the virus described notoriously non-specific symptoms, with clinical presentations ranging from asymptomatic, to pneumonia, to death[3]. A letter submitted to the European Society of Intensive Care Medicine in March documenting the impact of the virus in Italy served as a call to arms to Irish healthcare workers to prepare for a sudden influx of severely hypoxaemic patients that could potentially overwhelm the state's Emergency and Intensive Care Unit (ICU) capacity[4].

Data from epidemiology and virology studies determined that COVID-19 is transmitted through respiratory droplets, by direct contact with infected persons, or by contact with contaminated surfaces[5]. To mitigate the risk of intra-hospital virus transmission, the Health Protection Surveillance Centre (HPSC) issued guidelines describing the Personal Protective Equipment (PPE) to be worn by healthcare workers when treating suspected COVID-19 patients[6]. To prevent clinical equipment contamination and waste, it also mandated the removal of all non-essential items from designated COVID-19 treatment areas.

These necessary guidelines created the potential for delays in treating critically unwell patients with suspected COVID-19, which was of particular concern to Emergency Department (ED) staff. With high acuity patient cases often received by the ED with little warning, it was feared that time spent donning PPE and gathering clinical equipment in advance of treating patients requiring isolation could delay resuscitation and adversely impact patient outcomes. Furthermore, the unfamiliar era of fragile supply chains and novel infection control standards demanded a solution which minimised both equipment waste and staff movement in and out of isolation areas seeking consumables.

Cork University Hospital (CUH) acts as a regional centre for a catchment population of 550,000, and as a supra-regional centre for a total population of 1.1 million, with approximately 65,000 ED attendances per annum[7]. Responding to the challenge of the COVID-19 pandemic, CUH ED staff rapidly developed several, new, robust assessment and treatment strategies to manage the anticipated surge in patients requiring both isolation and critical care. One such strategy was to develop a supply of pre-packaged grab bags containing equipment necessary for the primary assessment and initial resuscitation of the unstable patient requiring isolation.

Delivering high quality care and maintaining patient safety is dependent on effectively and efficiently managing cognitive, physical, spatial, and temporal resources in the ED environment[8]. Caring for critically unwell patients with suspected COVID-19 within our ED required careful consideration of the process of equipment provision and use, in addition to the human factor challenges of working in a high-risk isolation environment [9]. To this end, a new model of care was introduced for unstable patients requiring isolation at CUH ED. This model involved an initial assessment and stabilisation phase via the "Primary Assessor Team" (comprised of an Emergency Medicine doctor and nurse), allowing the "Intubation Team" (comprised of two airway competent doctors and a nurse) time to prepare for intubation outside the isolation room when required.

The introduction of “Primary Assessor Grab Bags” complemented the “Primary Assessor” phase of this new model of care and aimed to reduce the risk of error and delays in patient treatment while improving staff experiences of managing isolated patients.

This article describes both the process of developing these “Primary Assessor Grab Bags” and the staff experiences of this bespoke addition to a novel primary assessment strategy of critically unwell patients at CUH ED. It is our hope that other healthcare facilities may find the concept beneficial in their own practice, or that it may be applicable to scenarios and environments beyond the COVID-19 pandemic.

Methods

Emergency Department Clinical Operations and Governance (ED COG) structures at CUH approved the development of medical grab bags. Grab bags were designed by ED staff using equipment which was readily available and familiar to users. We adopted the “ABC” principle of patient management in our design, dividing bags into sections for managing anticipated airway, breathing and circulation areas, and for commencing initial resuscitative treatments.

Prototypes were trialled in multidisciplinary COVID-19 simulations attended by ED and Intensive Care medical and nursing staff. Realtime feedback from simulation debriefs and early experiences managing isolated patients helped modify grab bag content. Contents were iteratively updated to reflect ever evolving clinical guidance.

Volunteer medical students assembled to produce a consistent supply of grab bags once content was agreed. Quality assurance required the completion of an accompanying contents checklist prior to sealing each bag. Sealed bags were repackaged in a sterile environment by the Central Sterile Services Department (CSSD). Unnecessary packaging was removed at this stage, resulting in a leaner product which maximised storage space and reduced time spent opening equipment in resuscitation scenarios.

Bags were stored in an equipment hub within the “COVID Red Zone” – an area designated for the management of the most critically unwell isolation patients in the ED. Future stock orders were matched with the contents checklist, ensuring a secure supply. Daily checks were carried out to ensure a minimum number of bags was available to staff at all times. Crossover in stock supply to other areas was prevented by designating a room to house stock solely intended for grab bag production.

Staff were educated about the intended use of the grab bags at daily handovers, during multidisciplinary simulations and via a closed group on an instant messenger platform. Twelve months post grab bag introduction, a staff experience survey utilising a 5-point Likert-type scale was issued via Google Forms. Agreement that grab bags positively impacted staff experiences of managing unstable patients in isolation was defined as at least 70% of respondents rating an indicator as “agree” or “strongly agree”. Data were analysed using SPSS.

Results

A total of eighty-five grab bags were produced. Seventy-four bags were used over a twelve-month period. A finalised grab bag with one iteration of the contents list is shown in Figure 1. The contents of each grab bag section is shown in Figure 2. Twenty-six staff members replied to the staff experience survey, the breakdown of which can be seen in Table 1. Sixteen (61.53%) respondents used the bags more than five times, while one respondent (3.84%) had never used the bags. Fifteen (57.67%) had received teaching (either formal or informal) on the intended use of the grab bags, while nineteen (73.07%) respondents had been involved in patient simulations using the grab bags. Agreement was reached amongst survey respondents that the grab bags helped them feel prepared to, reduced the stress of, and minimised delays in treating critically unwell patients with suspected COVID-19 (Figure 3). Twenty-three respondents (88.5%) agreed that the bags helped them feel prepared to treat patients requiring isolation. Twenty-one (80.8%) agreed that the bags reduced the stress of treating patients requiring isolation. Twenty-three (88.5%) agreed that the bags minimised delays in treating patients requiring isolation. Twenty-two (84.6%) agreed that the bags contained sufficient equipment while ten (38.5%) felt the bags contained excess equipment.

Figure 1. Finalised grab bag with checklist.

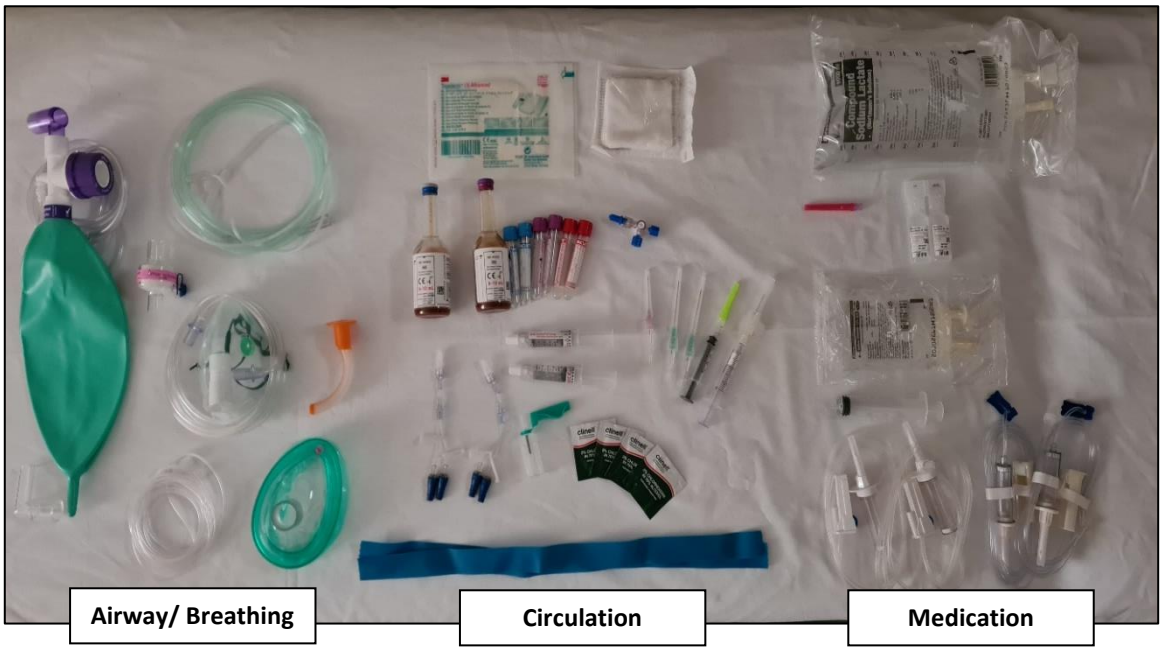

Figure 2. Grab bag sections.

Staff	**Nurse**	**Consultant**	**Registrar**	**SHO**
	12	2	10	2
Number of uses	**Never**	**Once**	**2-5 times**	**>5 times**
	1	4	5	16
Attended teaching	**Yes**		**No**	
	15		11	
Attended simulation	**Yes**		**No**	
	19		7	

Table 1. Survey demographics.

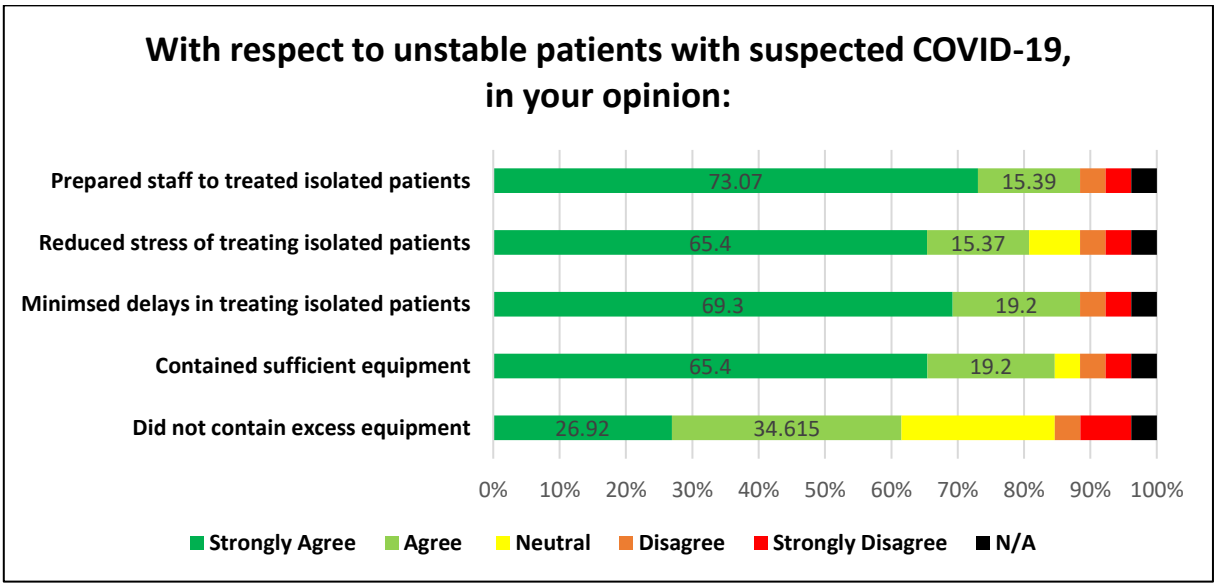

Figure 3. Results of Likert-type questionnaire.

Discussion

In response to the myriad challenges presented by COVID-19, the introduction of Primary Assessor Grab Bags at CUH ED eased the cognitive burden and stress of managing critically ill patients in isolation areas and allowed staff to deliver high quality care in a safe and efficient manner, while maintaining compliance with infection control standards. However, developing a simple and useful clinical tool under the time constraints precipitated by the anticipated patient surge was not without its challenges.

Early stages of development focussed on reaching consensus on bag content. Content was largely informed by the "ABC" approach to patient resuscitation. Decisions regarding the choice of antibiotics and the inclusion of High-Efficiency Particulate Absorbing (HEPA) filters were steered by the CUH Drugs and Therapeutics Committee and American Heart Association guidance[10], respectively. We were mindful to avoid both understocking and overstocking the bags, as both scenarios generated unwelcome sequelae. If understocked, precious time could be lost to awaiting delivery of requested equipment to isolation rooms. This also increased the potential for traffic back and forth from isolation rooms, thereby increasing the risk of virus exposure to staff and patients. If overstocked, unnecessary waste of equipment not required in initial resuscitation could occur. The solution was achieved via regular simulations of COVID-19 cases in ED isolation rooms, which were attended by both ED and ICU staff.

Multidisciplinary COVID-19 simulations were integral to both the initial design of and the subsequent demonstration of the grab bags. Feedback from simulation debrief sessions represented an invaluable resource for generating pragmatic alterations to the bags. To reflect clinical conditions, simulation teams had to wait in real time for the delivery of any additional requested equipment to their isolation room. These wait times cemented the potential implications of understocking bags. Conversely, when an item was routinely wasted in simulations, we sought feedback and agreement on whether it could be safely omitted. Unable to anticipate the exact equipment requirements for each case, we established an equipment hub in close proximity to the department's major isolation rooms, allowing quick delivery of supplies to isolation rooms when required. With simulations themselves a potential source of equipment waste, we set aside a "simulation kit" which was complete with instructions for reassembly after use and was stored in the ED Registrar office.

We revised contents until no further recommendations were made at daily simulations or department handovers. The first prototype was ready just days after the pandemic was declared, however the bags were and continue to be subject to ongoing alterations as clinical guidance perpetually evolves. Early in the course of the pandemic, clinical guidelines were liable to change swiftly and significantly. Any proposed changes to the grab bags were communicated to the ED COG and multidisciplinary team, while recommendations for empirical antibiotic cover were monitored closely in conjunction with the ED Pharmacist. Given the supply issues facing all hospitals at that time, any necessary alterations were reflected in our stock orders to ease the process of stock acquisition.

It was our intention that grab bags were only employed in specific circumstances – that is, for the initial stabilisation of critically unwell patients requiring isolation where time was not available to gather equipment required for resuscitation. To avoid unnecessary use and waste of bags this policy had to be clearly communicated to ED staff – a process which was complicated by the increased staff turnover due to the pandemic. COVID-19 resulted in staff absences due to illness or mandatory self-isolation, a sudden influx of staff from other clinical areas in an attempt to ease the burden at the hospital frontline, and an era of working alongside members of the "Intubation Team" if not native to the ED. Thus, it was required that communication regarding the grab bags and other novel ED policies was an ongoing process during this turbulent time. This was facilitated in three ways. Firstly, via the introduction of twice daily handover meetings attended by all ED staff which addressed fresh issues and provided updates on new policies and procedures. Secondly, via routine COVID-19 simulations as discussed above. And lastly, via a secure instant messenger group which was established to ensure uniform and reliable dissemination of information pertaining to COVID-19 service provision, and which included ED staff from all disciplines and grades. At the time of writing, this group is still used to deliver department-wide clinical updates.

It should be noted here that the overall positive impact of this intervention may have been due to the grab bags in combination with the ongoing teaching sessions and simulations, and not necessarily due to the introduction of the grab bags alone.

By enabling staff to deliver high quality care in a time effective manner, while maintaining compliance with infection control standards, the introduction of Primary Assessor Grab Bags at CUH ED was observed to optimise staff preparedness for and reduce the stress of treating critically unwell patients in isolation. Capturing and actioning the human factor challenges posed by the COVID-19 pandemic became an essential task in the overall process of ensuring the safe, efficient, and effective implementation of this practice change.

Declaration of Conflicts of Interest:
The authors have no conflicts of interest to declare.

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Factors Influencing Career Choices of Medical Students in Obstetrics and Gynaecology

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Abstract

Introduction

Choice of specialty is an important decision for medical students or newly-qualified doctors with internal and external factors influencing decisions. There has been a fall in doctors pursuing a career in Obstetrics and Gynaecology over recent decades. This study's aim was to ascertain factors influencing individuals interested in pursuing a career in the specialty.

Methods

A survey of attendees at a large National level Medical Careers Day was completed.

Results

A total of 191 individuals attended. The gender breakdown was 60% female (n=115), 40% male (n=76). The majority were medical students (84%, n=160) and the remainder were interns (16%, n=31). Thirteen percent (n=25) of those in attendance visited the Obstetrics and Gynaecology Careers clinic. There was a female majority amongst clinic attendees (85%, n=21). The influencing factors reported included experiences with superb role models and the opportunity to care for vulnerable women.

Conclusion

This study shows there is a small proportion of individuals interested in pursuing a career in Obstetrics and Gynaecology with an array of reasons for doing so. The majority of those who expressed an interest were female. Positive role models and opportunities to care for women appear to be driving interest in the specialty.

Introduction

Choosing a specialty in medicine is a 'critical decision' for medical students and interns.[1] A small number of students may know their chosen area prior to starting medical school however many are influenced during their degree and in the early years of their working lives. The majority are influenced by both internal and external factors throughout their studies.[1]

Understanding reasons for choosing specific disciplines can help to determine the composition of current and future work forces. With our changing populations, longer-living elderly patients and more complicated disease processes, healthcare work force planning is vital to maintain and improve services.[1] Obstetrics and Gynaecology is not exempt from these evolving patient populations with higher numbers of high-risk pregnancies, obesity and genetic diversity all playing a role.

There is an abundance of literature identifying the factors leading to certain career decisions amongst medical students.[2] Studies completed regarding this have identified factors such as personality, gender, potential income, lifestyle and experience with positive role models as being key to specialty choice.[1,2,3] The idea of a 'controllable lifestyle' was suggested by Schwartz et al. and it has been posited as one of the major influences for career choice among medics.[2,4] Examples mentioned in this research included dermatology, emergency medicine, anaesthetics, ophthalmology and radiology.[2,4] Medical graduates in the United States have noted rising levels of competition for the aforementioned areas and it is widely believed that the main reasons for this are the associated lifestyle and financial renumeration.[2,5] Whether or not the same trends are emerging amongst Irish medical students and newly- qualified doctors remains to be seen but it is highly likely that 'controllable lifestyle' is at the forefront for many trainees.

As correctly discussed by Takeda et al.[2,] American graduates encumber larger amounts of debt than their European counterparts and this financial burden may play a significant role in decision-making processes. The UK and Irish medical school and training body systems are similar in both pathway and financial burden. The UK Medical Careers Research group has been studying over a third of NHS medics spanning a number of decades.[2,6] To date, enthusiasm for a specialty has been identified as a core factor amongst those choosing ophthalmology and surgery yet the potential for more reasonable working hours influenced those in ophthalmology but less so those in surgery.[2,6,7,8,9] Interestingly, choosing paediatrics was strongly impacted by individual experiences as a student.[10] Repeatedly, work-life balance has been identified as the most common denominator for individuals when changing their career choice.[2,11,12,13] In comparison to American students and doctors, inadequate salary was reported as a reason for not pursuing their ideal specialty by only 1.2% of NHS doctors surveyed.[2,13]

It is important to understand the wider literature regarding this subject whilst also becoming familiar with the factors impacting Obstetrics and Gynaecology trainees, both in Ireland and abroad. Work from 2003 surveying UK doctors found that 75% of those who initially considered and then rejected Obstetrics and Gynaecology cited 'poor career prospects' as their reason.[14,15]

More recent findings from 2017 show that Obstetrics and Gynaecology trainees in the UK withdraw, or consider withdrawing, from training because of inadequate support, low job satisfaction, low morale and challenges with work-life balance.[14,16] Interestingly, from a medical student perspective, Australian students ranked the specialty in the bottom three across a total of 19 choices for 'lifestyle friendliness'.[14,17] In a more positive light, experience of the specialty during medical school and influential role models have been found to affect career choices more in Obstetrics and Gynaecology than in other areas of medicine.[18]

The fall in doctors pursuing a career in Obstetrics and Gynaecology has occurred steadily over the last number of decades.[7,18] Anecdotal trends show men are less likely to choose the specialty in more recent years and this has been proven across many countries and differing healthcare systems and workforces.[7,18] Suggested reasons for this include a perception that women would choose a female doctor for their Obstetric or Gynaecology needs[7,19,20] and the potential for gender bias and discrimination against men during their training.[21] The impact of medico-legal issues within Obstetrics and Gynaecology cannot be ignored. Recent research in Ireland has shown that trainees within the specialty feel that medico-legal issues negatively impact retention and recruitment.[22] In addition, this study showed that media scrutiny is also implicated in high attrition rates amongst trainees. [22]

As is evident there is an abundance of factors impacting specialty choice, retention and career progression. The aim of this study was to identify the level of interest in Obstetrics and Gynaecology at medical student and intern doctor level as well explore some of the reasons for individuals choosing to pursue a career in this field.

Methods

A survey of attendees at a large National level Medical Careers Day hosted by Forum of Irish Postgraduate Medical Training Bodies in September 2018 was completed. This is a one-day event that is aimed at interns and final year medical students to provide valuable information at this critical career stage. It is focused on specialty training and medical career planning. Data was obtained from the Forum of Irish Postgraduate Medical Training Bodies and by personal interview at the Obstetrics and Gynaecology Career clinic facilitated by two Consultants and three registered trainees, all of whom volunteered to contribute to the clinic.

The survey was deemed Rotunda Hospital Research Ethics exempt.

Age, gender, numbers attending the specialty related careers clinic and factors influencing displayed interest in Obstetrics and Gynaecology were examined.

Responses from the clinic attendees were recorded in real-time via text. This text included questions asked by attendees regarding the specialty, their reasons for attending the clinic, the expectations of the specialty and their concerns around pursuing a career in O&G.

All data was collected in an anonymized fashion and Excel was used for demographics analysis. Thematic analysis was used to examine text excerpts to identify common views and ideas amongst attendees.

Results

The total number of attendees at the careers day was 191. The average age was 23.8 years with the age range between 22 and 35 years. All 6 medical schools in Ireland were represented.

As shown in Figure 1. the gender breakdown was 60% female (n= 115) and 40% (male n=76). Of the attendees, the majority were medical students (84%, n=160) and the remainder were interns (16%, n=31).

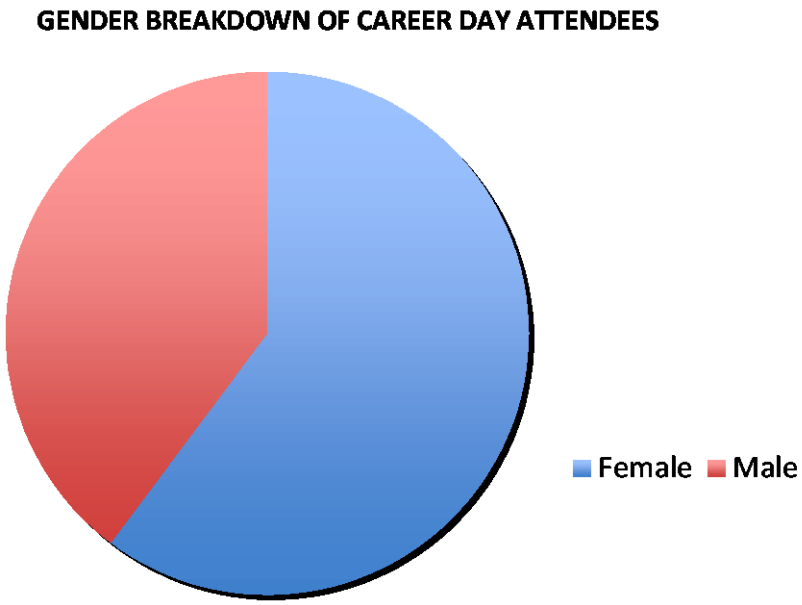

Figure 1. Gender breakdown of careers day attendees.

Thirteen percent (n=25) of those attending the careers day visited the Obstetric and Gynaecology Careers clinic, this is shown below in Figure 2.

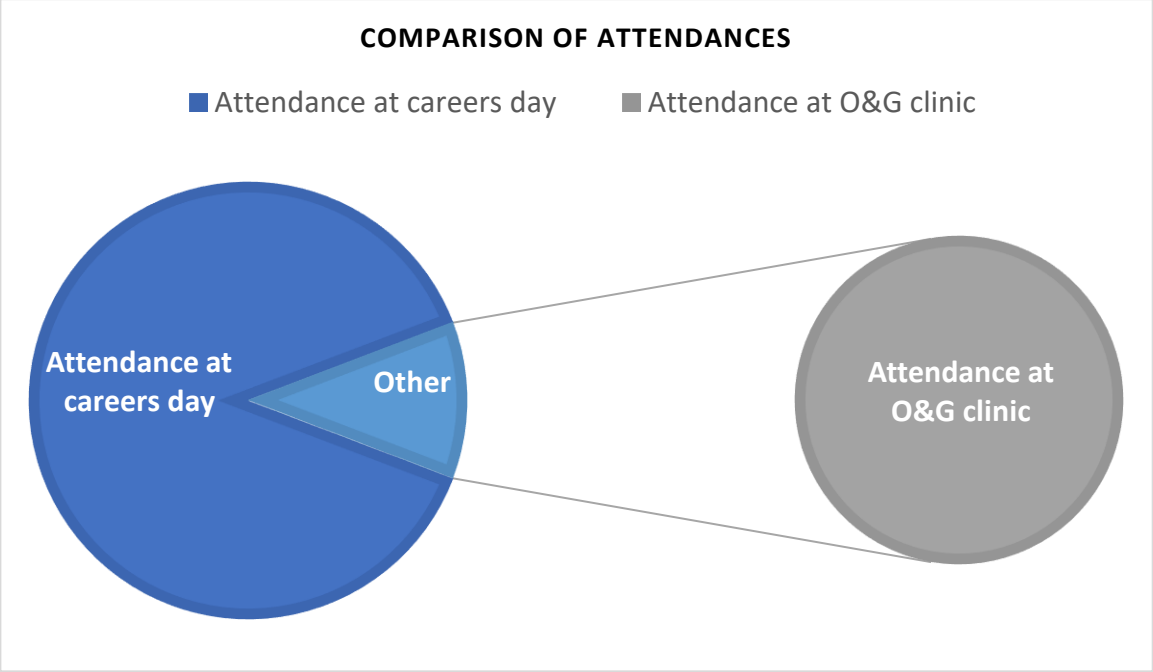

Figure 2. Breakdown of attendance at O&G clinic in comparison to overall careers day attendance**.**

There was a female majority in attendance making up 85% of clinic attendees (n=21).

Following thematic analysis of text excerpts from interviews, the following factors emerged as influencing interest in Obstetrics and Gynaecology; Experiences with clinicians who were superb role models, the scientific and technical complexity of rapidly evolving diagnostics, medical and surgical treatments, the opportunity to care for vulnerable women both domestically and globally and the opportunity to deliver babies.

Discussion

The careers day and specialty clinic provided interesting information about attitudes towards Obstetrics and Gynaecology in Ireland. There was less interest shown compared to other surgical disciplines. Only 13% of all attendees showed an interest in Obstetrics and Gynaecology. The reasons for this are likely related to perceptions of lifestyle, working hours and the increasing legal issues facing Obstetricians in Ireland. The limited interest shown reflects previous findings regarding this. It is line with the finding that 'poor career prospects' have been associated with the specialty.[14,15] It also further compounds the finding amongst Australian medical students that Obstetrics and Gynaecology was ranked in the bottom three of nineteen specialities in terms of 'lifestyle friendliness'. [14,17] As has been highlighted amongst Irish trainees within this field, increasing media scrutiny and medico-legal challenges are related to recruitment and attrition.[22]

Eighty-five percent of those who showed an interest were female. It is necessary to note that overall there were more women in attendance than men at the careers day (60% versus 40%). This shows a reassuring trend that women are keen to stay in hospital medicine. It is also reflective of trends over the last number of decades regarding the gender gap within Obstetrics and Gynaecology. Turner et al. report that 0.8% of male graduates chose the specialty in comparison to 4.1% of female graduates.[18] Both men and women can bring different skill sets and breadth of experience which should not be underestimated. Various healthcare systems internationally have noted a fall in men choosing Obstetrics and Gynaecology.[7,18.] The reasons for this range from a perception that women prefer female-led medical care for their Obstetric and Gynaecological needs to the potential for gender bias and discrimination against men.[21] It is important that both genders are encouraged and supported during their training in an effort to achieve a healthy balance of male and female clinicians.

Based on the findings of this study it is evident there is a small proportion of individuals interested in pursuing a career in Obstetrics and Gynaecology with an array of reasons for doing so. Positive role models, advancing medical and surgical techniques and the opportunity to care for women appear to be driving these individuals. The influence of good role models and student experiences cannot be ignored. These are factors that repeatedly present themselves in research as reasons for choosing this specialty, more so than any other medical discipline.[18] This knowledge is useful, and its power should not be underestimated within recruitment and retention of trainee doctors.

The strengths of the study include the quantitative and qualitative aspects of assessing attitudes towards the specialty. By incorporating direct discussion with individuals who attended the clinic, motivational and influencing factors were understood in more depth. In addition, the population was representative of all medical students in Ireland with all six medical schools represented at the careers day. At the time of writing, this was the first Irish study of its kind, highlighting the knowledge gap regarding career choices. Limitations include the small sample size that attended the specialty clinic. By accessing a larger population, more information could be garnered regarding barriers to choosing Obstetrics and Gynaecology and perceptions of the discipline amongst the wider medical population. Potentially, directly surveying individuals not interested in the field would provide stark contrasts with the positive factors cited by interested trainees.

This study provides a strong foundation for further research including the role of qualitative research to obtain a clearer understanding of individual rationales for their career choice. In addition, assessing motivations and influential factors at varying stages of Obstetrics and Gynaecology trainees' careers could give more insight into how to attract and retain doctors within the specialty.

The findings of this study are in line with international research regarding career decision-making among medical students and doctors. Interest in Obstetrics and Gynaecology remains present with positive factors driving those who pursue this career. However, there are barriers that may be influencing the decline in interest noted over the last number of decades.

The changing demographic and expectations of the current and future workforce needs to be understood in a way that is inclusive and supportive of a healthy work- life balance. This needs to be in tandem with realistic expectations for what we can deliver to women with the workforce available. Both of these factors are crucial in not only attracting doctors, but also retaining and nurturing them within our profession.

Ultimately there is an array of factors influencing career decision-making amongst medical students and intern doctors. Obstetrics and Gynaecology is a unique specialty that marries medicine and surgery whilst also enabling trainees to care for women at various stages of their lives. The driving factors that influence individuals to choose this field have been identified, the next steps should be to optimize and benefit from this knowledge and ultimately attract and retain highly motivated individuals.

Declaration of Conflicts of Interest:
I hereby declare that this research is my own original work under the guidance of Dr. Rupak Sarkar and Dr. Ita Shanahan at the Rotunda Hospital, Dublin. There are no conflicts of interest to declare.

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Evaluation of the Antibody Response Induced by the Pfizer-BioNTech COVID-19 Vaccine and the Effect Prior COVID-19 Infection has on the Response Elicited by the Vaccine.

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Abstract

Introduction

Understanding the immune memory of individuals who have naturally contracted SARS CoV-2 versus naïve individuals might help to optimise the vaccination campaigns. Here we describe the Anti-SARS-CoV-2 IgG response induced by the Pfizer-BioNTech COVID-19 Vaccine in both naive individuals and those with prior confirmed SARS-CoV-2 infection. We also look at the durability of that response over a six-month period.

Methods

This study enrolled a total of 219 participants who had completed the full course of the Pfizer BioNTech BNT162b1 COVID 19 vaccine. SARS CoV-2 IgG levels were measured at two different stages over a period of six months using Abbott Architect SARS-CoV-2 IgG II quantitative assay.

Results

After two doses of the Pfizer BioNTech BNT162b1 COVID 19 vaccine, the median SARS CoV-2 IgG concentration from all participants was 4866 AU/mL (IQR 2738-8424). Median IgG levels in naïve individuals were 4219 AU/mL (IQR 2450-7602). Median SARS CoV-2 IgG levels were significantly higher in those with a previous SARS CoV-2 infection at 8323 AU/mL (IQR 4728-16579 $p<0.001$). Median SARS-CoV-2 IgG levels decreased to 953 AU/mL (IQR 512-1730) after six months post vaccination. This represented a median decrease of 80% between the two testing periods

Conclusion

Our findings suggest that those with natural infection before vaccination produce a higher IgG response than naïve individuals as shown by a nearly 2-fold increase in the mean concentrations between the two groups.SARS-CoV-2 IgG levels showed a median decline of 2% per day.

Introduction

The coronavirus disease (COVID 19) is caused by the novel coronavirus, commonly known as SARS-CoV-2 (Severe acute respiratory syndrome coronavirus 2). The disease is thought to have first originated in Wuhan, China, in 2019 and was declared a global pandemic by the World Health Organisation on March 11th, 2020. Globally there have been over 245 million confirmed cases of COVID-19and over 5 million deaths[1].

The causative agent of COVID 19, SARS-CoV-2, is a member of the coronaviridae family, specifically the betacoronaviruses, which is one of seven known to infect humans[2,3].The pandemic's severe health and economic burden meant that there needed to be a global effort to halt the virus's spread through an effective vaccine. Several candidates appeared early in 2020, with different vaccine technologies being employed in the hope of creating an effective and safe vaccine to combat the virus. Early studies are beginning to appear surrounding the immune dynamics from the vaccines. It is essential that we fully understand this immune response to optimise the vaccination campaigns and facilitate decisions regarding booster doses.

The immune response to the invasion of SARS-CoV-2 is complex and shares similarities to its common precursors. Once the virus enters the host, the immune system then recognises epitopes on the virus's surface and activates the innate and adaptive immune response[4].The adaptive immune response plays a crucial role in controlling SARS-CoV-2 infection and inhibiting future re-infection. The adaptive immune response consists mainly of B cells and T cells (CD4+ and CD8+ T cells). These cells play a role in eliminating the invading cells and producing antibodies that help fight re-infection. T and B cells are typically seen one week post-onset of COVID-19 symptoms[5,6]. T cells are detected in almost all SARS-CoV-2 infections with CD4+ cells being more predominant than CD8+ cells[7].CD8+ T cells possess cytotoxic abilities that help to kill infected cells. The presence of CD8+ T cells has been linked to improved prognostic outcome due to their potent abilities to remove the virus[8].It is suggested that T cell response hold the key to long-duration protective immunity. Studies on SARS CoV-1 showed that T cells were present from three months up to six years post-infection[9].

While the correlates of protection have not been defined yet, it is presumed that neutralisation of the virus through NAb is the primary mechanism for viral suppression. Serum IgG concentrations have been known to correlate with circulating NAb concentrations. Measurement of IgG concentrations is a promising diagnostic biomarker for protection post-infection or vaccination[10,11].High levels of IgG concentrations have also been linked to high levels of T cells producing IFN γ. While antibodies levels do decline over time, strong evidence suggests that T cell immunity does persist longer, implying that immunity does persist long after undetectable antibodies. Studies from MERS and SARS-CoV-1 patients have shown to have persistent memory T cell immunity years after infection [12].

This study aims to look at the IgG response following a two-dose campaign of the Pfizer–BioNTech COVID-19 vaccine. Particular attention will be focused on those who have previously tested positive for SARS-CoV-2. The study also aims to evaluate the durability of the IgG response over a period of six months. The study aims to look at how quickly the immune response declines after vaccination and also to measure the level of IgG response to confer protective immunity.

Methods

This study enrolled 215 participants from the Mercy University Hospital in Cork, Ireland. All individuals who partook in the study had to have completed the full course of the Pfizer BioNTech BNT162b1 COVID 19 vaccine (2 doses with an interval of 21-28 days between first and second doses). The study was open to every profession from within the hospital. All participants were to be >18 years of age.

Participants were asked to provide one adult serum sample (2.5 ml) at two different time periods. The initial phase of this study aimed to obtain the first sample from all participants at 14 days post second dose of the Pfizer BioNTech BNT162b1 COVID 19 vaccine. Samples taken from the initial cohort of participants ranged from 14-72 days post second dose. Participants were asked to return six months post vaccine to provide another adult serum sample (2.5 ml).Samples taken at the six-month interval ranged from 166-227 days post second dose of the vaccine.

SARS CoV-2 IgG levels were measured using Abbott Architect SARS-CoV-2 IgG II quantitative assay (Abbott, Abbot Park, US). The assay is a chemiluminescent microparticle immunoassay (CMIA) designed to detect SARS CoV-2 IgG antibodies, including neutralising antibodies to the RBD of the S1 subunit of the spike protein with high specificity and sensitivity.

Results

A total of 219 participants were included in the first phase of this study with the median age of enrolled participants being 40 years of age. Demographic variables and corresponding SARS-CoV-2 IgG levels are displayed in table 1 in the form of median and IQR. Groups were comparable for gender ($p = 0.351$) and profession ($p = 0.161$) but differed significantly for age ($p = 0.018$), close contact ($p = 0.031$) and prior infection status ($p < 0.001$).During GLM analysis, age ($p =0.001$) and prior infection status ($p >0.001$) (figure 1), but not gender ($p = 0.557$), close contact status ($p = 0.249$) and profession ($p = 0.139$), were independent predictors of SARS-CoV-2 IgG levels. Analysis on severity of symptoms during COVID-19 infection showed that those with mild ($p >0.001$) and severe ($p >0.001$), but not moderate ($p = 0.393$) symptoms, were independent predictors of SARS-CoV-2 IgG levels over naïve individuals (figure 2).Of note there was one female participant aged 63 who produced a response of >40,000 AU/ml, which was at the upper limit of detection for this assay. A 1:10 dilution was made of their serum, and a value of 7,132 AU/mL was obtained. This individual had a severe SARS-CoV-2 infection three months before sampling.

Participants were resampled again at 6 months post vaccine. A total of 133 participants were enrolled in the second phase of testing with a median age of 42. Demographic variables and corresponding SARS-CoV-2 IgG levels are displayed in table 2 in the form of median and IQR. Groups were comparable for gender ($p = 0.563$), age ($p = 0.223$) and profession ($p = 0.732$) but differed significantly for close contact ($p = 0.036$), prior infection status ($p < 0.001$) and COVID-19 infection post vaccination ($p = 0.017$).During GLM analysis, age ($p >0.001$), post vaccination infection status ($p > 0.001$), prior infection status pre vaccination ($p > 0.001$) and profession ($p = 0.036$), but not gender ($p = 0.563$), were independent predictors of SARS-CoV-2 IgG levels at 6 months post vaccination.

Of the 133 participants who were sampled at 6 months post vaccination, only two had subsequent positive PCR confirmed COVID-19 infections. Both subjects reported only mild infection. The first individual had an antibody titre of 609.6 AU/mL at 28 days post vaccination. This individual tested positive 136 days post vaccination with a subsequent increase in SARS-CoV-2 IgG level to 16,689 AU/mL. The second individual had an antibody titre of 3597.7 AU/mL at 27 days post vaccination. This individual tested positive 150 days post vaccination with a subsequent increase in SARS-CoV-2 IgG levels to 12,021 AU/mL.

The rate of antibody decline was measured in 133 returning participants. The median decline in SARS-CoV-2 IgG levels was seen at 79% (IQR 68%-88%) over the period between testing, with male and females at 86% (IQR 79%-89%) and 78% (IQR 65%-87%)respectively. The median rate of decline was seen to be 2% per day of SARS-CoV-2 IgG levels.

(Table 1. Next Page)

Table 1. Median concentration of SARS-CoV-2 IgG antibodies in Healthcare Workers post full course of the Pfizer BioNTech BNT162b1 COVID 19 vaccine (2 doses with an interval of 21-28 days between first and second doses).

Variables		Sample Size n (%)	IgG median concentration (AU/mL[a])	Interquartile ranges (Q1-Q3)
All participants in the study		219 (100)	4866	2738-8424
Sex	Male	47 (21.4)	4078	2685-9577
	Female	172 (78.6)	5029	2680-8423
Age	<30	48 (22.3)	5884	3665-12505
	30-39	57 (26.5)	5281	3020-9026
	40-49	67 (30.7)	3706	2042-6070
	50-59	39 (16.7)	4532	3055-7612
	60+	8 (3.7)	7387	1235-11747
Professional Category	Doctor	37 (16.7)	5972	3464-11062
	Nurse	80 (36.3)	4223	2111-7324
	Medical Scientist	52 (24.2)	5222	2464-8428
	Clerical	11 (5.1)	6697	3868-9286
	Allied Health Professionals [b]	29 (13)	4906	3415-8108
	Household Services [c]	10 (4.7)	3076	1219-9287
Prior Infection Status	Laboratory confirmed PCR positive for SARS-CoV-2	35 (16.3)	8323	4728-16579
	No previous PCR confirmed SARS-CoV-2 Infection	184 (83.7)	4219	2450-7602
The severity of symptoms associated with prior infection status	Mild	19 (8.8)	8323	5396-17979
	Moderate	12 (5.6)	6104	3547-13340
	Severe	4 (1.9)	15902	3805-35126
COVID 19 Symptoms within the last month	Yes	9 (4.2)	5798	2538-15335
	No	210 (95.8)	4849	2675-8458
Been deemed a close contact previously [d]	Yes	50 (23.3)	5892	3920-10137
	No	169 (76.7)	4619	2325-8168

[a] *Arbitrary units per millilitre*

[b] *Allied Health Professionals consisted of: Healthcare Assistants, Physiotherapists, Speech and Language Therapists, Phlebotomists, Dieticians and ECG Technicians.*

[c] *Household Services consisted of: Catering, Porters, Security and Maintenance*

[d] *Close contact definition according to the WHO, "Spending more than 15 minutes of face-to-face contact within 2 metres of someone who has COVID-19, indoors or outdoors. Living in the same house or shared accommodation as someone who has COVID-19. Sitting within 2 seats of someone who has COVID-19 on public transport or an airplane".*

Table 2. Median concentration of SARS-CoV-2 IgG antibodies in Healthcare Workers at **six** months post full course of the Pfizer BioNTech BNT162b1 COVID 19 vaccine (2 doses with an interval of 21-28 days between first and second doses)

Variables		Sample Size n (%)	IgG median concentration (AU/mL[a])	Interquartile ranges (Q1-Q3)
All participants in the study		133 (100)	953	512-1730
Sex	Male	28 (21.1)	1213	433-2079
	Female	105 (78.6)	915	490-1575
Age	<30	26 (19.5)	1081	579-1823
	30-39	29 (21.8)	976	523-2169
	40-49	44 (33.3)	747	193-1168
	50-59	28 (21.1)	1020	457-1772
	60+	6 (4.5)	1625	411-15929
Professional Category	Doctor	15 (11.3)	1077	399-1912
	Nurse	54 (40.6)	873	538-1328
	Medical Scientist	39 (29.3)	1258	533-2546
	Clerical	8 (6)	963	391-1719
	Allied Health Professionals [b]	11 (8.3)	1029	454-1633
	Household Services [c]	6 (4.5)	643	289-11551
Infection Status post-vaccine	Laboratory confirmed PCR positive for SARS-CoV-2	2 (1.5)	14355	12021-16689
	No PCR confirmed SARS-CoV-2 Infection	131 (98.5)	951	490-1673

[a] *Arbitrary units per millilitre*

[b] *Allied Health Professionals consisted of: Healthcare Assistants, Physiotherapists, Speech and Language Therapists, Phlebotomists, Dieticians and ECG Technicians.*

[c] *Household Services consisted of: Catering, Porters, Security and Maintenance*

(Figure 1. Next Page)

Figure 1. SARS-CoV-2 IgG levels post 2 doses of the Pfizer-BioNtech vaccine by prior infection status.

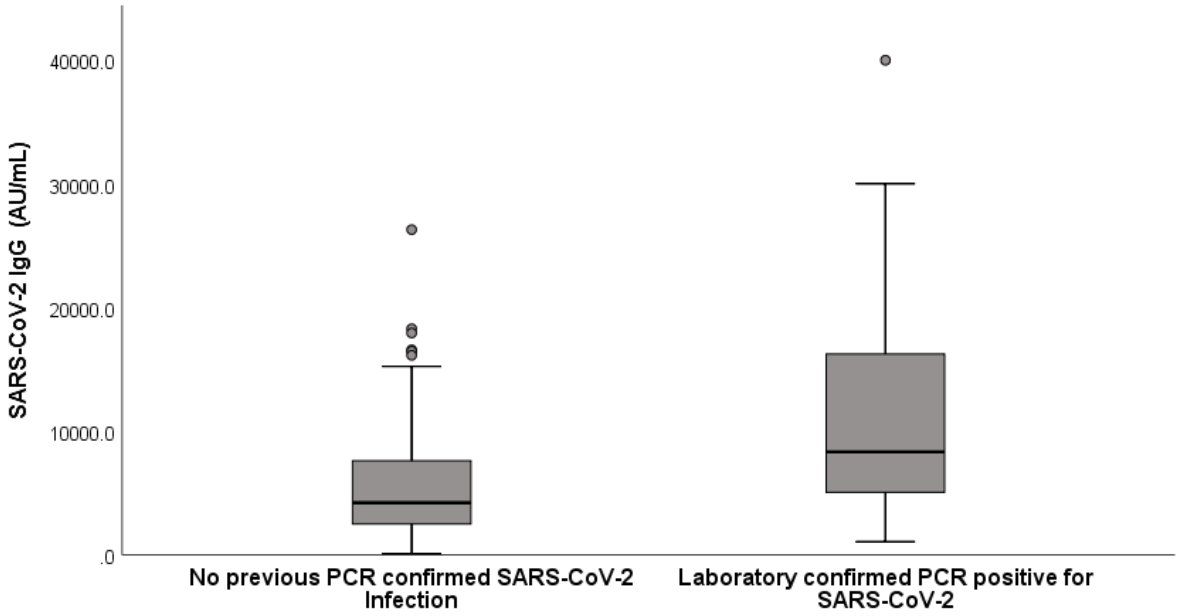
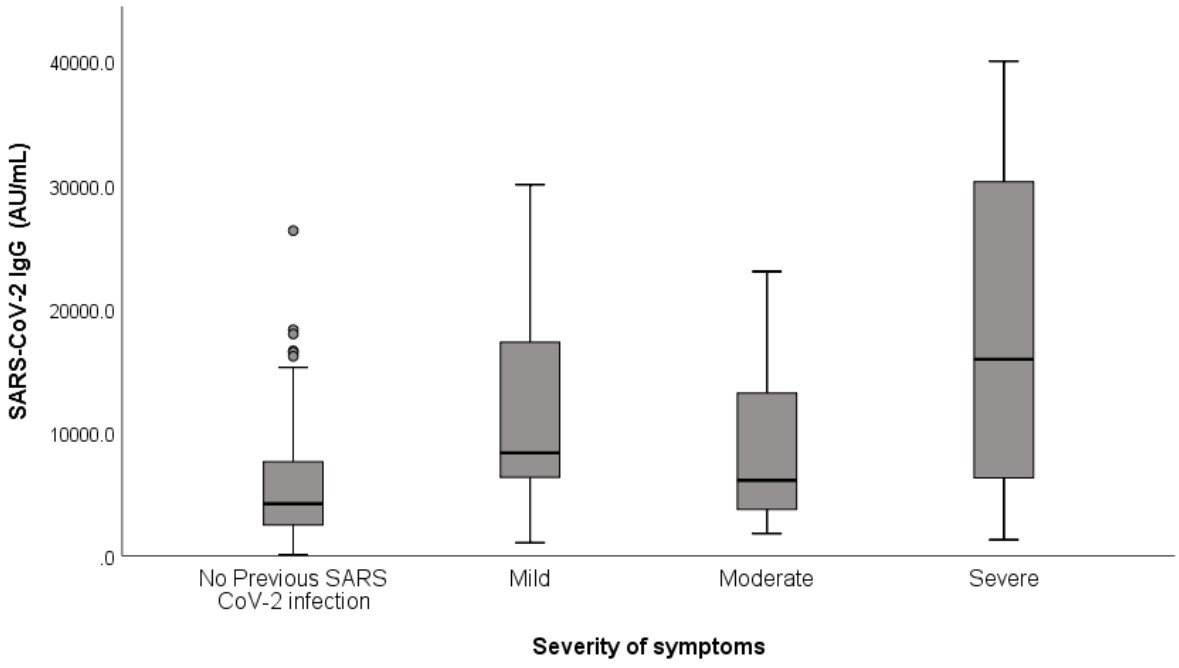


Figure 2. SARS-CoV-2 IgG levels post 2 doses of the Pfizer-BioNtech vaccine by severity of symptoms.



Discussion

With current global vaccinations continuing and some countries adopting new restrictions, the need for a successful and effective vaccine is ever evident. A two-dose campaign 21days apart of the Pfizer BioNTech BNT162b1 COVID 19 vaccine has shown to be 100% immunogenic, with all participants showing evidence of an IgG immune response in this study.

As expected, the biggest determinant of magnitude in SARS-CoV-2 IgG response was prior infection status, with symptom severity also contributing to that response. Our data suggest that those with a natural infection before vaccination have produced a higher IgG response than naïve individuals. There was a near 2-fold increase in the median concentrations between the two groups. Those who reported having severe symptoms had a substantial difference over those with lesser symptoms. A mild infection showed to be more reactive than those with moderate symptoms. There were some limitations in how this question was asked. Criteria should have been set out on how to determine which category of symptoms one fitted in. Some may interpret symptoms in the moderate category as mild and may account for the differences in the two categories. That being said, there is still a marked difference in the immunogenicity of infected subjects. In other studies, evidence has suggested that those with prior infection before vaccination may benefit from a single dose campaign of the vaccine[13–15]. While most westernised countries having a large cohort of their population already vaccinated, lower income countries with very little of the population vaccinated may benefit from this approach.

With regards to age and gender our findings found no significant difference with gender ($p = 0.577$) but showed some significance with age ($p = 0.001$). The data showed that immunogenicity was highest in the 60+ age group with those in the age group 40-49 producing the lowest response. This evidence may be falsely misleading given the small proportion of subjects in the 60+ age group with 3/8 of those having previously testing positive prior to vaccination. The one individual who produced the highest IgG response in the study was also in that category which may have falsely elevated the median. The majority of literature looking at age as a determinant of immunogenicity have quoted a decrease in IgG levels as age goes up[13,16–18]. High seroconversion rates were seen however in the <30 age group compared with the older age groups.

This study followed up with 133/219 participants at a time interval of six-months post vaccination in which 132/133 (99.3%) still had detectable SARS-CoV-2 IgG levels (i.e.>50 AU/mL as set by the manufacturer). The median SARS-CoV-2 IgG level had decreased by80% in the period between the two phases which equated to a median decrease of 2% per day. A similar Italian study with a sample size of 352 subjects found that there was a 1.1% median decrease in IgG levels per day over a period of 72 days[16]. This study could have been further strengthened if we allowed for more time intervals to accurately assess the rate of decline. It is intended to further sample the same population at eight- and ten-months post vaccination.

A correlate of protection (CoP) is urgently needed given the fact that a lot of countries have most of their population vaccinated but infections are still on the rise. It would also be beneficial as we head into the winter months and booster doses will be needed for the most vulnerable.

While the immune response to COVID-19 infection is complex and not solely based on antibody production, measurement of IgG response can be readily performed in routine diagnostic laboratories making it a very attractive target for assessing the response to SARS-CoV-2 vaccination. While virus neutralisation is thought to occur through NAb there is a strong correlation between binding antibody and NAb and therefore measurement of binding antibody is a reliable determinant for protection [19]. Our study reported two positive cases out of 133 participants post vaccination. These individuals had a SARS-CoV-2 IgG range of 609-3597 AU/mL. Our study was insufficiently powered to determine the relationship between SARS-CoV-2 IgG titre and protection.

This paper does present itself with several limitations. All participants are from a healthcare setting which increases their risk of exposure to infected individuals. The average concentration of SARS-CoV-2 IgG levels may be elevated due to this exposure. Some naïve individuals produced similar responses to those who had been previously infected. No participants were under the age of 23 or over the age of 66 years and may not be representative of the wider population. Participants were not asked whether they were on any immunosuppressant or immunomodulatory drugs before vaccination which may have accounted for decreased responses. Nonetheless this paper contributes to the understanding of the degree of immunity afforded by both vaccine and combined vaccine plus natural infection.

Ethics Declaration:

Full approval for this study was granted by the Clinical Ethics Committee of the Cork Teaching Hospitals, University College Cork. CREC Review Reference Number: ECM 4 (b) 09/02/2021 COVID-19 & 3 (ff) 09/02/2021

Declaration Conflicts of Interest:

There is no conflict of interest, on the part of any of the authors that could be perceived as prejudicing the impartiality of the research reported.

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An Online NCHD Led Tutorial Program for the MRCPI Part 2 Clinical Examination in Paediatrics

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Children's Health Ireland at Temple Street.

Abstract

This project aimed to help individuals preparing for the Membership of the Royal College of Physicians of Ireland Part 2 Clinical Exam in Paediatrics by delivering a non-consultant hospital doctor (NCHD) led online teaching program. NCHDs working in Children's Health Ireland at Temple Street were recruited to deliver tutorials. The program was delivered from the 5th October to the 3rd November 2020 and evaluated before and after via online surveys. Of the 69 participants recruited 41 (59%) completed the "Before" survey and 32 (46%) completed the "After" survey. The project started as a local hospital initiative within CHI at Temple Street however subsequently expanded to include 14 Irish hospitals and international attendance. Overall, the project was rated excellent by 78.1% of attendees and very good by 21.9% of attendees. Despite being an imperfect method of preparation for a clinical examination, survey responses suggested that the program helped prospective exam candidate's preparations.

Introduction

Due to the COVID-19 pandemic traditional learning methods including self-initiated opportunistic ward level case-based preparation and bedside clinical tutorials for the Paediatric Part 2 Clinical MRCPI (Membership of the Royal College of Paediatrics of Ireland) Exam have become challenging. Prior to the COVID-19 pandemic clinical tutorials for the MRCPI Part 2 Clinical Exam took place in Children's Health Ireland (CHI) at Temple Street with an informal structure delivered by both consultants and senior NCHDs (non-consultant hospital doctors). This project aimed to help candidates in their preparation by delivering an NCHD led online teaching program.

Methods

NCHDs working in CHI at Temple Street were recruited to deliver tutorials. Attendees were recruited and coordinated via Whatsapp®. The program was evaluated before and after via online surveys (Surveymonkey®). The program was designed for delivery online due to the COVID-19 related public health measures. The Zoom® platform was used to deliver the tutorial program. No patients were examined or involved in the delivery of this teaching program. Tutorials were designed to be as interactive as possible and focused on history and examination. Topics chosen for tutorials included endocrinology, neurodevelopment, respiratory medicine, metabolic medicine, what to expect from the new exam format, neurology, nephrology, gastroenterology and cardiology.

Results

Of the 69 participants recruited to the coordinating WhatsApp group, n=41 people completed the "Before" survey and n=32 completed the "After" survey.

In the "Before" group, respondents attended from the following hospitals; CHI at Temple Street (37.1%), CHI at Crumlin (22%), Our Lady of Lourdes Hospital Drogheda (7.3%), Cork University Hospital (7.3%), Limerick University Hospital (4.9%), Waterford University Hospital (2.4%), Letterkenny University Hospital (2.4%), Midlands Regional Hospital Mullingar (2.4%), Galway University Hospital (2.4%), Mercy Hospital Cork (2.4%), Coombe Maternity Hospital (2.4%), National Maternity Hospital (2.4%) and the Rotunda (2.4%). One person attended while on maternity leave and one person attended from Saudi Arabia. Respondents had an average of 2.3 years clinical experience in paediatrics (Range: 3 months to 7 years). Regarding postgraduate training programs; 73.17% of respondents were enrolled in Basic Specialist Training, 2.4% were enrolled on the College of Physicians and Surgeons of Pakistan Postgraduate Scholarship Program, 2.4% were enrolled in the International Residency Training Program in Paediatrics and 2.4% were enrolled in the Faculty of Paediatrics General Division Scheme. Notably 19.5% of respondents stated they were not enrolled in a postgraduate training program. Of the n=27 individuals who stated that they are not currently preparing for the MRCPI Part 2 Clinical Examination; 66.7% stated that they planned to sit the MCRPI Part 2 Clinical exam at a later date, , 22.2% stated they were attending to avail of opportunistic training, 14.8% stated that they had a lack of available paediatric training at their institution, 11.1% stated they were preparing for an examination other than the MRCPI Part 2 Clinical and 7.4% stated that they were attending to help them prepare for the MRCPI Part 2 written exam. Please see Table 1 for further results from the before survey.

In the "After" group, 77.4% of respondents rated the course as excellent and 22.6% rated the course as very good on a 5-point Likert scale. Respondents in this survey were employed in the following hospitals; CHI at Temple Street (38.7%), CHI at Crumlin (19.4%), Cork University Hospital (9.7%), Our Lady of Lourdes Hospital Drogheda (6.5%), Waterford University Hospital (3.2%), Limerick University Hospital (3.2%), Galway University Hospital (3.2%), Wexford General Hospital (3.2%), Mercy University Hospital (3.2%), Midlands Regional Hospital Mullingar (3.2%), National Maternity Hospital Holles St. (3.2%) and the Rotunda (3.2%).

Table 1. Survey Results							
Before Survey (n=41)							
	Strongly Agree	**Agree**	**Somewhat agree**	**Neither agree nor disagree**	**Somewhat disagree**	**Disagree**	**Strongly disagree**
I feel prepared for the MRCPI Part 2 Clinical Examination	2.6%	7.7%	46.2%	7.7%	18.0%	18.0%	-
I understand the format of the MRCPI Part 2 Clinical Examination	9.8%	31.7%	39.0%	4.9%	7.3%	7.3%	-
The current COVID-19 global pandemic has impacted on my ability to prepare for the MRCPI Part 2 Clinical Examination	62.1%	34.5%	-	3.5%	-	-	-
After Survey (n=32)							
	Excellent	**Very good**	**Good**	**Fair**	**Poor**		
How would you rate the course?	78.13%	21.9%	-	-	-		
	Strongly Agree	**Agree**	**Somewhat agree**	**Neither agree nor disagree**	**Somewhat disagree**	**Disagree**	**Strongly disagree**
I feel prepared for the MRCPI Part 2 Clinical Examination	6.25%	25.0%	43.8%	12.5%	9.4%	3.1%	-
I understand the format of the MRCPI Part 2 Clinical Examination	28.1%	50%	15.6%	6.25%	-	-	-
The Endocrinology Tutorial helped my examination preparation (n=22/32)	40.9%	59.1%	-	-	-	-	-
The Neurodisability Tutorial helped my examination preparation (n=31/32)	54.8%	41.9%	3.2%	-	-	-	-
The Respiratory Tutorial helped my examination preparation (n=30/32)	50%	46.7%	3.3%	-	-	-	-
The Metabolic Tutorial helped my examination preparation (n=29/32)	34.5%	55.5%	6.9%	3.4%	-	-	-
The "What to expect from the new exam format" helped my examination preparation (n=28/32)	35.7%	57.1%	-	7.1%	-	-	-
The Neurology Tutorial helped my examination preparation (n=30/32)	43.3%	46.7%	6.7%	3.3%	-	-	-
The Nephrology Tutorial helped my examination preparation (n=28/32)	50%	46.4%	-	3.5%	-	-	-
The Gastroenterology Tutorial helped my examination preparation (n=29/32)	51.7%	41.4%	3.4%	3.4%	-	-	-
The Cardiology Tutorial helped my examination preparation (n=26/32)	38.5%	50%	3.8%	7.7%	-	-	-
I think that online tutorials are useful in preparation for the MRCPI Part 2 Clinical Examination	65.6%	31.3%	3.1%	-	-	-	-
The material presented had practical relevance	59.4%	13%	-	-	-	-	-
I feel that the topics covered in this Online Preparation Course adequately reflect topics covered by the MRCPI Part 2 Clinical Examination	53.2%	37.5%	-	9.4%	-	-	-
I think that an online tutorial program dedicated to preparing candidates for the MRCPI Part 2 Clinical Exam would be useful in the absence of a global pandemic	65.6%	34.4%	-	-	-	-	-

Respondents to this survey had an average of 2.13 years clinical experience (Range: 3 months to 4 years). Regarding training status: 83.9% of respondents were enrolled in Basic Specialist Training, 6.5% in the Faculty of Paediatrics General Division Scheme and 3.2% were enrolled in the International Residency Training Program. In this survey 9.7% of respondents stated they were not enrolled in a postgraduate training program. 18 respondents (58%) stated they were scheduled to sit the next sitting of the MRCPI Part 2 Clinical Exam in Paediatrics. Further information from the after group can be found in Table 1. All lectures delivered were rated on a 7-point Likert scale. When asked what additional topics could be included in a future tutorial program, suggestions included Rheumatology, Haematology, Growth and Development, Communication scenarios, Dermatology, Oncology, Allergy and Neonatology. When asked if there were any other educational tools/methods that could be used to deliver a structured teaching program in the current COVID-19 pandemic, individuals suggested; socially distanced small group tutorials, short quizzes, videos demonstrating clinical examination for complex patients, online bedside tutorials and history taking/communication type scenarios. When asked if any tutorial topics delivered by this online tutorial program were not necessary, 100% of respondents replied, "I think they were all necessary". When asked how tutorial presentations could have been improved upon, answers included "content directed towards potential exam questions" and "make sessions more interactive".

Discussion

This project started as a local NCHD-led initiative within CHI at Temple Street and, subsequently expanded to include 14 Irish hospitals and international attendance. This expansion took place via peer-to-peer recruitment into the organising WhatsApp® group due to demand from other sites. Tutorials were delivered by NCHDs in-training and while all reasonable measures were undertaken to ensure information disseminated was correct, it was highlighted to attendees that tutorials were designed by non-specialists. Since the inception of this tutorial program the project has completed four subsequent cycles. Feedback from sessions was also used to revise the scheduling of tutorials, to make them more amenable to NCHDs work schedules. Notably feedback regarding tutorials mostly highlighted technical issues rather than issues of content. Feedback received regarding content was directed only at the breath of coverage. Only positive feedback was received regarding the depth of coverage. The breadth of content delivered was somewhat limited by the specific expertise of senior paediatric trainees working in CHI at Temple Street recruited to give tutorials owing to localisation of certain paediatric sub-specialities across different CHI sites. Given the national audience recruited to the program due consideration will be given to expanding the range of sub-specialities addressed. Feedback following completion of these surveys was communicated to the RCPI (Royal College of Physicians of Ireland) examinations committee.

A significant proportion of candidates surveyed did not understand the format of the MRCPI Part 2 Clinical Examination. One possible reason for this was the change to the new MRCPI Part 2 Clinical format in November 2019. Attendees were preparing for the second delivery of this new format at the time of the program's delivery. This was a marked cause for query from NCHDs delivering tutorials who were largely unfamiliar with the new syllabus as, all except one, had sat the prior format.

To mitigate this all tutors were sent the up-to-date syllabus at the time of their commitment to delivering tutorials and a session entitled "What to expect from the new exam format" was added to the schedule. In the most recent cycle of the program the scope of the delivered sessions has broadened to include a question-and-answer session from RCPI. A likely reason for uncertainty regarding the format of the examination among attendees was the imposition of COVID-19 on the examination calendar. Increased stress among exam candidates due to necessitated format changes in preparing for medical postgraduate examinations during the COVID-19 pandemic has been well described in the literature[1,2]. Difficulties in preparing and delivering clinical examinations due to the necessitated public health measures have been acknowledged by the Royal College of Physicians of Ireland[3], the Royal College of Paediatrics and Child Health[4], the Royal Australasian College of Physicians[5], the American Board of Pediatrics[6] and other governing bodies.

The use of alternative "creative avenues" for the delivery of postgraduate medical education in the post COVID-19 era have been advocated in the literature[1]. This initiative aimed to compliment significant efforts[7] already made to ameliorate the effects of COVID-19 on postgraduate medical education. Due to the success of and demand for this program due consideration will be given to continuing its delivery in the post-COVID-19 era.

The COVID-19 pandemic has changed the postgraduate training experience in many ways. The overnight move to online platforms such as Zoom, Webex and Microsoft Teams forced upon medical services has been a rapid period of transition for many individuals across all postgraduate disciplines[8]. While these key technologies have made the shift to online learning possible, students and educators still prefer in-person teaching methods to pandemic pedagogy[9].We acknowledge that an online tutorial program is an imperfect method of preparation for a clinical exam[1] however it was the best tool at our disposal. The design of this program could potentially be replicated for training in other postgraduate disciplines. While there is likely bias in response given the working relationship between those attending and participating, survey responses obtained suggest that this program helped prospective examination candidate's preparations. Interestingly 42% of individuals surveyed were not scheduled to sit the MRCPI Part 2 Clinical Exam in November. In this cohort 14.8% said that they lacked available paediatric training in their institution. Online learning activities remove barriers to participation that are particularly evident in groupwork activities[10] and represent an educational means to include this cohort.

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Antenatal Magnesium Sulphate: Preventing Cerebral Palsy in Preterm Infants

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Magnesium sulphate is one of the two antenatal neuroprotective pharmacological agents used for preterm infants, the other being glucocorticoids such as dexamethasone.

The prevalence of cerebral palsy is 2 per 1000 live births with 41% of cases occurring in preterm infants. The risk of cerebral palsy increases with the degree of prematurity. A systematic review and meta-analysis showed a pooled prevalence per 1000 live births of 111.80 among children born before 28 weeks gestation and 1.35 for children born after 36 weeks.[1] Cerebral palsy varies in degree and can be debilitating if severe. In a review of 1,300 studies of children with cerebral palsy, 33% are unable to talk, 50% have learning difficulties, and 25% have epilepsy.[2] Preventing cerebral palsy is of utmost importance as there is no cure for cerebral palsy and the condition can have a significant impact on families and carers.

Cerebral palsy in preterm infants results from white matter injury. There is a loss of oligodendrocytes which produce myelin and an increase in astrocytes that cause scarring. The immature oligodendrocyte in the preterm infant is very vulnerable to hypoxic injury. Hypoxic-ischaemic damage causes an increase in glutamate release. Glutamate stimulates the N-methyl-D-aspartate (NDMA) receptor, resulting in an influx of calcium into the neurone, leading to neuronal death. It is hypothesised that magnesium sulphate exerts its neuroprotective effect by acting as an NDMA antagonist and decreasing extracellular glutamate, thus preventing excitotoxic calcium-induced injury to the neurone.[3]

The neuroprotective properties of magnesium sulphate for preterm infants were first reported by Nelson and Grether in 1995 in a case-control study.[4] The authors noted that very low birth weight infants (defined as infants with birth weights <1500 g) who survived to 3 years of age with cerebral palsy were less likely to have been exposed to magnesium sulphate in-utero when compared to controls (7.1% vs 36%).

The justification for administering magnesium sulphate as a neuroprotective strategy is based on randomised control trials. The 6 seminal studies are ACTOMgSO4[5], PREMAG[6], BEAM[7], MAGNET[8], MAGPIE[9] and a more recent study by Wolf et al[10]. A total of 8,576 infants were involved. The overall cerebral palsy prevalence was 5.2% in the magnesium sulphate group and 7.2% in the controls. This 2% superiority was consistent across all studies except for MAGNET, but this trial only reported on 46 infants.[8] In the BEAM study, the cerebral palsy rate was lower in the treatment group, 3.8% versus 6.4% (95% CI 0.41-0.86).[7] In the PREMAG study, the cerebral palsy was 7.0% in the treatment group, and 10.2% in the controls (95% CI 0.40-1.17).[6] In the ACTOMgSO4 study, the cerebral palsy rate was 6.8% in the treatment group and 8.2% in the controls (95% CI 0.54-1.27).[6] In the study by Wolf et al., the rate of moderate to severe cerebral palsy was 3.5% in the magnesium sulphate group and 5.6% in the control group (95% CI 0.28-1.27).[10]

A Cochrane Review in 2009 reported that antenatal magnesium sulphate was associated with a relative risk reduction in cerebral palsy of 32% (Relative Risk 0.68, 95% CI 0.54-0.87), and an absolute risk reduction of 1.7%.[11] In systematic reviews, the numbers needed to treat were estimated at 63 (95% CI 43-155) for infants <37 weeks gestation,[12] 52 (95% CI 31-154) for infants <34 weeks gestation,[12] 56 (95% CI 34-164) for infants <32-34 weeks gestation[13] and 46 (95% CI 26-187) for infants <30 weeks gestation.[13] While the benefit of magnesium sulphate for neuroprotection in infants less than 30 weeks gestation is broadly accepted, uncertainty remains as to whether these benefits apply at higher gestational ages.

Magnesium sulphate is administered to mothers at risk of preterm labour at less than 32 weeks gestation in some centres and at less than 30 weeks gestation in others.[14, 15] The dosage regimen consists of an intravenous bolus of 4 g, followed by an infusion of 1 g per hour for 24 hours or until the infant is born. There is rapid transfer of magnesium sulphate across the placenta to the fetus within 30 minutes of maternal administration. Therefore, it is of therapeutic value even when given a short few hours before birth. In practical terms, the mother needs to receive the magnesium sulphate between 20 minutes and 4 hours before delivery. No outcome differences have been reported with differing dosage regimens. A repeated dose is often recommended if delivery is deemed to be imminent and more than 24 hours have elapsed since discontinuing magnesium sulphate.

The duration of the antenatal magnesium sulphate infusion does not appear to influence its neuroprotective effects. However, what seems to be important is the proximity of the infusion to the delivery. A final magnesium sulphate exposure less than 12 hours before delivery significantly reduced the odds of cerebral palsy compared with exposure greater than 12 hours before delivery.[16]

Magnesium sulphate has been shown to be well-tolerated by neonates when given appropriately according to a standardised protocol. Meta-analyses of the major randomised control trials have not reported any adverse effects in this group.[12]

Women receiving magnesium sulphate in an appropriate manner have been reported to experience transient and minor side effects such as hypotension, tachycardia, nausea, dry mouth and blurred vision.[17] However, the Institute for Safe Medication Practices classifies intravenous magnesium sulphate as a high-alert medication. All obstetric staff who prescribe and administer IV magnesium sulphate to mothers should have training in the recognition of the signs of toxicity.

Since 2010, many countries have recommended the use of magnesium sulphate for neuroprotection. The administration of IV magnesium sulphate in preterm labour commenced at the National Maternity Hospital Holles Street in Dublin and other centres in Ireland in 2012. The Institute of Obstetricians and Gynaecologists of the Royal College of Physicians of Ireland (RCPI) published a clinical practice guideline in 2013.[14] It recommends its use for imminent preterm delivery before 32 weeks, but has qualified this statement by saying that, in situations where resources are limited, administration may be confined to those delivering less than 28 weeks gestation. NICE recommends administration of magnesium sulphate to preterm deliveries of less than 30 weeks gestation.[15]

The Vermont Oxford Network (VON) is a non-profit collaboration of over 1,400 neonatal centres worldwide dedicated to improving the quality and safety of medical care for newborn infants and their families. The network maintains a database of information regarding the care and outcomes of high-risk newborn infants. Currently, all 19 centres in Ireland that deliver newborn infants contribute data on infants born ≤1500 g and/or ≤29 weeks gestation to the network allowing neonatal outcomes to be benchmarked both national and internationally.

The median rate for the antenatal administration of magnesium sulphate for the entire network in 2012 was 42%. This has increased steadily from 48% in 2013 to 65% in 2020. However, this rate falls significantly below the reported median network rate of 86% for the administration of antenatal steroids (NMH Annual Neonatal Clinical Reports).

In September 2012, our institution began administering magnesium sulphate routinely to all women less than 30 weeks gestation in whom delivery was anticipated to occur within the next 12 hours. Based on the 2013 national guidelines, the indication for magnesium sulphate was extended to include infants delivering less than 32 weeks gestation.

The percentage of mothers receiving magnesium sulphate in our institution was 40% in 2012, increasing to 82% in 2020. If only women who deliver infants in our institution (i.e. inborn infants as opposed to outborn infants) and who deliver these infants between 23-31 weeks gestation are included, the rate of antenatal administration of magnesium sulphate in 2020 increases to 92% (NMH Annual Neonatal Clinical Report). The national rate for all infants delivering in the Republic of Ireland was 73% in 2019.[18] While rates of magnesium sulphate administration to eligible mothers in Ireland are slightly higher than those reported by the Vermont Oxford Network in 2019, our rates remain suboptimal.

The reported proportion of eligible mothers who receive magnesium sulphate varies from 68% to 87.5%.[19] The reasons for not receiving magnesium sulphate often include forgetting to prescribe it, difficulties in predicting preterm labour, shortage of staff, mother declined, and the lack of suitable guidelines and standard operating protocols. Key points for improving implementation include keeping the dosing protocol exactly the same, making the medication and giving sets readily available, engaging with all the caregivers, stressing the importance of the intervention, and creating a sense of expectation and a duty of care.[20]

The issues around antenatal magnesium sulphate in the prevention of cerebral palsy have changed over time. Initially, there were the clinical observations and the hypothesis that it may have a preventative role. Next, there were the randomised control trials showing a positive benefit. This was followed by the meta-analyses which confirmed that the benefits were statistically significant as well as investigating the safety profile of the drug. In more recent years, the emphasis has been on investigating the neuroprotective effect of magnesium sulphate on older gestational age groups and also on how best to roll-out and implement antenatal magnesium sulphate for preterm labour. In summary, considering the beneficial effects of antenatal magnesium sulphate, it is important to ensure that its administration becomes embedded into perinatal practice in this country.

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The Adequacy of Training Afforded to New Doctors in Caring for Central Venous Catheters

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Abstract

Aim

In Irish hospitals, central venous catheters (CVCs) are typically removed by nurses or Non Consultant Hospital Doctors. More than 18% of patients who receive a CVC experience complications. We sought to assess competency in new doctors' CVC care

Methods

We surveyed 384 doctors at the end of their intern year to assess their level of competence in managing CVCs

Results

Out of 159 responses, one third (34.5%) removed CVCs unsupervised the first time. Seventy eight percent (124) were unconfident in their technique for confirming CVC position on X-ray and 24%(34) thought that their technique for accessing CVCs was incorrect. Ninety six percent (153) felt they would have benefitted from teaching on CVCs at the start of the year, only 29.5% (47) received such a session

Discussion

We suggest that a teaching session involving a simulated procedure for all new interns provided by an experienced clinician would improve knowledge and competence. This may make practices with regards to CVCs safer and reduce the risk of complications

Introduction

Central Venous Catheters (CVCs) are often removed by a nurse or Non Consultant Hospital Doctor (NCHD) on the ward. Removing CVCs incorrectly can cause air embolism, bleeding, infection or endovascular injury. Eighteen percent of patients with CVCs have complications, with this risk rising to 20% when managed by a doctor in the early stages of training.[1] While efforts to make CVC insertion safer have reduced risks of arterial puncture and pneumothorax[2], efforts to ensure competency of staff caring for and removing CVCs have not been studied in detail. We sought to assess key competencies and knowledge of new doctors in Irish hospitals to determine safety in managing CVCs.

Methods

Following a literature review, focus group interviews between the authors and a small pilot group, we created a questionnaire based around CVC practices[3]. We surveyed interns working in teaching hospitals across the six hospital groups on their level of training and knowledge of CVCs. The survey was administered using Google Forms over 2 months between May and June 2020. Respondents had successfully completed nine months of rotations in different specialties. Institutional approval was obtained at each site to distribute the survey. Statistical analysis was conducted using Excel.

Results

Response rate was 43% (165/384) One hundred and fifty nine interns across 6 intern groups completed valid surveys. Results are summarized in table 1.

Seventy percent (112) of respondents had not received teaching on CVCs from their hospital. 46.5% (74) of interns were shown how to remove CVCs by a tutor, registrar or SHO, while 31.5% (50) were shown by another intern or nurse, and 22% (35) learned from the internet or textbook. Of 142 interns who had removed a CVC, 34.5% (49) were supervised by a senior colleague the first time they removed a CVC, 29.5% (42) by an intern or nurse, and 36% (51) were unsupervised.

Regarding technique, 93% (149) of interns correctly remove jugular CVCs with the patient head down or flat, while 3.5% (5) remove them head up, and 3.5% (5) remove them in whatever position the patient is already in. When removing femoral CVCs, 83% (132) of interns correctly position the patient head up or flat, while 15% (24) remove them head down, and 2% (3) remove them in the position the patient is already in.

Seventy six percent (120) of interns correctly remove the catheter during expiration, while 20% (32) remove it during inspiration and 4% (7) do not time removal to the respiratory cycle. Ten percent (15) hold pressure for the recommended 3 minutes, while 58% (93) hold pressure for longer, and 32% (15) hold pressure for less time. Fifty two percent (83) of interns were not confident that their CVC removal technique was correct or safe.

Twenty seven percent (43) of interns were taught to confirm CVC position on chest X-ray by a senior colleague or tutor, 4% (6) by an intern or nurse, and 69% (110) learned from the internet or a textbook. Fifty nine percent (93) knew that the CVC tip should lie in the SVC. Seventy eight percent (124) of interns were not confident that their technique for confirming CVC position on chest X-ray was correct.

Twenty four percent (38) of interns are not confident that their technique for accessing a CVC is correct. Ninety six percent (153) of interns feel they would have benefited from teaching sessions on CVC management.

Table 1: Survey Results.

Questions	Answers	Number of valid
Hospital Group	Dublin/Mid-Leinster	42
	Dublin/Northeast	34
	Dublin/Southeast	18
	Mid-West	24
	South	23
	West/Northwest	18
Have you received formal teaching on CVC care	Yes	112
	No	47
Who showed you how to remove a CVC	Tutor/more senior doctor	74
	Nurse/other intern	50
	Not shown	35
Who supervised you when you first removed a CVC	Senior colleague	49
	Other intern/nurse	42
	Not supervised	51
How do you position a patient when removing an internal jugular or subclavian CVC	Head down or flat	149
	Head up	5
	Any position	5
During what portion of the respiratory cycle do you remove CVCs	Inspiration	32
	Expiration	120
	Any time	7
Who taught you how to confirm CVC position on X ray	Senior colleague/tutor	43
	Other intern/nurse	6
	Self-taught	110
Where should the tip of a CVC lie on chest x ray	Superior Vena Cava	93
	Right Atrium	46
	Inferior Vena Cava	5
	Subclavian artery	7
	Hepatic Vein	1
Are you confident that your technique for accessing a CVC is safe?	Yes	52
	No	107
Do you think you would have benefited from teaching on CVC care	Yes	153
	No	6

Discussion

Our survey indicates that interns are not receiving adequate teaching on CVCs. The current national intern curriculum addresses taking blood cultures from CVCs but not removal allowing potential for error.[4] The respondents report the use of high risk practices, and are not confident they are managing CVCs safely. Many interns are taught how to manage CVCs by juniors, while others are learning from the internet. Sixty six percent removed CVCs without senior supervision for the first time.

The old mantra of "see one do one teach one" has been abandoned in medical education.[5] Learning methods including simulation and procedure based assessments have replaced these traditional methods in order to improve patient safety and reduce risk.[6] In CVC management we have not progressed with novel training. Interns may be expected to manage CVCs before "see one" and lack of training may cause avoidable risk to patients.

Based on our findings, we recommend a teaching session for all new interns provided by an experienced clinician. A standardized training session during induction and a supervised procedure based assessment may homogenise practices, reducing risks including air embolism, malpositioned catheters, and associated infections.

Declaration of Conflicts of Interest:
The authors report no conflicts of interest.

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Patients Experience and Preference Regarding Subcutaneous Venous Thromboembolic Prophylaxis Following Robotic Assisted Radical Cystectomy

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Abstract

Aim

The European Association of Urology recommend venous thromboembolic (VTE) prophylaxis for 28 days following radical cystectomy (RC). The aim of this study was to assess patients experience with VTE prophylaxis.

Methods

A review was performed of the last 100 patients who underwent RC at our centre.

Results

80 patients responded, 59 (73.8%) patients self-administered, 16 (20%) had it administered by a family member and 5 (6.3%) required a daily visit by a district nurse. 22 (27.5%) patients reported mild pain, 18 (22.5%) moderate pain while 9 (11.3%) reported severe pain. 33 (41.3%) patients described some bruising. 4 (5%) patients reported haematomas and 3 (3.8%) skin irritation. 4 (5%) patients described difficulty with injecting. 69 (86.3%) patients reported they would prefer an oral agent if possible. No patient developed a VTE.

Conclusion

Patients who receive extended VTE would prefer an oral agent if possible.

Introduction

The incidence of venous thromboembolism (VTE) following radical cystectomy (RC) is reported to be up to 17% (open cystectomy 2.9–11.6% and robotic assisted radical cystectomy (RARC) 2.6–10.3%)[1]. The European Association of Urology recommends 28 days VTE prophylaxis following RC[2]. The current standard is subcutaneous low molecular weight heparin (LMWH).

There have been concerns regarding patient compliance and physician adherence with the extended regimen[3]. Data from orthopaedic literature suggest that extended VTE prophylaxis with direct oral anticoagulants (DOACs) may be as effective in VTE prevention[4]. The aim of this study was to assess patients experience and preference regarding subcutaneous VTE prophylaxis following RARC.

Methods

A retrospective review was performed of the last 100 patients who underwent RARC. All patients received dalteparin post operatively commencing the night of the procedure and continued for 28 days. Patients are managed according to an enhanced recovery program which emphasises early mobilisation[5].

Results

80 patients agreed to take part in our survey. The clinical and pathological characteristics of the cohort are detailed in Table 1.

n=	**80**
Median Age, years (range)	72 (48-87)
Sex (%)	
Male	57 (71.3)
Female	23 (28.7)
Histological subtype	
Urothelial Cancer	70 (87.5)
Variant	10 (12.5)
Indication for surgery	
Non muscle invasive disease	35 (43.8)
Muscle invasive disease	45 (56.2)
Pathological Stage	
T1	29 (36.3)
T2	31 (38.8)
T3	14 (17.5)
T4	6 (7.5)
Nodal Status	
N0	75 (93.8)
N1	5 (6.2)
Neo-adjuvant chemotherapy	24 (30)
Median pre-operative Haemoglobin, g/L (range)	130 (81-163)
Median operative time, mins (range)	320 (200-500)
Median blood loss, mls (range)	200 (50-800)

Table 1: Patient demographics and histopathological details of patients who underwent robotic assisted radical cystectomy.

59 (73.8%) patients self-administered, 16 (20%) had it administered by a family member and five (6.3%) required a daily visit by a district nurse. 31 (38.9%) patients reported no pain over the course, 22 (27.5%) mild pain, 18 (22.5%) moderate pain while 9 (11.3%) reported severe pain. 33 (41.3%) patients described some degree of bruising. 4 (5%) patients reported haematomas and three (3.8%) skin irritation. Four (5%) patients described difficulty with injecting. No patient reported stopping dalteparin injections early.

69 (86.3%) patients reported they would prefer an oral agent if possible.

No patient developed a thrombo-embolic event by 90 days. No patient was readmitted with a haemorrhagic event.

Discussion

Our study demonstrates no issue with compliance with extended VTE prophylaxis following RARC. There were also no significant complications associated with extended VTE prophylaxis. Despite this the majority of patients in our cohort would prefer an oral alternative if possible.

Contrary to our findings, numerous studies have demonstrated that patient compliance can be an issue[3,6]. Marchocki et al, reported on 62% of patients completed their 28-day regimen[3]. Furthermore, physician adherence to prescribing extended regimens needs to be improved, Bergqvist demonstrated only 80% of over 3000 high risk orthopaedic patients received the appropriate prescription for extended VTE prophylaxis in a multi-centre registry across 17 European countries[6].

The concern regarding extended VTE prophylaxis is the increased risk of bleeding. One of the advantages of RARC is less blood loss (200mls in our series)- the risk of a secondary haemorrhage is low (no patient was readmitted with a haemorrhage in our series). In a review of over 400 open RC, Pariser et al, demonstrated no increase in bleeding events or transfusion rates following the introduction of an extended VTE regimen[7].

The use of an oral agent would be preferable for patients- avoiding the need to self-inject. Several randomized controlled trials in the orthopaedic literature have compared the use of direct oral anticoagulants (DOACs), factor Xa inhibitors such as apixaban to LMWH. The ADVANCE-2 trial compared Apixaban and Enoxaparin VTE prophylaxis following knee replacement. Apixaban 2.5 mg twice daily, starting on the morning after total knee replacement, offers a convenient and more effective orally administered alternative to 40 mg per day enoxaparin, without increased bleeding[8].In the ADVANCE-3 trial 5,407 patients were randomized similarly for 35 days after hip replacement. Thromboprophylaxis with apixaban, as compared with enoxaparin, was associated with lower rates of venous thromboembolism (1.4% vs 3.9%, $p<0.001$), without increased bleeding[9]. Furthermore, similar to LMWH no therapeutic monitoring is required with DOACs.

The current 2021 EAU guidelines for radical cystectomy suggest pharmacological prophylaxis such as LMWH- there is a slight discrepancy with the 2020 EAU VTE guidelines which suggest alternate prophylaxis regimens can be used such as DOACs [2]. Despite this LMWH is standard practice.

There is also an economic advantage to the use of DOACs instead of LMWH[10].

Although no serious adverse events were reported with 28 days of dalteparin use following radical cystectomy, the majority of patients would prefer an oral alternative.

Ethical Approval:
The study was approved by the ethical committee at the Royal Surrey (RS2021-1252).

Declaration of Conflicts of Interest:
There are no conflicts of interest to declare.

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Novel Method of Engaging with Vulnerable, Settled Communities During COVID-19

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Abstract

Aims

Ongoing high COVID-19 incidence rates within settled vulnerable populations in the Midlands of Ireland required a novel, non-discriminatory model of engagement.

Methods

A collaboration of HSE Midland's Department of Public Health, Safetynet Primary Care and the HSE Midlands Traveller Health Unit trialled six pop-up COVID-19 testing sites throughout March/April 2021, targeting settled vulnerable communities with high local incidence rates. Public Health doctors provided information, reassurance and advice on-site, with members of the Traveller Health Unit and Primary Health Care Projects providing Infection Prevention and Control (IPC) supplies.

Results

576 COVID-19 tests were performed, from which two positive cases identified, 42 members of vulnerable populations were identified, 221 health promotion videos were sent and 448 IPC packs were distributed.

Conclusion

While the effectiveness of the process to identify positive COVID-19 cases was limited, it offered a unique opportunity for Public Health Medicine to engage with settled vulnerable populations and build a relationship of trust.

Introduction

The Midlands of Ireland have seen a disproportionally high incidence of COVID-19 recently when compared to the rest of the country[1]. In early March 2021, Offaly and Longford had the highest and second highest incidence rates nationally[2]. Furthermore, between December 10th 2020 and March 18th 2021, 44 outbreaks (with an associated 527 cases) within Traveller communities in the Midlands were notified to the Department of Public Health Medicine[3].

Irish Travellers have been burdened significantly by such outbreaks when compared to other vulnerable groups. Nationally, between March 1st 2020 and September 25th 2021, there were 481 outbreaks amongst Irish Travellers, compared to 95 Direct Provision outbreaks, 56 Homeless outbreaks and 40 Roma outbreaks [4]. Travellers also have a higher risk of both infection and severe disease relative to the general population[5].

A novel method of engaging with these communities, to facilitate testing and to allow for community health promotion, was proposed by the Midlands Department of Public Health, in collaboration with the Traveller Health Unit and Safetynet Primary Care, a medical charity with funding from HSE Social Inclusion. The objectives of this collaboration were; 1) to identify cases in high incidence communities, 2) foster trust and confidence amongst these vulnerable communities in the services provided by the Partnership, thus paving the way for positive engagement in future services such as vaccination, and 3) provide an opportunity for vaccine advocacy.

Methods

The project's aim was to offer testing to populations living in residential areas with high COVID-19 transmission and a high proportion of vulnerable groups, especially Irish Travellers. This would provide an opportunity for health promotion and to provide supplies to assist with health protection in households. A longer-term aim was to pave the way for strong vaccine demand in these vulnerable populations, by growing trust in the service and the partnership.

A pop-up testing site was used to facilitate testing at the chosen locations. These testing sites, held in open and visible outdoor spaces, were supplied/staffed by Safetynet and typically ran for approximately four hours. Anyone who attended was offered a free COVID-19 PCR test with an additional rapid antigen test if symptomatic. The only exception was the testing in Birr which was a trial of primarily antigen testing. Safetynet followed-up results and contacted individuals as required. Ethnic identifiers were acquired from tested individuals. Public Health doctors engaged with all attendees to answer questions and provide advice, with emphasis on methods to prevent COVID-19 transmission within Traveller communities as outlined through the relevant HPSC guidance[6], including COVID-19 vaccines. All those attending were offered an information video from the HSE on the vaccine, both for the general public[7,8] and the Traveller communtiy[9]. Finally, individuals received a hygiene pack, with face masks, wipes and hand sanitiser, to aid in infection prevention.

Targeted advertisement, using door to door visits and flyers, was conducted at residential sites the day prior, with special emphasis on reaching the vulnerable population in question.

Results

Between 16/03/2021 and 30/04/2021, six separate sites were chosen based on local incidence rates and presence of a settled, vulnerable population. A table summarising results is presented below.

Table 1: Summary of data from six chosen sites within the Midlands.

	Ardnacassa Estate, Co. Longford	***Birr, Co. Offaly***	***Grange, Mullingar, Co. Westmeath***	***Edenderry, Co. Offaly***	***Arden View, Tullamore, Co. Offaly***	***Portlaoise, Co. Laois***
Date:	16/03/2021	26/03/2021	02/04/2021	09/04/2021	23/04/2021	30/04/2021
Residents Tested:	50	238	63	147	43	35
Number of Positive Cases:	1	1	0	0	0	0
Incidence Rate:	2%	0.42%	0%	0%	0%	0%
Number of Vulnerable Population Identified:	22	0	4	8	0	8
Ethnic Breakdown:	x22 White Irish Traveller x10 White Irish x9 Black African x2 White Polish x2 Other White x5 Undocumented	x229 White Irish x4 White Polish x4 Other White x1 Undocumented	x54 White Irish x4 White Irish Traveller x1 White British x4 Undocumented	x130 White Irish x8 Brazilian x3 Polish x6 Other White	x42 White Irish x1 Indian Irish	x21 White Irish x8 White Irish Traveller x4 White European x1 Brazilian x1 South African
Number of COVID-Vaccine Videos Sent:	37	40	32	72	15	25
Number of IPC Packs Distributed:	42	182	51	109	36	28
Public Health Q&A Offered (including vaccine advice)?	Yes	Yes	Yes	Yes	Yes	Yes

Discussion

It was noted that there was limited identification of vulnerable populations on certain sites (namely Birr and Arden View). It is possible that some Travellers in these locations were reluctant to self-identify as such.

Piloting of antigen-only testing proved to be time-consuming and labour-intensive for on-site laboratory staff when compared to PCR testing, and was not repeated in the setting of unpredictable numbers attending. Disproportionally high attendance in Birr was linked to leaking of information on the testing to the broader community on social media 48 hours prior, with more restrained and targeted marketing utilised thereafter.

Of the 576 tests from the six sites, only 2 COVID-19 cases (0.35% incidence rate) were identified. While the number of identified cases was low, it was felt that the true strength of this operation was its ability to engage and encourage healthy behaviour within a vulnerable community. Community feedback on both the events themselves and the follow-up vaccine information videos was largely positive and appreciative.

Whether this has had any impact on incidence rates amongst these vulnerable groups, or the communities in which they live, is questionable. However, we feel the partnership has provided a grass-roots service that our vulnerable communities can trust and have confidence in. We hope this will pave the way for strong vaccine uptake.

Declaration of Conflicts of Interest:
We have no conflicts of interest to declare.

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Occam's Razor Versus Hickum's Dictum: Getting the Diagnosis Right

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Abstract

Presentation
We present a patient who attended our Emergency Department with a short history of unilateral weakness and slurred speech.

Diagnosis
The patient had suffered a stroke and investigations pointed to a diagnosis of Giant Cell Arteritis (GCA) as the underlying mechanism.

Treatment
However, with further clinical events occurring the possibility of additional pathology was explored. This led to the diagnosis of paroxysmal atrial fibrillation for which a Direct Oral AntiCoagulant was commenced.

Conclusion
This patient's initial differential diagnosis of GCA was supported by raised inflammatory markers, a vasculitic process evident on Computed Tomography Angiogram, an abnormal Temporal Artery Ultrasound and confirmative histology. Ultimately, the insertion of an implantable loop device led to the detection of paroxysmal atrial fibrillation and the commencement of anticoagulation resulted in no further neurological events facilitating discharge to a rehabilitation facility.

Introduction

At medical school, we are taught the skills to take a history and examine a patient. A differential diagnosis is thus derived leading to further investigations and a clinical plan. We endeavour to find one unifying diagnosis, assuming a single cause for a patient's clinical presentation (Occam's razor). Although, as advised by Hickam's dictum, "a man can have as many diseases as he damn well pleases". [1]

Case Report

A 70-year-old right-handed male, presented to the Emergency Department (ED) with a one-day history of slurred speech, right sided weakness and an unsteady gait. On examination, mild dysarthria and right arm ataxia was evident. He was in sinus rhythm and was normotensive. There was no evidence of temporal artery tenderness.

Prior to his presentation, he had a three-week history of muscle aches and pains and received a provisional diagnosis of probable Giant Cell Arteritis (GCA). Steroid therapy had been commenced with plans for a temporal artery biopsy.

Investigations: His blood biochemistry was notable for an elevated C-reactive protein (CRP) 20 mg/L (normal less than 3 mg/L) and Erythrocyte Sedimentation Range (ESR) 65 mm/hr (normal 0-22 mm/hour). A 24-hour electrocardiogram (ECG) monitor showed no atrial fibrillation. His Computed tomography (CT) exam of the brain was normal, however, his Magnetic Resonance Imaging scan of the brain demonstrated acute infarcts in the posterior circulation. In addition, his CT angiogram showed evidence of a large vessel vasculopathy consistent with vasculitis in the setting of biopsy proven giant cell arteritis'. The temporal artery ultrasound scan and temporal artery histology was consistent with the diagnosis of GCA (Figures 1 and 2).

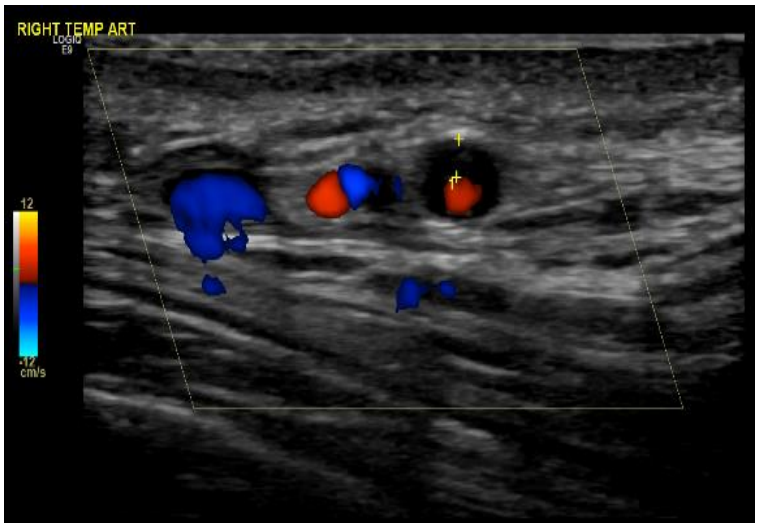

Figure 1: Temporal artery ultrasound - The dark area around the arterial lumen on ultrasonography (yellow crosses) is characteristic of the halo sign.

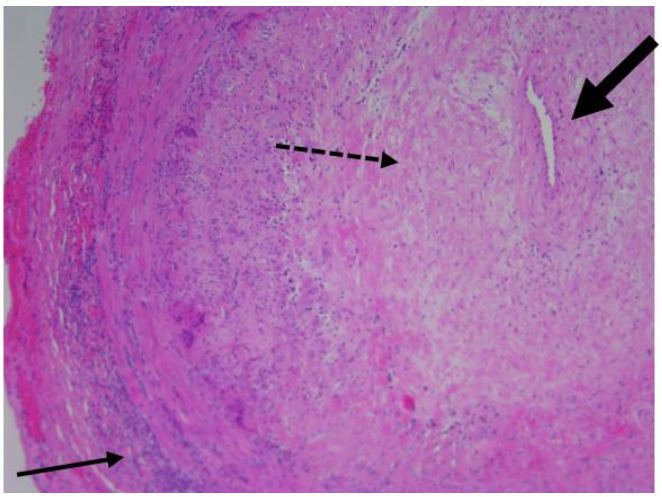

Figure 2: Right temporal artery biopsy specimen under medium power, haematoxylin and eosin stain - Characteristic features of temporal arteritis are seen including a cluster of multinucleated cells (white arrow) and periadventitial lymphocytic inflammatory infiltrate (thin arrow). Age related intimal fibrosis has resulted in a thick lumen (dotted arrow). With continued inflammation, the lumen has become slit-like (thick arrow).

This patient was therefore treated for an ischemic stroke secondary to GCA. His prednisolone therapy was increased to 60 mg per day and aspirin 300 mg per day was concurrently started.

Over the subsequent days, our patient experienced three further transient episodes of speech disturbance. Further brain imaging did not indicate any new ischaemic or haemorrhagic event and our patient was converted to dual antiplatelet therapy (aspirin and clopidogrel). As the patient's CRP and ESR were down trending no changes were made to his steroid therapy and he was referred to cardiology for an implantable loop device which subsequently detected paroxysmal atrial fibrillation (PAF). The patient was anticoagulated thereafter and had experienced no further acute neurological events at the time of his last outpatient review.

Discussion

The nature of the diagnostic process is iterative; by gathering information, the goal is to reduce diagnostic uncertainty, narrow down the diagnostic possibilities and develop a more precise and complete diagnosis. [2] PAF can be difficult to diagnose if the patient does not have an event whilst being monitored. [3] However, the further vascular events on 'optimum treatment', led to a critical reappraisal of our diagnostic thinking.

In conclusion, this patient had two significant diseases – GCA and PAF both of which are common in the older patient. While the patient initially had the clinical and radiological features of GCA, the continuing vascular events led us to reconsider the diagnostic process and arrange further investigations which led to the second diagnosis of PAF and hence Hickam's dictum has been followed.

Declaration of Conflicts of Interest:
The authors declare that there are no conflicts of interest.

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Varicella Zoster Meningoencephalitis

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Abstract

Presentation

Our case features a non-specific presentation of headache with associated vomiting, which progressed to include behavioural and personality changes.

Diagnosis

A lumbar puncture revealed central nervous system infection with Varicella Zoster Virus, indicating viral meningoencephalitis.

Treatment

A two week course of anti-viral therapy was initiated, consisting of Acyclovir 10mg/kg three times daily, and the patient made a full recovery.

Discussion

This case highlights a rare viral cause of meningoencephalitis, as well as the importance of having a high index of suspicion for viral meningitis/encephalitis in 20-40 year olds presenting with headache and nausea, even where the full constellation of meningitic symptoms is not present. Also, it reminds us that encephalitis may not always be accompanied by classic MRI changes.

Introduction

This case highlights a rare viral cause of meningoencephalitis, as well as the importance of having a high index of suspicion for viral meningitis/encephalitis in 20-40 year olds presenting with headache and nausea, even where the full constellation of meningitic symptoms is not present. Also, it reminds us that encephalitis may not always be accompanied by classic MRI changes.

Case Report

A previously healthy young man presented to the Emergency Department with a two day history of headache and vomiting. There was no photophobia, neck stiffness or seizure activity. His vitals were within normal range and physical examination was unremarkable. Past medical history included a discectomy of L5/S1 and chickenpox at the age of six.

Investigations involved routine blood tests including inflammatory markers, which were completely normal, and cerebrospinal fluid (CSF) analysis. CSF was clear and colourless with raised WCC (142-160cmm), raised protein (0.93) and low normal glucose (3.2mmol/L, 56% of serum glucose). CSF was sent to the National Viral Reference Laboratory for viral studies, including Varicella Zoster Virus (VZV). Brain CT scanning demonstrated no abnormality.

At presentation, the patient was isolated and started on Ceftriaxone 2mg twice daily and Acyclovir 10mg/kg three times a day to cover meningoencephalitis. He was feeling much improved the following day and was discharged from hospital. On day five the patient re-presented to the Emergency Department with forgetfulness, blurred vision and severe headache. A collateral history revealed that he had been having episodes of confusion and strange behaviour such as putting ice-cream in the cupboard. The patient's vitals and physical examination were once again normal.

VZV DNA was detected in the CSF by polymerase chain reaction (PCR) on 06/10/2016. A two week course of anti-viral therapy was initiated, consisting of Acyclovir 10mg/kg three times daily, to treat encephalitis. Following consultation with the neurology service, a brain MRI was carried out, with the additional recommendation of an electroencephalogram (EEG) pending the result. This showed no abnormality and an EEG was booked in the nearest available centre.

On day ten the patient developed a pain affecting the chest and posterior aspect of the right shoulder. The pain was deemed to be neuropathic so Amitriptyline 25mg once daily was administered which provided relief. The two week course of Acyclovir was completed and an EEG showed no abnormality. The patient's clinical status improved significantly and he was discharged on the final day of anti-viral therapy. The patient was followed up two months later and was feeling well with no recurrence of symptoms.

Discussion

This is a rare case of meningoencephalitis due to VZV in an immunocompetent adult. Unlike post-herpetic rash, the symptomatic re-occurrence of VZV in the brain is far less common, with VZV encephalitis occurring in only 1-2 per 10,000 cases of VZV[1]. In the majority of these cases VZV meningoencephalitis occurs in immunocompromised individuals, many of whom have HIV[2].

In a patient with new onset of headache and vomiting it is important to first consider dangerous pathologies such as space occupying lesions from blood, oedema or tumour. Headache has a broad differential diagnosis. Although our patient did not display overt red flags of meningitis, infection is another diagnosis that must be out-ruled in new headache.

VZV encephalitis may occur at the time of primary infection or due to re-activation. Other than the immunocompromised, it occurs more commonly in adults over 20, patients with cranial dermatome involvement and patients with disseminated skin disease. Typically, onset is insidious, and there may be no associated zoster rash, fever, or CSF pleocytosis; a brainstem encephalitis associated with Ramsay Hunt syndrome can sometimes feature also[3].

We used the evidence-based British Infection Association guidelines, which cites a consensus meeting examining all published literature to recommend treatment strategies for VZV encephalitis[4]. Whether it occurs in the context of primary infection or reactivation, intravenous acyclovir 10-15mg/kg TDS is the recommended regimen to be started immediately when viral encephalitis is suspected or confirmed[3]. The slightly higher dose is reasonable as VZV is not as sensitive to acyclovir as HSV. There exists no evidence to support standard antimicrobial treatment of viral meningitis. In terms of corticosteroids, there is little evidence showing their efficacy in the management of viral encephalitis[3]. However, if there is a vasculitic component associated with the disease the use of corticosteroids is reasonable.

Interestingly, the incidence of viral meningitis is rising, likely due to increasing detection with PCR[5]. One study examining the incidence of VZV infections of the CNS found a progressive increase in CSF samples requesting VZV testing between 2007 and 2014[6]. Irish data from the Health Protection Surveillance Centre has also recorded a significant increase in VZV encephalitis in 2019 compared with 2009[7].

Declaration of Conflicts of Interest:
There are no conflicts of interest to declare.

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Cloudy Peritoneal Dialysate in the Absence of Peritonitis

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Abstract

Presentation
We present a case of a female patient on continuous ambulatory peritoneal dialysis who presented with cloudy effluent in the absence of peritonitis, presenting a diagnostic challenge.

Diagnosis
Our patient developed cloudy effluent secondary to the use of a calcium channel blocker for control of hypertension.

Treatment
Cloud effluent resolved on cessation of Lercandipine.

Conclusion
Cloudy effluent is an important clinical finding in patients undergoing peritoneal dialysis and most commonly represents infection or peritonitis However, there are some lesser known causes including certain drugs.

Introduction

Continuous ambulatory peritoneal dialysis (CAPD) is an effective treatment modality for patients with end stage kidney disease[1]. Peritonitis is a serious complication of CAPD and is the most common cause of cloudy fluid. This is caused by polymorphonuclear leukocytes (PMNL) passing through the peritoneal fluid causing the effluent to appear cloudy. Patients with peritonitis usually present with abdominal pain, nausea, vomiting, fever and raised white cell count in the peritoneal fluid[2].

There are rarer non-infectious causes of cloudy effluent in CAPD which include intraperitoneal malignancy, allergic reactions to PD solutions, increased fibrin, increased triglycerides, vasculitis and trauma[3]. Drugs are an often over-looked cause of cloudy effluent. Among the drugs causing cloudy effluent are amphotericin B, chloramphenicol, cefazolin, and dihydropyiridine group of Calcium channel blockers[4].

Case Report

Our patient is a 60-year-old lady with end-stage kidney disease as a consequence of ANCA associated vasculitis who was newly commenced on peritoneal dialysis.

10 days later she presented to renal home therapies unit with cloudy effluent. Newspaper print was not visible through the fluid. She was asymptomatic and afebrile. A sample of peritoneal fluid was sent for white cell count and culture and returned a normal reading of 14 x 10^9/L.

The following day later she presented again with a second bag showing cloudy effluent. White cell count was 42 x 10^9/L on this occasion and she was commenced on vancomycin and ceftazidime and as per protocol. After two days there was no resolution in the appearance of the effluent. Antibiotics were stopped and a non-infectious cause was queried.

At the time her medications included aspirin 75mg OD, bisoprolol 2.5mg OD, omacor 1g OD, Orovite OD, calcium acetate 1g TDS, and lercanidipine 10mg OD. Following a literature review of non-infectious causes of cloudy effluent calcium channel blockers were reported as a rare cause. The patient's lercanidipine was stopped and replaced with doxazocin XL 4mg OD.

24 hours days after discontinuing lercanidipine, peritoneal effluent became translucent and continued to be so off lercanidipine.

Discussion

Calcium channel blockers are routinely used in the management of hypertension and are a first line for patients over the age of 55. They are divided into different groups based on their molecular structure and are usually classified as dihydropyiridines, such as lercanidipine, and non-dihydropyridines, such as verapamil.

Calcium channel blockers, especially dihydropyridines, have been known to cause cloudy peritoneal effluent. The first reported case in the literature was in 1993 and involved manidipine, with which the authors noted a cloudy dialysate in 5 out of 8 patients within 24 hours of commencing the drug, in the absence of clinical signs and symptoms of peritonitis and with negative cultures and normal white cell counts.

Triglycerides were noted to be elevated in the peritoneal effluent, which are not normally non-existant in dialysate. On discontinuation of the drug, the effluent became translucent and triglyceride levels returned to normal[5].

A follow up study by the same authors identified three more drugs of this class (nifedipine, nisoldipine and benidipine) that induced a reversible cloudy dialysate[6]. Further studies have demonstrated similar results with lercanidipine[7].

Although it's not fully understood, the literature currently proposes numerous mechanisms by which CCBs can cause cloudy effluent and triglyceride levels in the dialysis fluid are thought to play a principal role. The CCBs that are known to cause cloudy effluent more frequently are mostly lipophilic. This lipophilic nature of certain CCBs and their effect on the GI tract, lymphatic vessels and blood vessels is believed to influence triglyceride levels in effluent, leading to cloudy dialysate.

Studies have found that those with cloudy effluent on lercanidipine have higher peritoneal membrane transport, leading to greater accumulation of lercanidipine in effluent and thus resulting in decreased lymphatic absorption, further increasing effluent triglyceride levels[8]. Serum triglycerides and dialysate triglycerides were not measured in our patient.

Further studies of CCB's mechanism of action report that their action on lymphatic vessels leads to reduced contractility of the vessels, which contributes to increased hydrostatic pressure in such vessels and vasodilation, ultimately leading to increased exudation of lymph. Our patient had no evidence of peripheral oedema.

Healthcare professionals caring for patients on peritoneal dialysis should be aware of drugs that can cause cloudy effluent in the absence of peritonitis or positive cultures. This will help avoid unnecessary antibiotic therapy and costs.

Declaration of Conflicts of Interest:
The authors have no conflicts of interest to declare.

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Nose Tickles, a.k.a. The Swab

Poem by D. Ní Chróinín

She takes off my bib,
And tells a fib-
"Just nose tickles" she says.

Into the car-
The tent's not far.
"Nose tickles!" she says.

They poke and prod
Around my snot.
"Nose tickles?" she says.

I hate this task,
Done by men in masks.
"Nose tickles!" he says.

Someday my *srón*
Will be left alone.
Tummy tickles are best.

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Temocillin: A Meropenem-Sparing Agent for Treating Infections Caused by ESBL-Producing *Enterobacterales*

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Dear Editor,

Carbapenems have traditionally been the drugs of choice for treating infections caused by extended-spectrum β-lactamase- (ESBL) and AmpC producers. Use of carbapenems increases the risk of patients being colonized or infected with Carbapenemase-producing *Enterobacterales* (CPE) and therefore alternative treatments are needed.[1]

Temocillin has resistance to both classical and extended-spectrum β-lactamases and AmpC enzymes and some activity against KPC-producing *Enterobacterales*.[2] Temocillin is licensed for treatment of septicaemia, urinary tract infection and lower respiratory tract infection where susceptible Gram-negative bacilli are suspected or confirmed.[3] A number of review articles have noted the potential of temocillin as an meropenem-sparing agent for ESBL/AmpC –producing organisms, however there is limited published literature regarding temocillin usage and clinical efficacy.

As part of an institutional antimicrobial stewardship initiative temocillin was introduced as a meropenem-sparing agent. A record was kept of all patients who were prescribed temocillin over a 6-month period. These patient's healthcare records and laboratory results were retrospectively reviewed.

Sixteen patients were included in this study. All patients received temocillin for a temocillin-susceptible ESBL-producing isolate detected in a clinical sample. The maximum dose prescribed was 2g BD. Temocillin susceptibility testing was done on the VITEK using BSAC breakpoints. Nine patients (56.25%) treated had urinary tract infections. Other infections were intra-abdominal (n=2), respiratory (n=2), biliary (n=1), wound site (n=1) and unclear source (n=1). Eight patients (50%) had an associated blood stream infection with the ESBL-producing organism isolated from blood cultures. The majority (87%) of the ESBL-producing organisms isolated were *Escherichia coli* and the remainder were *Klebsiella pneumoniae*.

There was resolution of infection in 15 of the 16 cases reviewed. One patient developed breakthrough bacteraemia while on temocillin with a temocillin-resistant ESBL-producing isolate. This patient had intra-abdominal sepsis with inadequate source control. There were no documented side-effects attributed to temocillin nor were there any reported cases of *C. difficile* infection.

When this study was carried out there were no EUCAST breakpoints for temocillin. The BSAC guidelines were used. The newly released EUCAST criteria define MICs >0.001 and <16mg/L as susceptible with increased exposure for *E. coli, Klebsiella* species (except *Klebsiella aerogenes*) and *Proteus mirabilis*. These breakpoints apply to a high-exposure dosing regimen of 2g 8 hourly.[4] The standard dose as listed in the drug summary of product characteristics is 2g twelve hourly.[3] All patients in this study received a lower dose of temocillin than currently recommended by EUCAST and notably 93.8% had documented resolution of their infection. They state there are insufficient data to recommend breakpoints and dosing regimens for pneumonia or other invasive infections.[4] In this study temocillin was used to treat patients with pneumonia and intra-abdominal sepsis. Both patients with pneumonia had good clinical outcomes. One of the patients with intra-abdominal sepsis had a poor outcome.

This study, despite small sample size, adds to the literature and supports the use of temocillin as an effective meropenem-sparing agent for the treatment of infections caused by temocillin-susceptible ESBL-producing isolates. Larger scale studies are needed, particularly to evaluate temocillin use in patients with deep-seated infections.

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Reflections from a Feasibility Study on Maternal Live Singing to Preterm Infants in the Neonatal Unit

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Dear Editor,

Research has shown that live singing (LS) can support the preterm infant's development and parents' wellbeing. Reported physiological effects of singing for preterm infants include reduced respiratory rate and heart rate[1, 2], increased oxygen saturation rate[1, 2], improved sucking rate[2], and increased weight gain[2, 3].Parents' perceived stress and anxiety levels reduced in response to LS[2], and a decrease in state-trait anxiety inventory (STAI) scores in response to maternal singing to preterm infants has been reported[4]. To foster similar maternal LS research in Ireland, a feasibility study was carried out as part of a music therapy (MT) project in partnership between the University of Limerick and the regional NICU at the University Maternity Hospital Limerick (UMHL). Ethical approval was granted by the University of Limerick Hospital Group's Research *Ethics* Committee (No: 144/19) in November 2019.

A total of four mother – pre-term infant dyads partook in this NICU study to examine the effects of maternal LS. All four mothers chose "Twinkle Twinkle Little Star" as their preferred song. The song then featured as part of the LS intervention by both researcher and mother who held the preterm infant in their arms. The intervention consisted of two 3-minute periods of singing with three 2-minute resting periods before, between and after singing (2m rest > 3m singing >2m rest > 3m singing > 2m rest).

The findings showed an overall decrease in the mean heart rate of the preterm infants during the second time of the three-minute singing (pre, 142.50, SD 5.79; 2nd singing, 138.98, SD 1.42) and a reduction of maternal stress levels in all participants (pre, 3.5, SD 1; post, 1.5, SD 1). The oxygen saturation of the preterm infants varied and no conclusion could be drawn.

Analysis of qualitative findings from three questionnaires completed by mothers included themes relating to maternal wellbeing, wellbeing of the preterm infant, and programme evaluation. Some quotes about the LS included: "(live singing was) relaxing and reduced stress levels", "(preterm infants) found it soothing" and "(their babies) went into deeper sleep". Overall, despite the small sample size, the findings of this study on HR and maternal stress levels align with previous studies[2, 3].

From this feasibility study we could infer that; 1. Effective communication between the researcher and the NICU staff was key in supporting study recruitment, 2. Flexibility was essential on behalf of the researcher in organizing suitable times for mother's participation, 3. Special considerations required and mindfulness around the suitability of the NICU environment for the LS sessions, and 4. Challenges in ensuring privacy and limiting the potential impact of background noise within the shared clinical floor space in NICU.

This study enabled us to gather information on the short-term physiological outcomes of LS in the NICU as well as evaluating the practicality of implementing MT research in perinatal settings in Ireland. The findings suggest that adopting LS sessions in the NICU could potentially have beneficial outcomes for preterm infants and their mothers even after a single session.

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Listeriosis: An Atypical Presentation of an Uncommon Disease

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Dear Editor,

Listeria monocytogenes is a Gram positive bacterium found widespread in the environment. Ingestion of contaminated food products such as soft cheese and pâté can lead to infection[1]. Listeriosis is uncommon among the immunocompetent but can cause serious infection in neonates, pregnant women, immunosuppressed patients and the elderly[2]. Invasive disease manifests as meningitis, meningoencephalitis and bacteraemia and can be associated with a significant mortality[3].

Listeriosis is infrequent in Ireland with only 22 cases reported in 2018, equating to a crude incidence of 0.46 per 100,000 population[4].

A 63-year-old gentleman presented with self-limiting left-sided facial droop, limb weakness and slurred speech suggestive of transient ischaemic attack. He described general lethargy in the preceding 5 days and had been discharged from another local emergency department after presenting with a shaking episode, which in retrospect may have been a rigor. His presentation had been attributed to seizure activity and blood cultures had not been collected. Medical history was significant for chronic perianal fistula and elevated BMI.

On admission, he was tachycardic but afebrile and normotensive. White cell count was elevated at 11.3×10^9/L and C-reactive protein was 10mg/dL. Lethargy and light-headedness persisted and he denied gastrointestinal disturbance. Investigations included magnetic resonance imaging (MRI) of brain, demonstrating acute infarcts in the right cerebellum, right pons and left occipital lobe.

On day 7 of admission, he became febrile with minimal change in clinical status and minor elevation of inflammatory markers (C-reactive protein 52mg/dl). Blood cultures flagged positive in both bottles with Gram positive bacilli, subsequently identified as *Listeria monocytogenes,* confirmed on repeat blood cultures. On more detailed history, the patient reported large quantities of cream cheese in the 2 weeks prior to initial symptoms, thought to be the most likely source of infection.

A diagnosis of meningoencephalitis was made based on the combination of *Listeria monocytogenes* bacteraemia, neurological symptoms and characteristic MRI findings involving brainstem and cerebellum.

The patient was treated with 21 days of four-hourly amoxicillin 2g IV and 7 days gentamicin (3mg/kg once daily). A repeat MRI brain carried out after 2 weeks treatment showed no evidence of evolving intracranial abscesses. Transoesophageal echocardiogram revealed no valvular vegetations. Serology for human immunodeficiency virus was negative. He remained afebrile with sterile blood cultures after 24 hours of treatment and was discharged well on completion of therapy, with no further complications.

This is an unusual case of a rarely encountered illness. Our patient had no risk factors for invasive disease. In Ireland in 2018, only 4/22 patients with Listeriosis were under 65 years, excluding neonatal and maternal cases, and all had underlying immunosuppression[4]. It is possible that this gentleman's perianal fistula predisposed him to a bacteraemia due to a breach in normal gut mucosa. Despite high mortality rates with meningoencephalitis, this patient remained haemodynamically stable throughout his illness, mounting minimal inflammatory response with few clinical symptoms.

This case highlights the variable presentation of this uncommon infection and the associated diagnostic challenges. It also illustrates the importance of blood culture collection in identifying unusual pathogens.

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Unilateral Pleural Effusion as a Presentation of Clinically Amyopathic Dermatomyositis

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Dear Editor,

Clinically amyopathic dermatomyositis (CADM) is a subset of dermatomyositis (DM), accounting for 20% of cases[1]. It has been hypothesised that CADM and DM may occur in continuum[2]. Pleural effusion is a very rare manifestation of DM and even rarer in CADM, with only a single previous case report[1].

We investigated a middle aged year old female in our institution for a 7 month history of dyspnoea and a persistent pleural effusion. The pleural effusion had been diagnosed in April 2019 in a peripheral hospital following a short history of right sided pleuritic pain and subsequently a pulmonary embolism was diagnosed. On further discussion, a 9 month history of a bilateral erythematous rash on the dorsal surfaces of the hands, a 7 month history of profound lethargy and 5kg weight loss, and a 4 month history of hair thinning and intermittent migratory polyarthralgia involving her knees, wrists, hands, and shoulder joints were revealed.

Bloods revealed normochromic normocytic anaemia, lymphopaenia and ESR was mildly elevated. Serial serum CK levels were within normal limits. US guided thoracentesis revealed an exudative effusion, abundantly lymphocytic with a white cell count of 3000 cells/mm3 of which 98% were monomorphic cells, no malignant cells were seen. PET CT did not identify any sinister pathology and imaging revealed no evidence of myositis.

ANA was positive at a titre of 1:80 with homogenous staining pattern. ENA panel demonstrated negative anti-ds DNA, anti-Jo1, anti-RO/La, anti-RNP, anti-Sm and anti-SCl 70. Rheumatoid factor, anti-CCP and anti-phospholipid antibodies were negative. ANCA was obscured by nuclear staining but PR3 and MPO were negative. An extended myositis panel demonstrated strongly positive anti-MDA5 antibody and weakly positive anti-NXP2 antibody.

A diagnosis of CADM was made and the patient was commenced on prednisolone 1mg/kg and methotrexate 15mg with good effect. Pulmonary function tests showed a restrictive pattern with an FEV1:FVC of 90%, reduced total lung capacity and reduced diffusing capacity of the lung (DLCO 47% predicted) consistent with a likely diagnosis of interstitial lung disease.

Pleural effusion is a very rare manifestation of DM and even rarer in CADM, with only a single previous case report[1]. The nature and persistence of the pleural effusion leads us to conclude that it was secondary to DM. Venous thromboembolic disease is very common in DM with a hazard ratio of 26.6 in the first year after diagnosis[3] and we believe the pulmonary emboli were also secondary to DM. Pleural effusions have not previously been reported as an isolated phenomenon in DM but as local immune pleuritis associated with ILD[1].

Myositis specific antibodies (MSA) are present in approximately 50% of cases of DM[4]. Anti-MDA5 is associated with amyopathic dermatomyositis and rapidly progressive ILD, while anti-NXP2 is associated with calcinosis, skin disease, and malignancy, often genitourinary, lung and breast. No previous data has shown association between NXP2 and melanoma.

We wish to highlight the importance of CADM as a rare but important consideration of the differential diagnosis of a pleural effusion. An extended myositis panel has both diagnostic and prognostic value. Certain MSAs associate with distinctive clinical manifestations. Patients with anti-MDA5 should be monitored for ILD while those with anti-NXP2 should be evaluated for malignancy.

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Congenital Varicella Syndrome with Postnatal Reactivation of Varicella Zoster Virus

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Dear Editor,

Congenital varicella syndrome (CVS) occurs in approximately 1-5 per 10,000 pregnancies, if primary maternal varicella zoster infection occurs within the first twenty weeks[1]. CVS has approximately 30% mortality rate in the first few months of life and 15% risk of subsequent herpes zoster virus between the 2nd and 41st months of life[2].

We report a growth restricted male infant born at 32+5 weeks with microphthalmia. Primary maternal varicella infection occurred in the second trimester; this was not disclosed during the late antenatal booking at 25 weeks gestation. Respiratory distress was present at birth requiring ventilation. He deteriorated further on day of life (DOL) 9; developing neutropenic sepsis, pneumonitis and coagulopathy. Serum PCR studies were sent on DOL 13. Cranial ultrasound demonstrated diffuse increased echogenicity, loss of grey-white matter differentiation, bilateral periventricular cystic changes and ventriculomegaly. Abdominal ultrasound scan revealed multiple liver calcifications. Ophthalmology assessment revealed bilateral widespread chronic chorio-retinal scarring. Progressive hydrocephalus was evident radiologically and clinically. Phenobarbital was required for seizures.

A diagnosis of postnatal reactivation of congenital varicella was confirmed with positive PCR results in serum, cerebral spinal fluid and respiratory secretions for varicella zoster virus (VZV) DNA on DOL 15. Waning cell-mediated immunity to VZV in immunosuppressed individuals is thought to trigger the reactivation of herpes zoster virus[3]. Serum from the mother's late booking visit and previous pregnancy booking samples were retrospectively tested for VZV serology. This identified seroconversion from VZV IgG negative to positive, and a weakly positive varicella IgM result at the time of booking.

CVS is highly contagious via droplet and aerosols. Contact tracing was conducted due to risk to other infants in the neonatal intensive care unit. For identified contacts, the mothers' stored booking serology was tested for VZV IgG.

If the infant had risk factors for absence of trans-placental antibody (<28 weeks gestation, <1000grams, >60 days in NICU or received packed red cell transfusion), then serology for VZV was also performed for the infant. Four infants required varicella immunoglobin prophylaxis. No additional cases were identified.

Despite three weeks of intravenous aciclovir, VZV persisted in the CSF and the patient did not survive. A literature search of antenatal varicella screening in 5 countries (Ireland, United Kingdom, United States, Canada and Australia) highlights that routine screening is not universal. However, questioning maternal past history of VZV or vaccination is recommended for all women at their booking visit and if non-immune, counselling is vital regarding action if exposure occurs. The woman should immediately inform healthcare workers if potential exposure. Public health implementations have recommended that immunoglobulin testing could be offered to women without history of VZV. A safe, effective and routinely available vaccine could eliminate this life-threatening condition. The United States introduced the VZV vaccine in 1995 and studies report a marked decline in mortality[4].

This case highlights public awareness regarding the severity of VZV in un-immunized mothers and the importance of notifying a health professional if primary maternal chickenpox occurs in pregnancy. Moreover, testing for viral pathogens, should be considered in the septic workup for neonates where the cause is unknown and particularly where the response to antibacterial treatments is suboptimal.

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Covid-19 Vaccine Uptake in People Living with HIV

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Dear Editor,

The vaccine rollout programme for COVID-19 in Ireland began in January 2021. As per both BHIVA and EACS latest guidelines, PLWH should receive one of the recommended vaccinations available against COVID-19. HSE data indicates that vaccine uptake among the general population is high. We aimed to review the various factors influencing vaccine uptake and hesitancy is a subset of patients attending our HIV clinic service.

We retrospectively reviewed 40 medical records of patients attending the HIV outpatient clinic in Beaumont Hospital in April 2021. We collected information including demographic, ethnicity, occupational and previous COVID infection history from all charts reviewed. Data was analysed using STATA software.

In terms of demographics, twenty patients (53%) were male and nineteen (47%) were female. Twenty (50%) identified as Black African, eighteen (45%) as Caucasian and two (5%) as Other. The age range was between 28 and 62 years with mean age being 42 years old. Sixteen (40%) patients reported being unemployed with twenty-four (60%) being employed. This included four (17%) HCWs.

Twenty-two (55%) patients had a documented chronic illness other than HIV. When we looked at HIV infection, the majority of patients were virally suppressed with one patient having a detectable viral load. Thirty-Seven (93%) patients had a CD4 count of >400cells/uL taken within last six months.

Four (10%) patients reported having experienced previous confirmed COVID infection. Of those, forty patients (100%) had either received first dose of vaccine or were awaiting appointment.

Twenty-eight (70%) patients in total were willing to receive or had received 1st dose of available COVID vaccine. Twelve (30%) stated they had declined or would decline a vaccination when it was offered. Of those, seven (58%) had previously declined other vaccinations in our clinic and nine (75%) were unemployed. Seven (58%) patients were Irish and five (42%) were Black African.

Our review demonstrated that vaccine hesitancy is a concern among PLWH attending our clinic. Of those that were unwilling to take an available vaccine, the majority were unemployed, Irish and male. Factors which may impact vaccine hesitancy in these groups include low education level and the influence of social media[1]. Increased focus on patient education and alleviating concerns should be prioritised at outpatient clinic settings in order to overcome this barrier to maintaining high vaccination uptake among vulnerable population groups[2].

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A Spotlight on Breastfeeding

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Dear Sir,

In the wake of the COVID 19 pandemic and increased awareness of infection and the immune system we feel it is important to highlight the free and effective intervention that protects our babies – Breastfeeding. National Breastfeeding Week is held annually and serves to promote breastfeeding in Ireland.

Breastfeeding has significant benefits for mother and baby however rates in Ireland remain disproportionately low. The Irish Maternity Indicator System 2020 National Report shows that 62.3% of babies breastfed at first feed with only 36% exclusively breastfeeding on discharge[1]. These rates are below the WHO global targets for breastfeeding which aims for rates of 50% exclusive breastfeeding in the first 6 months by 2025 and 70% by 2030[2]. The Rotunda Hospital had higher rates than the national average at 69.6% with 39.8% exclusively breastfeeding at discharge[3]. For women who choose to engage with breastfeeding after birth, less than half continue to exclusively breastfeed, this is alarming and a cause for action.

Formula supplementation is common practice across the world and locally within Ireland. In a recent audit in The Rotunda Hospital, we found that 60% of our breastfed babies received some formula during their inpatient stay. For most of these babies, supplementation was not medically indicated. Where medically indicated, formula is an important and effective treatment. Unfortunately, unnecessary supplementation can serve to interfere with breastfeeding success through reduced time for skin to skin and breastfeeding, further impacting milk production. Giving formula to babies of women who choose to breastfeed can negatively impact the mother's confidence in her ability to breastfeed her baby, and there is some evidence that supplementation with small amounts of formula can sensitise babies to cow's milk protein and increase the risk of allergies later on[4].

Apart from formula supplementation there are many barriers to exclusive breastfeeding in maternity hospitals at present. These include inadequate lactation support and hospital bed shortages.

Currently, specialised lactation support is unavailable at night and over the weekends in maternity hospitals. Rising caesarean section rates also increase the workload on post-natal ward midwifery staff. An aging maternal population with increasing incidence of gestational diabetes is another contributory factor.

Ideally primiparous mothers should spend 48 hours on a post-natal ward to ensure satisfactory initiation of breastfeeding or alternatively have community midwifery support if being discharged earlier. Overcrowded and antiquated postnatal wards encourage mothers to supplement their infants with formula. This facilitates earlier discharge if community midwifery support (which is currently limited) is unavailable.

How can we help our babies benefit from breastfeeding? We need to educate our mothers and healthcare workers on breastfeeding and on the indications for formula supplementation. We must support mothers after delivery with sufficient lactation and midwifery support and better hospital and community facilities. Maternity hospital infrastructures need to be updated to facilitate an improved postnatal experience for mothers.

We hope this letter serves to remind our medical community on the importance of breastfeeding. We need to empower these families in their breastfeeding journey through clear education and effective hospital services.

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Letter in Response to Article "Increased Mental Health Presentations by Children Aged 5-15 at Emergency Departments during the first 12 months of COVID-19"

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Dear Sir,

I am writing in response to the recent article "Increased Mental Health Presentations by Children Aged 5-15 at Emergency Departments during the first 12 months of COVID-19" by McDonnell, T et al.[1.]

We read with interest the observation that there has been an 8.6% increase in children attending paediatric emergency departments with mental health presentation during the first 12 months of the COVID-19 pandemic.

We would like to continue the discussion on the growing demand for acute Child and Adolescent Mental Health Services (CAMHS) by highlighting that psychiatry liaison teams within adult emergency departments are also feeling the increased burden of those under eighteen seeking acute mental health (MH) services. The "cut off" age for attending paediatric services in Ireland is sixteen years old but for CAMHS services is eighteen years. With no CAMHS out of hours services, those aged 16 and over in need of urgent MH care, have little choice but to present to an adult emergency department most often with no access to CAMHS specialist input on call.

Patients under the age of eighteen, seeking crisis MH support, accounted for 6% of all MH presentations in our adult emergency department (n=285/4732 2017-2019 incl.); well before the acute COVID -19 pandemic surge.

In the 18 months to June 30th 2021, patients under eighteen, presenting for MH assessment to our service accounted for 8.7% of all MH presentations. This represents a 45% increase from pre COVID-19 times. This worrisome trend could go unaccounted for, as highlighted in a recent Irish Times article observing that the Mental Health Commission only log admissions to approved child and adolescent centers and not medical admissions or acute presentations[3].

In 2020 2.5% of patients under eighteen presenting to our service required psychiatric admission. The majority are referred back to specialist CAMHS teams for outpatient care, which echoes the consensus that these children are presenting to "the wrong place"[3]. For the same year, the average length of stay for a distressed child and their families presenting to our adult emergency department seeking help was 7 hours.

The increasing numbers of children and adolescents presenting to all emergency departments in MH crisis need to be taken into consideration, in order to fully appreciate the urgency in which appropriate resourcing and investment is needed in child and adolescent mental health services (CAMHS), with particular focus on acute "out of hours" services.

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