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COMMENTARY

MEDICAL MALPRACTICE: PAYING TWICE FOR PATIENT CARE

ORIGINAL PAPERS

TOCILIZUMAB RESCUE THERAPY IN SEVERE COVID-19 PNEUMONIA

Nurdin et al report on 8 Covid cases treated with Tocilizumab. Fever time and CRP were reduced.

OUTCOMES AFTER LASER ABLATION IN TWIN-TO-TWIN TRANSFUSION SYNDROME

Javaid et al report on 78 twin pregnancies following laser therapy for T-T-T. In 50% of cases both babies survived, and in 22% of cases 1 baby survived.

PRE-HOSPITAL VIDEOCONFERENCING TELEMEDICINE: ARE WE THERE YET?

Gilligan et al examine the challenges in the development of a mobile audio-visual telemedicine platform for the pre-hospital telemedicine. They noted technical challenges in 33 of 34 telemedicine consultations.

OPHTHALMOLOGICAL SCREENING IN CHILDREN WHO ARE DEAF OR HARD OF HEARING

Clarke at al aimed to analyse studies on vision impairment in deaf or hard of hearing children to find out the prevalence ophthalmological problems. They found that Visual defects are more prevalent in deaf children, ranging from 9% 9 (n=435) to 60% 10 (n=302).

THE FACTORS THAT INFLUENCE MEDICAL STUDENTS WHEN DECIDING ON A CAREER IN GENERAL PRACTICE

O'Tuathail et al surveyed 94 students regarding career choices. 50% indicated GP as their choice. The majority (86%) had a positive GP experience.

ORIGINAL PAPERS (Continued)

KNOWLEDGE AND TRAINING NEEDS OF PAEDIATRIC TRAINEES IN MENTAL HEALTH

Oketah et al report on the responses of 99 paediatric trainees. Only 8% felt well prepared in dealing with paediatric mental health issues.

DAY CASE NECK SURGERY: THE SOUTHAMPTON EXPERIENCE

Jog et al describe 41-day case head and neck surgery cases, 29 neck dissections and 12 parotidectomies. The results were satisfactory.

NON-CONSULTANT HOSPITAL DOCTORS VIEWS' OF COVID-19 MEASURES IN IRISH MATERNITY UNITS

Elsayed et al surveyed 80 NCHDs. During the pandemic 92% reported major roster changes, and 89% felt that their anxiety levels were higher.

CONSULTING PATTERNS OF CHILDREN AT A GENERAL PRACTICE DURING THE CORONAVIRUS PANDEMIC

Maguire et al report that the number of children's consultations reduced from 12 to 3 per day during the Covid pandemic. Many parents (73%) wished to avail of phone triage.

LEARNING FROM COVID-19 TO CONTROL DROPLET & AIRBORNE TRANSMITTED DISEASE IN HEALTHCARE ENVIRONMENTS

Dromey et al conducted a literature review to ascertain what controls can be recommended to mitigate spread of Covid-19 to health-workers. The search indicates that provision of negative pressure ventilation, isolation zones and local exhaust ventilation, in Covid-19 wards, would likely mitigate spread to health-carers.

CURRENT PRACTICE AND ATTITUDES TOWARDS KEY INVESTIGATIONS IN ACUTE KIDNEY INJURY

Ahmed et al reviewed 73 renal referral cases. Key investigation information was missing in many of the letters including urine dipstick 15%, renal ultrasound 20%, pH Bicarbonate K 27%, creatinine 42%.

THE IMPACT OF THE COVID-19 PANDEMIC ON SURGICAL EMERGENCIES

Connelly et al examined corresponding March-May periods for 2019 and 2020. There was a 16.5% decrease in cases.

ORIGINAL PAPERS (Continued)

INTENSITY AND FREQUENCY OF PHYSICIAN INTERVENTIONS TO NURSING HOME RESIDENTS BEFORE AND DURING THE COVID-19 PANDEMIC

Doyle et al found that among 51 residents with mostly maximum dependency, the number of care interventions doubled from 89 to 176 during a 3-month pandemic period.

OCCASIONAL PIECES

ADDRESSING HEALTH LITERACY FOR IMPROVED OUTCOMES: A FOCUS ON PREGNANCY

FURTHER REFLECTIONS ON THE REPORT OF THE MOTHER AND BABY HOMES COMMISSION

SHORT REPORTS

THE ROLE OF AMBULATORY EEG IN THE INVESTIGATION OF PAROXYSMAL EVENTS

Bayati et al reviewed 47 patients following 24-hour ambulatory EEG recordings in patients with epilepsy. Epileptic events were identified in 29% cases.

INCREASE IN COMMUNITY ACQUIRED S. AUREUS BLOODSTREAM INFECTION ASSOCIATED WITH THE SARS-COV-2 PUBLIC HEALTH EMERGENCY

Houlihan et al report a higher rate of Staph Aureus positive blood cultures in 2020. They suggest that the pandemic has caused a delayed presentation of patients with Staph skin infections.

CASE REPORTS

CAUDA EQUINA IN PREGNANCY

Ting et al report a 29-year-old primiparous woman who presented at 31 weeks gestation with tingling in on the buttocks, lower limbs, and urinary retention. A cauda equina syndrome was confirmed on MRI and surgically reduced.

RETROPERITONEAL FIBROSIS PRESENTING WITH RECURRENT EPISODES OF ABDOMINAL PAIN AND POST-PRANDIAL VOMITING

Rohan et al describe a 74-year-old woman who presented with abdominal pain and vomiting. The ultimate diagnosis was retroperitoneal fibrosis.

CASE REPORTS (Continued)

ANAPLASTIC LARGE CELL LYMPHOMA OF THE TONGUE

Kavanagh et describe a 66-year-old woman with a mass on the left side of her tongue. The biopsy showed an anaplastic lymphoma. She responded to haematology treatment.

CYTOMEGALOVIRUS INFECTION – NOT SO (H)ARMLESS

The authors report a 23-year-old male with bilateral mononeuropathy multiplex affecting both upper limbs. He was CMV Ig M positive and IgG low affinity indicating recent infection. He was treated with Gangciclovir with almost complete recovery.

POEMS

"HANG TIGHT"

LETTERS TO THE EDITOR

DERMATOLOGY REVIEW AND SKIN CANCER PREVALENCE IN A KIDNEY TRANSPLANT PATIENT COHORT

URINARY TRACT IMAGING IN CHILDREN POST UTI

RECOMMENDING & OFFERING VACCINATION IN ANTENATAL CLINICS: AN INITIATIVE TO IMPROVE UPTAKE

COVID-19: THE DISAPPEARANCE OF CHILDREN FROM THE PAEDIATRIC EMERGENCY DEPARTMENT

VIRTUAL CLINICS DURING COVID-19: IMPLEMENTATION AND IMPACT IN AN IRISH CONTEXT

DOCTORS AND THE MOTHER AND BABY HOMES FINAL REPORT

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Medical Malpractice: Paying Twice for Patient Care

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

Recently published data[1] from the UK reports that the NHS has paid 2.8 billion Euro in clinical negligence claims in 2018-19. This equates to 2% of the entire UK health budget. It is forecast that into the future the quantum will rise to 4%. Ireland is experiencing similar surges in legal claims. The number of claims is increasing at a faster rate than the numbers being resolved. The rate of growth in outstanding liabilities is 15% per annum since 2010. The cost of a baby delivery is 3,324 Euro but when indemnity is factored in the cost is doubled[2]. Every Euro spent on lawsuit settlements is a Euro that cannot be spent on medical care.

Christine Tomkins, MDU chief executive, stated that the health services haven't become less safe[3]. 'The problem is that we have a medical negligence system that is unfair and unsustainable. A balance has to be found that is fair and affordable'.

It has been pointed out by many commentators that the modern public health care systems are very different to the original structures. The current services have to provide a much wider range of care. The commitments vary from screening programmes, clinical care, complex radiology, laboratory investigations, treatment, and communication. The delivery of this wide-ranging complex care system is challenging. All elements have been the subject of medico-legal claims in recent years.

Clinical negligence is the breach of a legal duty of care to a patient which directly caused harm to the patient. Over time the bar has been set higher for professional performance and patient expectations are greater. Health services have been criticised for not responding in an effective manner. They have been accused of admiring the problem rather than taking decisive action[4].

The rising malpractice costs over the past decade are due to three factors, 45% are due to the rise in claims, 34% are due the rise in damages awarded, and 21% are due to a rise in the claimants' legal costs.

The UK National Audit Office[5] has examined in some detail why increasing numbers of patients are suing their health services. It appears that one of the reasons is that they now have greater access to the legal system. This includes no-win-no-fee agreements and claims management companies. There is little to suggest that clinical care has become less safe or overall patient satisfaction is lower.

While a lawsuit may follow any type of clinical activity, there are a number of readily recognisable patterns. The common reasons are; failure or delay in performing a treatment 22%, failure or delay in diagnosing a condition 17%, incorrect treatment 7%, and operative complications 6%. Long waiting times following a GP referral are another adverse factor. They increase patient dissatisfaction and decrease tolerance for any subsequent perceived errors in their care.

In addition to the individual cases, there is the issue of mass action claims. Recent examples include the Pandemrix-Narcolepsy, the transvaginal implants, the symphysiotomy, and the cervical screening actions[6].

Maternity claims consistently occupy the headlines. They account for 10% of the claims but 50% of the total pay-outs. The issue is birth injury with the catastrophic effects over the child's lifetime. It is clear that any suite of measures being considered to tackle rising litigation costs should look at ways to support the obstetric services.

While there is no magic bullet, there are approaches at the clinical interface that may contain or reverse the current rising number of claims. Consent remains an important issue. The patient information must be both clear and comprehensive. It must avoid jargon. If the patient can't understand what they are consenting to, it is not informed consent. Communication between professionals is key for patient safety. Important moments include shift handover, the involvement of other clinical teams, the transfer of the patient to another ward, ICU, or another hospital. Another important measure is the early recognition of complex cases. This includes patients with multiple co-morbidities, often accompanied with a complex psycho-social history.

The diagnostic processes must be well structured. There needs to be a clear pathway built into the ordering of a test, its performance, the receipt of the result, and the appropriate action if required. Good clinical monitoring must be built into the care pathway of every patient. It is key to the timely identification of the deteriorating patient. Some obstetric units are using the 'fresh eyes' procedure, where the midwife looking after a patient in labour may at intervals ask a colleague to review the CTG.

The follow-on step is the escalation of the case. Knowing when to escalate is based on training, knowledge, and experience. Story telling by senior staff about previous cases is helpful. Staff must feel empowered to escalate when they are concerned. An over-call can easily be stood down, while failure to call can lead to serious consequences for the patient.

Health services must fully appreciate that investment in high quality health care pays dividends. It is the best way to reduce litigation rates. The four pillars set out by Yau et al[1] are staff, infrastructure, equipment, and IT.

Understaffing is a frequent problem. The common causes are lack of recruitment, lack of retention, and lack of funding. We now have a better understanding about why staff don't come and why they don't stay. Much has been learned from organisations that have good staffing records. Staff like to be properly trained for the tasks that they are doing. A skills facilitator plays an important role. Staff like to feel both clinically and psychologically supported. It is appreciated when senior staff are readily approachable and available. Good organisations have a well-structured safety culture that all the staff can contribute to and feel part of. Staff like to be mentored and given advice and evaluations on their career progression. Staff should feel both listened to and appreciated. They should be encouraged to develop and participate in quality improvement initiatives.

Infrastructure is a major problem. A lot of hospitals are old, and replacement is a slow process. Cramped, overcrowded clinical spaces are distressing for both staff and patients. They create difficulties in the delivery of care. The key points about medical equipment is that staff must be fully trained in its use. In order to avoid confusion, the same brands should be used throughout the hospital. Any malfunctioning items should be removed from clinical use and promptly repaired or replaced by clinical engineering.

IT systems have a great potential in improving patient care. They provide immediate access to the patient's record. Case notes are always available. The other strengths are the access to the radiology and lab reports. It makes prescribing safer. It speeds communication with GPs and other community staff.

In addressing the challenge of rising litigation, we need work out our best strategies and implement them.

References:

1. Yau CW, Leigh B, Liberati E, Punch D, Dixon-Woods M, Draycott T. Clinical negligence costs: taking action to safeguard NHS sustainability. BMJ 2020;368
2. Whelan S, Hally M, Gaughan C. The true cost to the State of maternity services in Ireland. Ir Med J 2021;114;241
3. Dyer C. England's clinical negligence system needs urgent reform, say medical organisations. BMJ 2021;372:Feb24
4. Dixon-Woods M. Harveian oration 2018: Improving quality and safety in healthcare. Clin Med (Lond) 2019;19;47-56
5. National Audit Office. Managing the costs of clinical negligence in trusts. House of Commons. 2017; Sept 1
6. NTMA Annual Report 2019 - State Claims Agency Page 48

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Tocilizumab Rescue Therapy in Severe COVID-19 Pneumonia

N. Nurdin[1], D. O'Brien[1], S. Naimimohasses[1], L. Gleeson[2], I. Martin-Loeches[2], N. Al Mane[1], T. McEnery[1]

1. Naas General Hospital, County Kildare, Ireland.
2. St. James' University Hospital, Dublin, Ireland.

Abstract

Aim

COVID-19 refers to a spectrum of disease caused by the severe acute respiratory coronavirus type 2 (SARS-CoV-2), an RNA virus first reported in December 2019 which has since resulted in a global pandemic. Multiple reports suggest that a hyper-inflammatory immune response contributes to multi-organ failure and death in a subset of patients. This is triggered by a cytokine cascade, in which interleukin-6 (IL-6) plays a key role.

Methods

We describe our experience with the anti-IL-6 monoclonal antibody tocilizumab. Retrospective data from 8 patients in ICU with severe COVID-19 was collected.

Results

8 patients were included. Tocilizumab was associated with a statistically significant defervescence of fever in the at day 2 and day 4 post administration (paired t-test, p=0.029, p = 0.009 respectively) and marked reduction in CRP levels (mean decrease 277mg/l day 0 to 3). One patient was managed with non-invasive ventilation and was discharged 11 days later. 7 patients had a prolonged period of IMV (median duration 21 days +/- 23). 3 patients subsequently died and 5 were discharged alive after a median hospital admission duration of 48 days (+/- 23.5).

Conclusion

Overall, clinical outcomes were mixed, but positive biomarker response and an absence of severe side-effects attributed to this treatment is encouraging.

Introduction

Severe acute respiratory coronavirus 2 (SARS-CoV-2), a novel coronavirus first described in Wuhan, China[1] in December 2019 has since resulted in a pandemic with over 12.5 million cases in 212 countries worldwide. In Ireland, there were 68,356 confirmed cases and 1984 deaths from the virus at the time of writing[2]. SARS-CoV-2 binds to the alveolar epithelial cell via the angiotensin converting enzyme-2 (ACE2) receptor, resulting in activation of the innate and adaptive immune systems[3]. This triggers a cascade of pro-inflammatory cytokines, including IL-6 which plays an important role in immune activation[4]. Although rapid viral replication is implicated in severe disease, a notable feature of severe COVID-19 is a hyper-inflammatory response or 'cytokine-release storm', leading to acute respiratory distress syndrome (ARDS), multi-organ failure and death[5]. This syndrome shares clinical and biochemical features with haemophagocytic lymphohistiocytosis (HLH), a rare hyper-inflammatory syndrome with varying aetiology that presents with blood cytopenias, exuberant cytokine release and resultant multi-organ failure[6]. The H score was developed in 2014 by Fardet et al, as a means of measuring diagnostic probability of HLH and validated in patients with infection as the causative factor[7].

Tocilizumab is a recombinant human monoclonal antibody against the IL-6 receptor[6]. It is currently approved for immune modulation in rheumatoid arthritis and juvenile idiopathic arthritis[8]. Tocilizumab has been used successfully in the treatment of HLH, particularly in the setting of cytokine storm secondary to chimeric antigen receptor T cell therapy[9]. A 15 patient retrospective case series from Wuhan, China suggested there may be a benefit from tocilizumab in severe COVID-19[10]. Randomised control trials are currently underway, but this case series data and the absence of proven effective treatments for severe COVID-19 (aside from standard evidence-based supportive care) led to off-label use of tocilizumab in this setting. Several European countries established criteria for tocilizumab administration, based on serum d-dimer and presence of features of hyper-inflammation[11,12].

Given the ongoing exponential worldwide growth of this pandemic, there is an urgency to identify treatments that may be effective in reducing the severity of illness and mortality. The RECOVERY trial is currently ongoing, with patients randomised to various treatments including dexamethasone, tocilizumab, or ritonavir/lopinavir. Dexamethasone has been shown to improve 28-day mortality in patients receiving invasive ventilation or oxygen. There is ongoing randomisation of patients to receive tocilizumab with results pending, with patients recruited in early disease and also eligible for second randomisation to tocilizumab in the event of deterioration with O2 saturation <92% and CRP >75. We report here a cohort of patients with more severe COVID-19 pneumonia who received tocilizumab in an ICU setting as rescue therapy.

Methods

All patients with severe COVID-19 who received intravenous Tocilizumab at Naas General Hospital (n=5) and St James' Hospital, Dublin (n=3) were recruited into the study. A retrospective chart review was performed with demographics, medical comorbidities, laboratory results, imaging findings, treatments received, and clinical outcomes recorded.

Real time polymerase chain reaction (PCR) on nasopharyngeal swab confirmed SARS-CoV-2 infection in all patients. The study was conducted in accordance with the Declaration of Helsinki and ethical approval was granted by the National Research Ethics Committee.

All patients in this study were critically unwell and receiving care in ICU at time of drug administration. In the absence of an approved clinical trial, decision to treat was made following multi-disciplinary discussion involving the primary treating Consultant, Clinical Lead for Critical Care, treating ICU Consultant, a Consultant Microbiologist and a Consultant in Infectious Disease where appropriate. Patient selection criteria for tocilizumab was in line with current Health Service Executive Ireland recommended guidelines[11]. All patients had confirmed COVID-19 pneumonia, hypoxia (defined as peripheral arterial oxygen saturation (SpO_2) of <93% or ratio of arterial oxygen partial pressure (PaO_2) to fractional inspired oxygen (FiO_2) <300mg) and established signs of hyper-inflammation (temperature >38^oC, d-dimer >1000mg/ml and/or elevated CRP or serum ferritin). Tocilizumab was avoided in patients with evidence of active uncontrolled bacterial infection. All patients received a single loading dose of tocilizumab at 8mg/kg. Data was collected from the day prior to tocilizumab (defined as D-1), prior to infusion on day of treatment (D0) and on days 1 - 5 post-treatment.

Tocilizumab was given in addition to standard medical care which included non-invasive or invasive ventilatory support, enteral nutrition and broad-spectrum antibiotic therapy where indicated. Clinical management was at the discretion of the treating consultant physician. All patients received venous thromboembolism prophylaxis with low molecular weight heparin. All patients were initially treated with hydroxychloroquine in conjunction with a macrolide and one patient received lopinavir/ritonavir. Glucocorticoids were administered in 6 individuals; two for concomitant asthma exacerbation and in four cases for severe ARDS.

Results

Eight patients were included, of whom two were female. Median age was 56 (+/- 7.75). Seven of eight patients were receiving invasive mechanical ventilatory support at time of tocilizumab treatment, and 6 were receiving vasopressors for shock. All patients met criteria for at least moderate ARDS (presence of bilateral infiltrates and PaO_2:FiO_2 ratio of <200mmHg), with 3 meeting criteria for severe ARDS (PaO_2:FiO_2 ratio of <100mmHg). All patients demonstrated persistent pyrexia despite broad spectrum antimicrobial therapy and had negative sputum and blood cultures. The median duration of symptom onset prior to receiving tocilizumab was 13.5 days (+/-5 days).

The majority of patients demonstrated defervescence in the 48 hours following tocilizumab administration. There was a significant reduction in maximum recorded body temperature at day 2 compared to day 0 (paired t-test, p=0.029) and at day 4 compared to day 0 (p= 0.009) (figure 1). Changes in PaO_2:FiO_2 ratio (figure 4) and in vasopressor requirement were variable and not statistically significant over the following 5 days. 4 of 8 patients demonstrated reduction in WHO clinical severity score over the following 5 days (figure 2).

Serum C-reactive protein levels demonstrated marked reduction following tocilizumab (figure 3) with a mean decrease of 277mg/L between day 0 and day 3 (95% CI -406 to -148, p=0.0014, paired t-test). There was no significant change in d-dimer or ferritin post treatment. At day 5 post-treatment compared to day 0 serum fibrinogen was decreased (p= 0.012, paired t-test) and serum lymphocyte count increased (p=0.035, paired t-test). H score did not demonstrate significant change at day 0 as compared to day 5 (mean day 0 69 +/- 53 vs 74 +/- 30).

Three patients subsequently developed sepsis with bacteraemia (2 cases with MRSA) at > 1 week following tocilizumab administration, one of whom subsequently died from multi-organ failure. No patients developed deranged liver function tests or gastrointestinal perforation. Of those who received tocilizumab, 1 individual was managed with non-invasive ventilation and was discharged 11 days later. The remaining 7 patients all had prolonged period of IMV (median duration 21 days +/- 23). 3 patients subsequently died and 5 were discharged alive after a median hospital admission duration of 48 days (+/- 23.5).

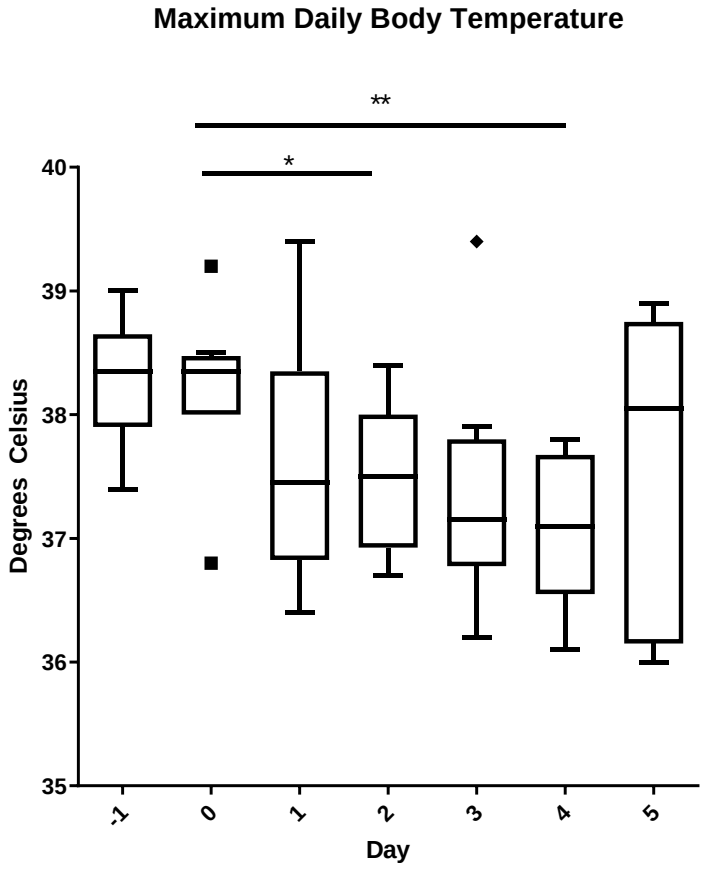

Figure 1: *Maximum recorded temperature following tocilizumab therapy. Tukey method with mean and honest significant difference displayed, n=8. Paired t-test, p<0.05 considered significant.*

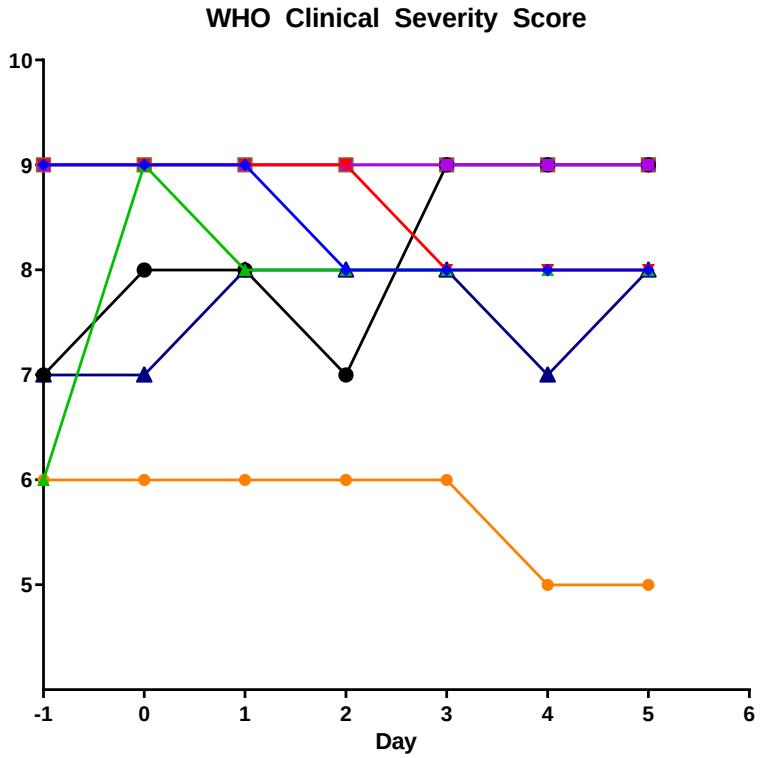

Figure 2: *WHO Clinical severity Score following tocilizumab therapy, n=8*

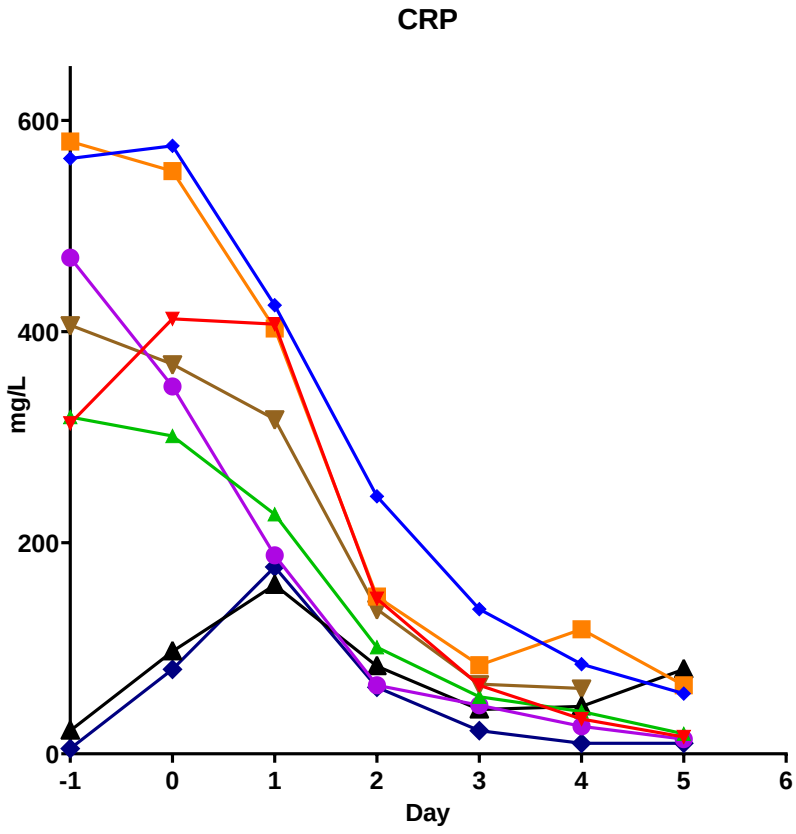

Figure 3: *Serum C-reactive protein following tocilizumab therapy, n=8*

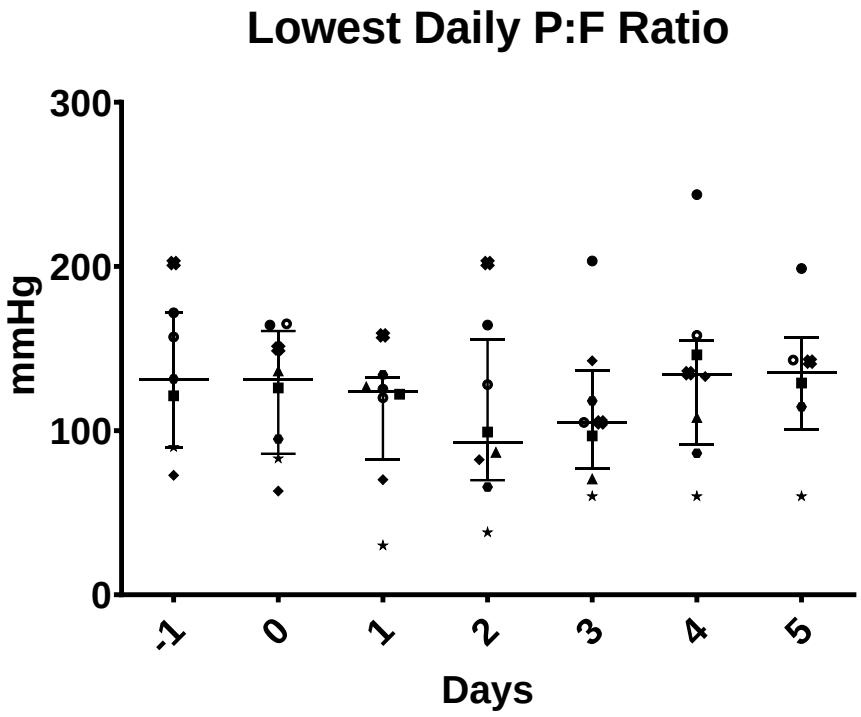

Figure 4*: Lowest recorded P:F ratio, mmHg. Individual patients represented by symbol, mean and SD indicated by error bars. N=8, 7 receiving IMV and 1 non-invasive ventilation.*

Discussion

The aim of this study was to report clinical and biomarker data from patients with severe COVID-19 pneumonia receiving tocilizumab as rescue therapy in the ICU. All patients had severe COVID-19 with WHO Clinical Progression Scale score of 6 or higher[14]. Guidance from other European countries suggests consideration of anti-IL6 therapy in selected patients with IL-6 level >40pg/nl OR d-dimer >1000ng/ml after exclusion of alternative causes. All our patients had d-dimers greater than this value (in many cases considerably higher). IL-6 was of limited clinical utility in our centre due to lag time between sampling and results of 1 week. All our patients were discussed at daily consultant-led microbiology rounds, were culture negative and were receiving broad spectrum antimicrobial therapy at time of tocilizumab therapy.

Tocilizumab was associated with a striking defervescence of fever in the 48 hours following administration and a marked reduction in CRP levels. Other parameters including d-dimer and ferritin demonstrated little change, though there was a reduction in fibrinogen and an increase in lymphocytes. Vasopressor requirement, P:F ratio (figure 4) and WHO severity index were variable and demonstrated no clear improvement following tocilizumab.

One patient who received therapy during milder phase of illness (prior to mechanical ventilation) was successfully managed with non-invasive ventilation and the trajectory of illness improved over the coming days.

Another patient who had been referred for extra-corporeal membrane oxygenation (ECMO) at time of drug administration demonstrated stabilisation of clinical trajectory, but still required a prolonged period of IMV (2 weeks) prior to successful extubation. Whether clinical improvement can be ascribed to Tocilizumab is unknown in the absence of a control, but our experience suggests that administration of therapy at an earlier phase of disease may have greater clinical impact.

Our study has important limitations. The lack of a control group makes comment on efficacy or otherwise of tocilizumab impossible. Differences in patient treatments and in particular in use of glucocorticoids may confound results. Glucocorticoid administration in our centre was not protocolised and was based on individual physician decision. There were no immediate drug-related adverse events in any patients, though the subsequent development of gram negative and MRSA sepsis reinforces the need for caution with immune modulating therapies in this cohort.

More research is required to characterise the hyper-immune response precipitated by COVID-19, and results from randomised control trials of anti-IL6 therapy are eagerly awaited. As noted in trials of the anti-viral therapy remdesivir, timing of treatment administration is a key consideration[15]. Data from observational cohorts can help to guide adequately powered RCTs to establish potential benefits and safety profile of tocilizumab in COVID-19. Our experience suggests that tocilizumab may have a role as rescue therapy in the ICU in selected patients receiving mechanical ventilation and that this warrants further investigation with RCT.

In conclusion, our study suggests tocilizumab may have a role in COVID 19 pneumonia characterised by hyperinflammatory response, given the positive shift in inflammatory biomarkers observed. Clinical outcomes observed were variable and it is difficult to conclude clinical benefit attributable to tocilizumab. Of note, three patients developed bacteraemia, a potential serious adverse effect of tocilizumab therapy. Randomised controlled trials are currently underway, evaluating the efficacy of tocilizumab in patients with varible severity of COVID 19[13].

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

Corresponding Author:
Nadra Nurdin
Naas General Hospital,
County Kildare,
Ireland.
E-mail: nadranurdin@gmail.com

References:

1. H Lu, CW Stratton, YW Tang, Outbreak of pneumonia of unknown etiology in Wuhan China: the mystery and the miracle, [published January 16, 2020], J Med Virol. 2020. Apr 92(4):401-402.

2. European Centre for Disease Prevention and Control, COVID-19 situation update worldwide, as of 12 July 2020, ECDC, updated 12 July 2020, Available from https://www.ecdc.europa.eu/en/geographical-distribution-2019-ncov-cases
3. J Amiral, AM Vissac, J Seghatchian, Covid-19, induced activation of hemostasis, and immune reactions: Can an auto-immune reaction contribute to the delayed severe complications observed in some patients?. Transfus Apher Sci. 2020;59(3):102804. doi:10.1016/j.transci.2020.102804
4. Chi Zhang, Zhao Wu, Jia-Wen Li, Hong Zhao, Gui-Qiang Wanga, Cytokine release syndrome in severe COVID-19: interleukin-6 receptor antagonist tocilizumab may be the key to reduce mortality, Int J Antimicrob Agents. 2020 May; 55(5): 105954.
5. SH Nile, A Nile, J Qiu, L Li, X Jia, G Kai, COVID-19: Pathogenesis, cytokine storm and therapeutic potential of interferons. Cytokine Growth Factor Rev. 2020;53:66-70. doi:10.1016/j.cytogfr.2020.05.002
6. P Mehta, D F McAuley, M Brown, E Sanchez, R S Tattersall, J J Manson et al. COVID-19: consider cytokine storm syndromes and immunosuppression, The Lancet, VOLUME 395, ISSUE 10229, P1033-1034, MARCH 28, 2020
7. L Fardet, L Galicier, O Lambotte, C Marzac, C Aumont, D Chahwan, et al, Development and Validation of the HScore, a Score for the Diagnosis of Reactive Hemophagocytic Syndrome, Arthritis and Rheumatology, 2014;66(9):2613-2620. doi:10.1002/art.38690
8. H I Brunner, N Ruperto, Z Zuber, C Keane, O Harari, A Kenwright, Efficacy and safety of tocilizumab in patients with polyarticular-course juvenile idiopathic arthritis: results from a phase 3, randomised, double-blind withdrawal trial, BMJ, Annals of Rheumatic diseases, 2015;74(6):1110-1117. doi:10.1136/annrheumdis-2014-20535
9. M Hutchinson, R S Tattersall, J J Manson, Haemophagocytic lymphohisticytosis—an underrecognized hyperinflammatory syndrome, Rheumatology, Volume 58, Issue Supplement 6, November 2019, Pages vi23–vi30
10. P Luo, Y Liu, L Qiu, X Liu, D Liu, J Li, Tocilizumab treatment in COVID-19: A single center experience, Journal of Medical Virology, 2020;92(7):814-818. doi:10.1002/jmv.25801
11. C Bergin, P Browne, P Murray, M O'Dwyer, N Conlon, D Kane, et al, Interim Recommendations for the use of Tocilizumab in the Management of Patients who have Severe COVID-19 with Suspected Hyperinflammation, V2 20 Mar 2020, available at https://www.hse.ie/eng/about/who/acute-hospitals-division/drugs-management-programme/interim-recommendations-for-the-use-of-tocilizumab-in-the-management-of-patients-who-have-severe-covid-19-with-suspected-hyperinflammation.pdf Accessed 04/03/21
12. Italian National Society of Infectious Diseases, Guidelines for the managment of COVID-19 infection. Available at https://www.eahp.eu/sites/default/files/covid19_vademecum_2.0_13_marzo_2020.03_11.pdf, date accessed 23/07/20
13. Recovery Trial, Protocol available at https://www.recoverytrial.net/files/recovery-protocol-v8-0-2020-07-08.pdf Accessed 05/08/21
14. WHO Working Group on the Clinical Characterisation and Management of COVID-19 infection, A minimal common outcome measure set for COVID-19 clinical research, The Lancet Infectious Diseases, 12 June 2020.
15. J Grein, N Ohmagari, D Shin, G Diaz, E Asperges, A Castagna, Compassionate Use of Remdesivir for Patients with Severe Covid-19, The New England Journal of Medicine, June 11 2020, 2020; 382:2327-2336

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Outcomes after Laser Ablation in Twin-to-twin Transfusion Syndrome

A. Javaid[1], A. Alsudani[1], W. Tadasse[1], S.W. Lindow[2], F. Malone[1]

1. Rotunda Hospital, Dublin 1, Ireland.
2. Coombe Womens and infants University Hospital, Dublin 8, Ireland.

Abstract

Aim

Twin-to-Twin Transfusion Syndrome (TTTS) is associated with high perinatal morbidity and mortality in monochorionic twins. Ultrasound Doppler studies of the umbilical arteries (UAD) have a vital role in fetal assessment in multiple pregnancies complicated by TTTS. The Quintero staging is used to grade the severity of the condition.

Methods

The aim of the study was to describe UAD findings and outcomes in a cohort of 78 twin pregnancies treated with laser ablation.

Results

Of the 78 twin pregnancies, 39 women had two surviving babies (50%) and 17 (22%) had a single survivor. The most frequent Quintero stage at diagnosis was Stage three (38%, 30/78), followed by Stage two (32%, 25/78), Stage one (24%, 19/78) and Stage four (5%, 4/78). The Quintero stage was not significantly associated with survival (chi sq 5.31 p=0.151).

While 50% of pregnancies had normal UAD at the time of TTTS diagnosis, 50% had at least one abnormal UAD. A normal UAD was not associated with higher survival (68% v 53%, chi sq 3.26 p=0.071).

Conclusion

Laser ablation for TTTS was associated with 50% double survival and 22% single survival. UAD abnormalities or the Quintero stage was not associated with survival after laser ablation.

Introduction

Twin-to-Twin Transfusion Syndrome (TTTS) is associated with high perinatal morbidity and mortality in monochorionic twins. It is associated with an increased risk of fetal loss and spontaneous and iatrogenic preterm delivery [1]. In TTTS the donor twin can become growth restricted and anaemic while the recipient twin grows discordantly larger and develops polycythemia.

Ultrasound Doppler studies of the umbilical arteries (UAD) have a vital role in fetal assessment in multiple pregnancies by screening and diagnosing common complications such as uteroplacental insufficiency, fetal anemia and growth restriction [2]. Ultrasound examination also has a crucial role in the assessment of multiple pregnancies at high risk of TTTS. The Quintero method is commonly used for staging TTTS by utilizing the presence or absence of donor bladder filling, abnormal fetal UAD and other Doppler measurements, fetal hydrops and fetal demise.

Other ultrasound features described in TTTS include growth discordance between the two twins (>20% of fetal size difference) and folding of inter-twin membrane may appear as an early sign of TTTS due to disparity in amniotic fluid volumes in two sacs.[4] In early pregnancy, there may be a difference in nuchal translucency between the twins or a significant difference in umbilical cord diameter. The recipient twin is usually larger in size with an increased estimated fetal weight (EFW), polyhydramnios, large urinary bladder, evidence of fetal hydrops and fetal cardiomegaly. In certain cases, fetal echocardiography may also show aorto-ventricular valve incompetence. The donor twin on the other hand is the small twin (with decreased weight), can appear "pinned" to the side of the gestational sac, may show evidence of fetal anemia, small or absent urinary bladder and oligohydramnios [2,3].

While a number of treatments for this condition have been suggested in the past including serial amniocentesis, septostomy and fetoscopic laser ablation, it is now clear that laser ablation is the optimal method of treatment, with a success rate of 49% for double fetal survival and 39% for single fetal survival [5].

The predictors of success or failure of laser ablation are not clear. This audit was undertaken to review results of TTTS treated with laser ablation and identify any characteristics, especially UAD parameters, that can predict which procedures are likely to be successful.

Methods

The aim of the study was to describe UAD findings in a cohort of TTTS patients treated with laser ablation. In addition, the clinical outcomes from laser treatment of TTTS in patients treated at the Rotunda Hospital, Dublin between 2006 and 2016 were recorded. The Rotunda Hospital is a large tertiary care centre with approximately 8.500 to 9,000 deliveries a year.

A retrospective cohort study of cases of multiple pregnancies complicated by TTTS who were subsequently treated with laser ablation in a single tertiary maternity hospital was conducted. There is a dedicated multiple birth clinic, fetal assessment unit and laser treatment services for TTTS. All cases treated for TTTS with laser ablation in the period from 2006 to 2016 were included. All cases of TTTS were managed under the supervision of single lead fetal medicine specialist with two more fetal medicine specialists and two fetal medicine fellows. The same technique for laser ablation was used in all cases: a 10 or 12 French Cook Check-Flo Performer introducer sheath is introduced into the recipient sac under continuous ultrasound guidance transabdominally. For cases with a posterior placenta a 2mm straight Karl Storz fetoscope was used, and a 2mm curved Karl Storz fetoscope for anterior placentae. After visualizing the whole vascular equator, all potential anastomoses are recognised and photocoagulated using a neodymium:YAG laser, using a Solomon technique.

An amnioreduction is then performed at the completion of each procedure. All patients are followed up by ultrasound on the next day, and then weekly, to check fetal wellbeing.

Data on gestation and stage of TTTS at diagnosis, UAD patterns, Quintero stage, the gestation at laser ablation treatment, the gestation at delivery, and any iatrogenic complications that may have occurred were collected. The main parameter of interest in this study was the prevalence of UAD abnormalities in cases of TTTS prior to treatment with laser, and the subsequent neonatal outcomes.

Data were collated using an Excel spreadsheet. Statistical analysis was performed using IBM SPSS Statistics Version 24. Ethical approval was obtained from the hospital research and ethics committee.

Results

Over a 10-year period there were 93 patients who underwent selective fetoscopic laser ablation treatment for TTTS. Overall, 82 women delivered in the Rotunda hospital and they are described here. The mean (range) maternal age was 31 years (17 to 42 years). The mean (range) gestational age at diagnosis of TTTS was 19+3 weeks (15+4 to 24+6 weeks).

The mean (range) gestational age at laser treatment was 19+6 weeks (15+6 to 24+6 weeks), giving a mean diagnosis-to-treatment interval of 3 days. The procedure was performed under regional anesthesia in 68% of cases (63/93) or local anesthetia in 33% of cases (30/93). Out of the total of 93 sets of multiple pregnancy, there were 4 sets of triplets, two cases of failed treatment due to excessive bleeding and 9 cases did not deliver in the same tertiary unit.

Of the 82 women who delivered in the Rotunda hospital, 78 were twin pregnancies and there were 4 triplet pregnancies. Of the triplet pregnancies, one resulted in the delivery of three live neonates, two resulted the delivery of two live neonates, and one resulted in the loss of all three fetuses.

The following results focus on the remaining 78 cases of twin pregnancies. Of the 78 twin pregnancies, 39 women had 2 surviving babies (50%) and 17 (22%) had a single survivor (fig1).

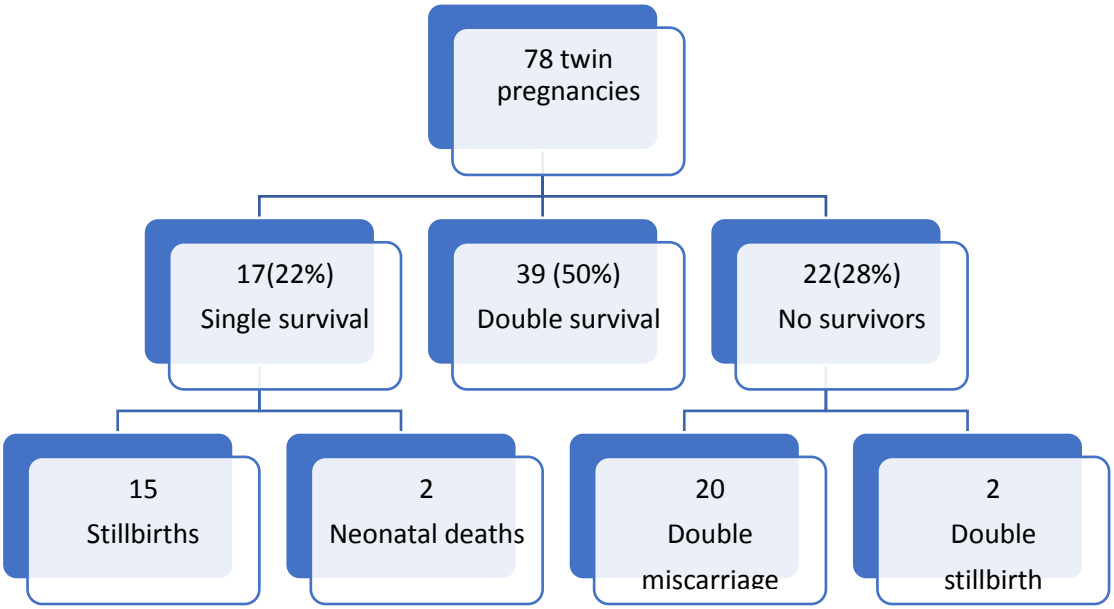
The most frequent Quintero stage at diagnosis was Stage three (38%, 30/78), followed by Stage two (32%, 25/78), Stage one (24%, 19/78) and Stage four (5%, 4/78). The Quintero stage was not significantly associated with survival (chi sq 5.31 p=0.151).

While 50% of pregnancies had normal UAD at the time of TTTS diagnosis, 50% had at least one abnormal UAD finding. Of the abnormal UAD, absent end diastolic flow in the donor twin (AEDF) was the most common (37%, 29/78), AEDF in the recipient 2% (2/78), reversed end diastolic flow (REDF) in donor twin was 6% (5/78), while 4% (3/78) had a raised SD ratio (Table 1). The association of the Quintero stage and abnormal Doppler waveforms is detailed in table 1 and figure 2.

The fetal survival rate with a normal UAD was 53/78 (68%) and with any UAD abnormality was 42/78 (53%). A normal UAD was not associated with survival (chi sq 3.26 p=0.071) (Table 2).

Most commonly, the placenta was located posteriorly (60% cases), versus 36% anterior and 4% fundal.

Figure 1: The neonatal outcome of 78 twin pregnancies with TTTS treated with laser ablation.



Of the 56 women with liveborn deliveries, 47 were delivered by caesarean section, 13(16%) had dual vaginal deliveries, and there were two cases of vaginal delivery for twin 1 followed by emergency Caesarean section for twin 2. The mean (range) gestational age at delivery was 30+1 weeks (23+3 to 40+3 weeks). This gives a mean laser-to-delivery interval of 10+2 weeks.

Table 1: The correlation of abnormal umbilical artery Doppler findings and Quintero stage in 78 sets of twins.

	Number (%)78	**Quintero Stage 1 N =19**	**Quintero Stage 2 N=25**	**Quintero stage 3 N=30**	**Quintero stage 4 N=4**	**Mean Gestational Age (weeks)**
Normal Doppler	39/78 (50%)	11/19	20/25	8/30	0/4	19.6
Total Abnormal Dopplers	39/78 (50%)	8/19	5/25	22/30	4/4	
AEDF Donor	29	7	2	20	0	21
AEDF Recipient	2	1	0	1	0	22.1
REDF Donor	5	0	0	1	4	19.3
Raised SD	3	0	3	0	0	21.1

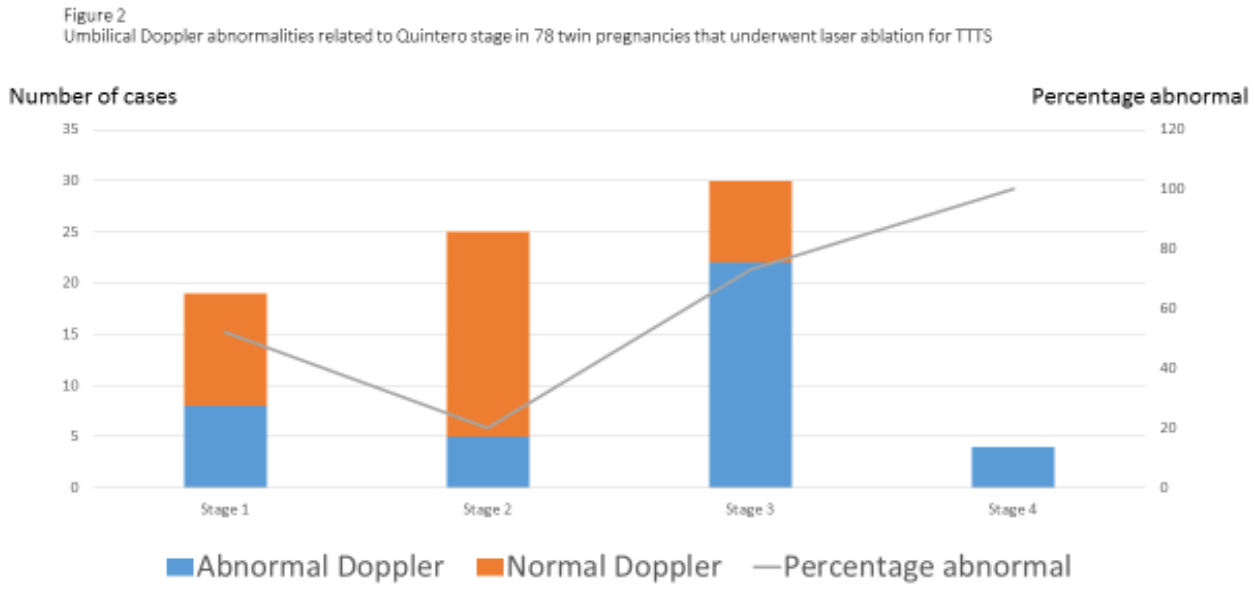


Figure 2: Umbilical Artery Doppler abnormalities related to Quintero stage in 78 twin pregnancies that underwent laser ablation for TTTS.

Table 2: Survival of 1[5]6 babies who underwent laser ablation for TTTS in different Quintero stages and in relation to the umbilical artery Doppler analysis.

	Double survival Number babies Survived	**Single survival Number babies survived**	**Double loss Number babies died**	**Total survival Number babies (%)**
Quintero Stage 1 N=38	20/38	3/38	12/38	23/38(60%)
Quintero Stage 2 N=50	32/50	4/50	10/50	36/50 (72%)
Quintero Stage 3 N=60	24/60	9/60	18/60	33/60 (55%)
Quintero Stage4 N=8	2/8	1/8	4/8	3/8 (37%)
Total normal Doppler analysis N=78	48/78	5/78	20/78	53/78(68%)
Total abnormal Doppler analysis N=78	30/78	12/78	24/78	42/78(53%)
AEDF donor N=58	26/58	8/58	16/58	34/58(58%)
AEDF recipient N=4	2/4	1/4	0/4	3/4(75%)
REDF donor N=10	2/10	1/10	6/10	3/10(30%)
Abnormal SD ratio N=6	0/6	2/6	2/6	2/6(33%)

AEDF = absent end diastolic flow, REDF = reversed end diastolic flow, SD ratio = systolic diastolic ratio

Discussion

In this study, abnormal UAD findings and perinatal outcomes of TTTS over 10 years treated with selective fetoscopic laser ablation supervised by a single lead fetal medicine specialist were evaluated. As outlined above, UAD was abnormal at diagnosis in 50% of the cases with the commonest abnormality being absent end diastolic flow in the donor fetus. We were unable to identify any correlation between Quintero stage or UAD abnormalities and overall survival. In this study, double survival was 50%, single survival was 22% and double miscarriage was 28%. Only 7% delivered after 36 weeks of gestation. In this study survival of babies with TTTS who have normal Doppler studies is 68%, but this drops to 53% when there is any Doppler abnormality, although this difference was not statistically significant. Doppler abnormalities were associated with Quintero stages three and four. This is not surprising as stage three diagnostic criteria is dependent on the findings of abnormal Doppler studies, but these abnormalities are not exclusively in the umbilical artery and can be found in the ductus venosus or umbilical vein Doppler parameters. Survival decreased with the advancing Quintero stage; 60% in stage one, 72% in stage two, 55% in stage three and 37% in stage 4. Another study conducted in Florida showed double survival of 49% with single survival of 39 %. Our survival rates are comparable to international rates. [5]. One randomized controlled trial showed that fetal survival was significantly lower in Quintero stage three cases compared with stage one and two. This study shows a reduction in survival in stage three cases with a further reduction in stage four cases [6]. This study can be helpful in counselling of women with TTTS at different Quintero stages as survival with abnormal Dopplers is worse in stage three and four compared to stage one and two. Although not statistically significant, the reduced survival in groups 3 and 4 was similar to the published literature.

It is notable that two cases had failed TTTS due to excessive bleeding at the time of procedure and were excluded. We excluded those cases who were referred to other centres for delivery on maternal request as well.

It is important to note that the number of cases treated progressively increased every year with one case being treated in 2006 and 16 cases treated in 2016. This is possibly attributed to greater awareness in monitoring of multiple pregnancies at referral hospitals. General application of early booking scans and serial scanning allows accurate gestational assessment, determination of chorionicity, early detection of TTTS and referral to tertiary care for management.

Declaration of Conflicts of Interest:
All of the authors have no conflict of interest.

Corresponding Author:
Dr Amina Javaid
Obstetrics and Gynaecology Registrar,
Rotunda Hospital,
Dublin 1
E-mail: draminaj@gmail.com

References:

1. RCOG Green-top Guideline No. 51 2016 Royal College of Obstetricians and gynaecologisthttps://obgyn.onlinelibrary.wiley.com/doi/epdf/10.1111/1471-0528.14188
2. Twin-to-twin transfusion syndrome: prenatal diagnosis and treatment. Benoit RM1, Baschat AA1.
3. Weissleder R, Wittenberg J, Harisinghani MG. Primer of diagnostic imaging. Mosby Inc. (2003) ISBN:0323023282
4. Brown DL, Benson CB, Driscoll SG et-al. Twin-twin transfusion syndrome: sonographic findings. Radiology. 1989;170 (1): 61-3.
5. J.M .Martinez, C.Bermudez, C .Becerra, J.Lopez, W.J.Morales, R.A .Quitero. The role of doppler studies in predicting individual intrauterine fetal demise after laser therapy for twin-twin transfusion syndrome – Ultrasound in obstetrics & gynaecology 22(3), 246-251, 2003
6. N.Persico, I.Fabietti, F.D'Ambrosi, M. Riccardi, S.Boito, L.Fedele Postnatal survival after endoscopic equatorial laser for the treatment of twin-to-twin transfusion syndrome- American journel of obstetrics and gynaecology 214(4),533.e 1-533. E7, 2016

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Pre-hospital Videoconferencing Telemedicine: Are We There Yet?

P. Gilligan[1], P.N. Sheung[2], M.A. Eswararaj[2], S. Gannon[2], A. Alrmawi[2], J.Z. Gasem[2], A. Bennett[2], C. Tynan[2], R. Little[2], A. Houlihan[2], A. Padki[2], N. Owens[2], D. Morris[3], I. Chochliouros[4], L. Cordeiro[3], A. Mohammed[2], A. Mutawa[2], W. Howard[5], A. Amadi-Obi[1,2], L. Kenna[5], D.A. Alim[2], C. O'Donnell[5]

1. Department of Emergency Medicine, Beaumont Hospital, Beaumont Road, Dublin 9, Ireland.
2. Royal College of Surgeons in Ireland (RCSI), Dublin 2, Ireland.
3. LiveCity Project Team Members.
4. Hellenic Telecommunications Organization S.A. (OTE).
5. HSE Ambulance Service.

Abstract

Aims

Pre-Hospital telemedicine has the potential to save lives. This study examined the challenges in the development of a mobile audio-visual telemedicine platform for the pre-hospital telemedicine component of the European Commission funded LiveCity project.

Methods

Open source software and off-the-shelf hardware elements were used to build a wearable field unit for the paramedic to communicate from the scene of an emergency via live video with the Emergency Department hub over a Third Generation (3G)/High Speed Packet Access (HSPA) network.

Results

Videoconferencing from the scene was compromised in all but one of thirty-four telemedical consultations. Significant challenges in software and hardware suitability, durability, and reliability were identified. The 3G network was unable to provide for an uninterrupted high-quality mobile video link between the paramedic and the Emergency Department.

Discussion

Improvements in hardware and software design with bespoke telemedicine equipment appropriate to the pre-hospital environment as well as investment in fourth (4G) and fifth generation (5G) networks with more extensive coverage will be required to further enable the widespread adoption of optimal telemedicine in pre-hospital care.

Introduction

In a world where videoconferencing from a mobile phone is readily available many ambulance services still communicate with Emergency Departments (EDs) via ambulance control switch boards or Citizens Band (CB) radios.[1] Whilst communication with the hospital has been an element of pre-hospital practice for many years the adoption of technological developments into this environment has been slower than many would have expected.[2,3] Real time high-definition audio-visual transmission can improve communication and enhance medical care.[4,5] These video transmissions are data-intensive applications that require high speed uninterrupted internet access. As part of the LiveCity project we had previously established the acceptability of an audiovisual link to the hospital for patients, paramedics, emergency medicine nurses and doctors.[6]

This research examined the feasibility of providing pre-hospital telemedicine between the on scene paramedic and the Emergency Department Doctor using a wearable kit developed from integrating off the shelf hardware, and modifying open source software and with transmission over an upgraded 3G network to communicate directly with a teleconferencing hub in the ED. The LiveCity project integrated wireless and wired broadband with the aim of creating an ideal communication platform for implementing pre-hospital audio-visual communication.

Methods

The research and ethics committee of Beaumont Hospital agreed to the performance of the prospective feasibility study. Approval was obtained from the Data Protection commissioner. Funding was received under the Competitiveness and innovation framework program seven of the European Commission.

The LiveCity Consortium consisted of 18 partners from seven EU member states. The telemedicine element of the LiveCity Project brought together experts in telecommunications, software development, network engineers, pre-hospital care and emergency medicine.

The developers of the hardware and software solutions and network providers collaborated with the Emergency Medicine health professionals and the Health Service Executive Ambulance service to describe and address the end users' requirements. From a user device point of view the initial strategy of the project had been to use common off the shelf devices with integrated cameras and wireless modems to connect the paramedic with the emergency department. The actuality was that the project built and tested a new wearable video solution as there were no suitable off the shelf solutions available that met the end users' requirements.

The fifth prototype of the field based-wearable kit which was deployed for the patient recruitment phase of the study consisted of a head mounted Contour camera with its own power supply and an ear piece and microphone linked by High Definition Multimedia Interface (HDMI output)cabling to a VIA Atom Microcomputer with video encoding software installed. Data transmission was through a HSPA/3G Modem. The computer and a two-hour battery pack were stored in a backpack along with a HDMI acquisition card, a power management unit and a 3G Universal Serial Bus (USB) dongle. Rugged buttons and feedback audio and Light Emitting Diode (LED) systems were attached to the arm straps of the backpack via cabling from the computer with heavy duty connectors (Figure 1).

Figure 1: Telemedicine Emergency Department Interface (TEDI) backpack.

Notification lights above the control buttons were developed to indicate when 1.the unit was powered on, 2. it was connected to the hub, and 3. it was live streaming. This camera back pack system collected the video and audio, and compressed it using the H.264 standard for video compression, encrypted the video and sent it over the air interface to the High Speed Packet Access (HSPA) base stations which are located at various locations around Dublin (Figure 2).

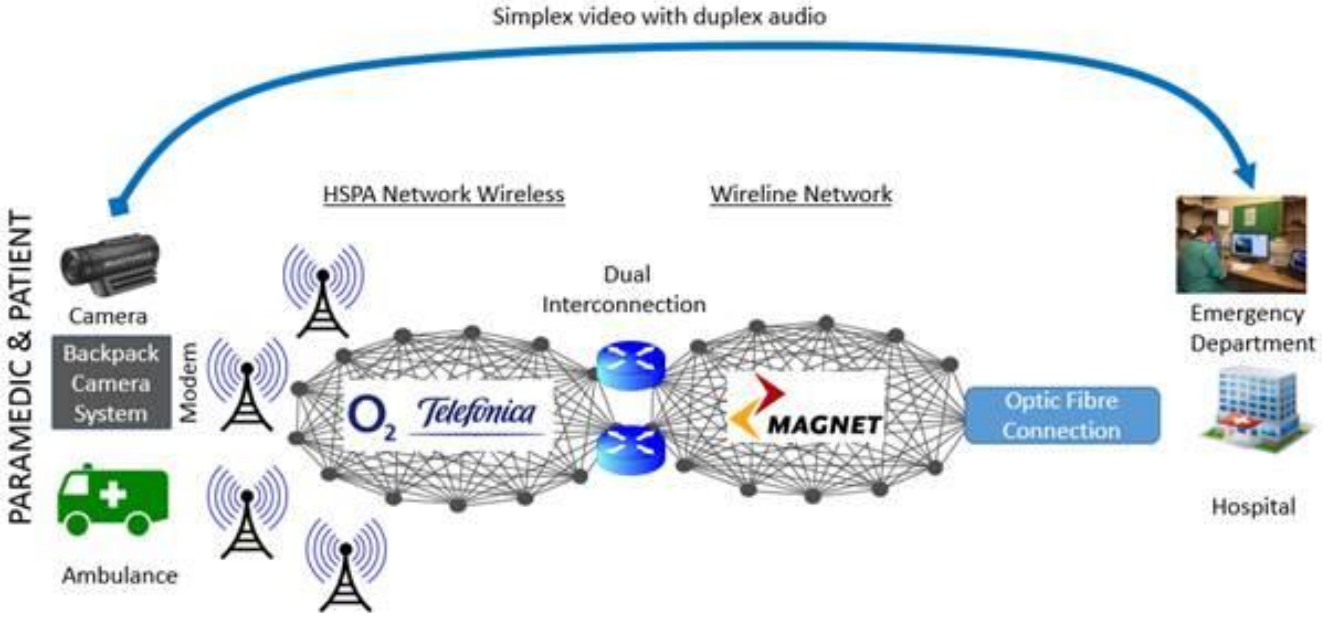

Figure 2: Network Deployment Overview.

From the base station the traffic was carried over the backhaul network to two interconnection points with the wireline network. The backhaul network included dual path redundancy as is common in 3G networks. An access point name (APN) with a private addressing scheme dedicated to the LiveCity project was used. The APN was configured for additional quality of service features to give a higher level of priority compared to other traffic on the uplink. The traffic arrived at the network and was carried in a virtual private network (VPN) to the hospital. A dedicated optic fibre was installed, in partnership with a third party who already had circuits in the area, into the hospital emergency department at Beaumont hospital. The dedicated hub office included a 27-inch LG Television monitor (Model 27EA33) and a Toshiba Satellite Pro L850-1P8 laptop computer with a headset with earpiece and microphone.

Results

Forty-seven field tests of the platform were performed prior to patient recruitment and subsequently 34 patients consented to and experienced an attempted pre-hospital telemedicine consultation.

We noted technical challenges in 33 of 34 telemedicine consultations. The technical problems are discussed under the headings of hardware challenges, software challenges and network challenges.

Hardware challenges

There was a need for detailed instructions for starting up the Telemedicine Emergency Department Interface (TEDI) device which included an eight-point standard operating procedure. The backpack itself could not be worn whilst seated in the ambulance as it placed the paramedic too far forward in the seat and as such had to be put on after arrival at the scene. The computer battery generated a lot of heat to the point of becoming uncomfortable for the person wearing it and this also caused overheating of the hard drive such that it would crash and fail to reboot. This necessitated the design of vents within the backpack which only partly resolved the issue. The hardware had multiple USB connections with cables going to a dongle, switch devices, and other cables to microphones and earpieces as well as a HDMI cable to the camera. During patient testing USB attachments broke, the HDMI cable became disconnected, a dongle broke, the cable into the back of the camera broke. The subscriber identity model (SIM) card in the hard drive tended to click up and out of position. There was a very frequent need to re-boot the hardware to ensure the camera was being recognised by the hard drive. The hard drive and camera both had separate power sources with separate chargers the camera having a usable time of about two hours whilst the hard drive could be up to 4 hours which necessitated carrying multiple spare batteries for each. There were repeated equipment breakdowns such as the hard drive casing cracking, cables fracturing and connections breaking that required progressive rebuilds with more durable material. The backpack potentially could catch on items. The camera on the head band tended to tilt upwards and could become uncomfortable with prolonged wearing of same. In short the provided hardware in prototype phase 5 still did not meet the requirements of the end users when deployed in the pre-hospital arena, such that when deployed the TEDI camera was worn by a member of the research team to avoid interrupting the paramedic in their work.

The software challenges

The modified open-source software was used to create an audio-visual software application with an end user interface (Figure 3) in the hub used by the hospital-based doctor.

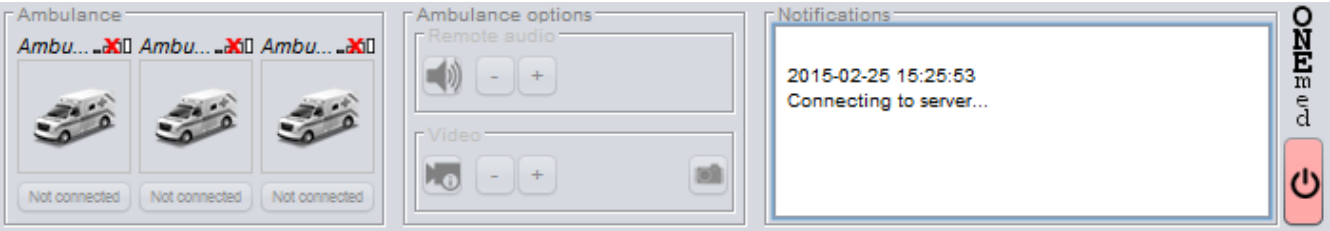

Figure 3: (software interface allowing up to 3 ambulances to interact with the physician who could manipulate audiovisual quality and take high definition still images).

The software development included full video to video re-engineering for improved integration and stability to allow up to 3 ambulances to be supported, preview image acquisition, Ambulance status and selection buttons, a notifications area, remote sound management and video quality management, still picture support and improved stability and resilience.

Due to the sensitive nature of data transmitted end-to-end encryption was required leading to data intensive transmission. Software resilience was suboptimal in enabling recovery especially during signal handover from mast to mast while transiting through a region with poor network signal. There was a need to re-boot the camera and hard drive to establish a video link which invariably took longer than establishing the audio link and it was often necessary to reduce video quality to try and establish a video link. At times the taking of a screen shot seemed to help start a video stream and at times if the video stream was established and a screen shot was taken the video stream would either freeze or be lost. Audio quality was poor whilst persistent echoing made it quite difficult to communicate. The Doctor manning the communication hub heard their own voice up to about five seconds after asking a question of the camera wearer due to the encryption process. In the event of a dropped or lost signal the Doctor at the hub heard the last sound from the field repeatedly until the connection was lost completely or re-established. This was due to the repetition of the last data parcel as a result of the looping of the signal. There was an issue of delay between the audio feed and the video feed and a delay created by the encryption of both. There was freezing of images, pixilation of images, degradation of sound quality and loss of signal with movement as well as looping of the audio signal. All of these made real time communication challenging and necessitated the Doctor at the hub speaking at a slower rate than would be optimal in an emergency situation.

The Network challenges

Due to the data-intensive nature of this application we experienced persistent signal drop that led to significant difficulties in real time audio-visual communication. Communication via the platform when the patient was in doors or in a moving vehicle was frequently associated with loss of signal. Notionally HSPA can have uplink speeds of several megabits (Mbps) per second.

In practice the pilot measured speeds in the range less then 1Mbps. During testing uplink speeds in the range of 500 kilobits (Kbps) to 1Mbps were found to be useful for transmitting video.

Discussion

Prehospital telecommunication has been used to expedite care in patients with stroke, myocardial infarction and trauma.[7-10] It is regarded as cost effective and increases the specialist's sense of safety with respect to the advice they are giving.[11-13] Its use has been advocated in situations as diverse as facilitating advanced airway management and major incident management.[14,15] In previous work paramedics expressed concerns about the reliability of the equipment available to facilitate teleconferencing.[6] Having light weight, compact, robust, reliable, intuitive, unobtrusive, low maintenance equipment that works rapidly first time and every time and is appropriate to the environment is essential if video conferencing from the pre-hospital environment is going to be used more frequently. The technology must facilitate not impede the delivery of pre-hospital care.[16] The equipment must be designed for the environment taking all of the end users requirements into account.[17] Bespoke hardware and software solutions must be developed to enable mobile video conferencing to facilitate paramedics in optimizing the usefulness of telemedicine consultations. The head mounted camera, earpiece and microphone should link wirelessly with the computer and from there to the communication hub. Our research has confirmed the work of others that data intensive transmission such as encrypted multimedia limits the utility of 3G for real-time on site mobile telemedicine application.[18] Even with higher network speeds that are available in 4G and even 5G networks priority access to all available networks will be required for optimum telemedicine functionality. Network providers must cooperate and allow access for pre-hospital telemedicine across all available networks. Satellite facilitated telecommunications from the pre-hospital environment has been suggested by others.[19] Getting the right patient to the right place whilst they are having the right treatment requires the right technology. We are not there yet when it comes to the provision of optimal pre-hospital video telemedicine technology but the goal of providing specialist advice where they can see and hear what the paramedic is dealing with is worth pursuing.

Declaration of Conflicts of Interest:
The involvement of the research partners was part funded by the European Commission under the FP7 initiative. The technical partners are commercially involved in telecommunications delivery.

Corresponding Author:
Dr Peadar Gilligan,
Emergency Department ,
Beaumont Hospital,
Dublin.
E-mail: peadargilligan@beaumont.ie

References:

1. Winburn AS1, Brixey JJ, , Champagne-Langabeer T. A systematic review of prehospital telehealth utilization. *J Telemed Telecare*. 2018;24(7):473-481.
2. Giovas P, Papadoyannis D, Thomakos D, Papazachos G, Rallidis M, Soulis D, Stamatopoulos C,et al. Transmission of electrocardiograms from a moving ambulance. *J Telemed Telecare*. 1998;4 Suppl 1:5-7.
3. Scalvini S, Glisenti F. Centenary of tele-electrocardiography and telephonocardiography - where are we today? *J Telemed Telecare.* 2005;11(7):325-30.
4. Marcolino MS, Maia LM, Oliveira JAQ, Melo LDR, Pereira BLD, Andrade-Junior DF,et al. Impact of telemedicine interventions on mortality in patients with acute myocardial infarction: a systematic review and meta-analysis. *Heart*. 2019;105(19):1479-1486.
5. Lumley HA, Flynn D, Shaw L, McClelland G', Ford GA, White PM et al. A scoping review of pre-hospital technology to assist ambulance personnel with patient diagnosis or stratification during the emergency assessment of suspected stroke. *BMC Emerg Med*. 202;26;20(1):30.
6. Gilligan P, Bennett A, Houlihan A, Padki A, Owen N, Morris D,et al. The Doctor Can See You Now: A Key Stakeholder Study Into The Acceptability Of Ambulance Based Telemedicine. *Ir Med J.* 2018;7;111(6):769.
7. Noorian AR, Bahr Hosseini M, Avila G, Gerardi R, Andrle AF, Su M, et al. Use of Wearable Technology in Remote Evaluation of Acute Stroke Patients: Feasibility and Reliability of a Google Glass-Based Device. *J Stroke Cerebrovasc Dis.* 2019;28(10):104258.
8. Liman TG, Winter B, Waldschmidt C, Zerbe N, Hufnagl P, Audebert HJ, et al. Telestroke ambulances in prehospital stroke management: concept and pilot feasibility study. *Stroke*. 2012;43(8):2086-90.
9. Brunetti ND, De Gennaro L, Correale M, Santoro F, Caldarola P, Gaglione A,et al. Pre-hospital electrocardiogram triage with telemedicine near halves time to treatment in STEMI: A meta-analysis and meta-regression analysis of non-randomized studies. *Int J Cardiol*. 2017;1;232:5-11.
10. Ogedegbe C, Morchel H, Hazelwood V, Chaplin WF, Feldman J. Development and evaluation of a novel, real time mobile telesonography system in management of patients with abdominal trauma: study protocol.*BMC Emerg Med.* 2012;18;12-19.
11. Langabeer JR , Champagne-Langabeer T, Alqusairi D, Kim J, Jackson A, Persse D, Gonzalez M. Cost-benefit analysis of telehealth in pre-hospital care. *J Telemed Telecare*. 2017 ;23(8):747-751
12. Delgoshaei B, Mobinizadeh M, Mojdekar R, Afzal E, Arabloo J, Mohamadi E. Telemedicine: A systematic review of economic evaluations. *Med J Islam Repub Iran*. 2017;20;31:113.
13. Vicente V, Johansson A, Ivarsson B, Todorova L, Möller S.The Experience of Using Video Support in Ambulance Care: An Interview Study with Physicians in the Role of Regional Medical Support. Healthcare (Basel). 2020 ;23;8(2).
14. Sakles JC, Mosier J, Hadeed G, Hudson M, Valenzuela T, Latifi R. Telemedicine and telepresence for prehospital and remote hospital tracheal intubation using a GlideScope™ videolaryngoscope: a model for tele-intubation. *Telemed J E Health*. 2011 ;17(3):185-8.
15. Plischke M, Wolf KH, Lison T, Pretschner DP. Telemedical support of prehospital emergency care in mass casualty incidents. *Eur J Med Res.* 1999; 9;4(9):394-8.

16. Felzen M, Beckers SK, Kork F, Hirsch F, Bergrath S, Sommer A,et al. Utilization, Safety, and Technical Performance of a Telemedicine System for Prehospital Emergency Care: Observational Study. *J Med Internet Res.* 2019;8;21(10):e14907. doi: 10.2196/14907.
17. Zhang Z, Brazil J, Ozkaynak M, Desanto K. Evaluative Research of Technologies for Prehospital Communication and Coordination: a Systematic Review. *J Med Syst*. 2020 ;3;44(5):100.
18. Winter B, Wendt M, Waldschmidt C, Rozanski M, Kunz A, Geisler F et al; Stroke Emergency Mobile (STEMO) Consortium. 4G versus 3G-enabled telemedicine in prehospital acute stroke care.*Int J Stroke.* 2019;14(6):620-629.
19. Nagatuma H. Development of an Emergency Medical Video Multiplexing Transport System (EMTS): aiming at the nation-wide prehospital care in ambulance. *J Med Syst*. 2003 ;27(3):225-32.

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Ophthalmological Screening in Children Who Are Deaf or Hard of Hearing

J. Clarke, W. Khan, N. van der Spek
Cavan General Hospital

Abstract

Aim

Sensory inputs are vital in the development of higher functions. As such, a combination of visual and hearing impairment can have a detrimental effect on development1. This article aims to analyse studies on vision impairment in deaf or hard of hearing children to find out the prevalence ophthalmological problems.

Methods

A literature search was done using databases that include MEDLINE, CINAHL, PubMed and Google Scholar. 18 studies were found with original or comprehensive reviews on eye findings in children with hearing impairment.

Results

Visual defects are more prevalent in deaf children, ranging from 9%9 (n=435) to 60%10 (n=302). Most of the identified visual defects are refractive errors. The majority of studies compare the findings with previous studies carried out on normal hearing children but two of the studies compared the results with their own control group8,10. On the other hand in addition to identifying eye problems one of the studies also looked for the impact of corrections after providing spectacles and low vision devices and noted a significant improvement3.

Conclusion

This literature review emphasises the ophthalmological complications associated with deaf or hard of hearing children. Further screening may be required for this particular patient cohort.

Introduction

Sensory inputs play a vital role in the development of higher functions in children. In this regard, hearing and vision are the most important as they are the source of approximately 95% of all collected information with touch, smell and taste playing a small role when compared to these[1].

Naturally, when one of these sensory inputs is impaired that individual relies more on other sensory inputs to narrow the gap in the collection of information. Hence, the greater the degree of sensory impairment the more significant the other becomes[2]. In the case of a deaf or hard of hearing child who also has a visual abnormality, the sense that is responsible for most of the knowledge acquisition, even a minor defect of refraction becomes very significant[3]. As such a combination of visual and hearing impairment can have a detrimental effect on various aspects of development, in particular speech and motor development[4]. Studies have shown that if these problems are identified early and intervention is promptly delivered outcomes like speech and language, sociability and academics can be improved upon when compared with those not identified early[5,6]. One study specifically evaluated visual acuity and vision function before and after providing spectacles and low vision devices (LVDs) in deaf children and showed reduced visual impairment and improved vision function, improving their ability to negotiate in and out of school[3]. Unfortunately, there is a significantly higher prevalence of eye problems in deaf or hard of hearing children compared with their normal counterparts[7,8].

The purpose of this article is to review studies completed over the last 15 years on vision impairment in deaf or hard of hearing children to ascertain the prevalence of, and the most common, eye problems in these children which in turn may help devise a strategy for screening and early identification of these problems thus justifying the enrolling of these children in a targeted screening process. A comparison can be made with best practice opthalmological screening suggested in children with Down Syndrome where such children are examined by an ophthalmologist by six months of age with follow up once per year if required[25]. There were no conflicts of interest from the three authors.

Methods

In order to find relevant articles and studies, a literature search was completed from electronic databases that included MEDLINE, CINAHL, PubMed and Google Scholar. More than 1000 articles were identified. A total of 18 studies were gathered with original or comprehensive reviews including data on eye findings in children with hearing impairment. These studies were initially identified by reviewing the study titles and then by evaluating 65 abstracts, which were used in this project. Articles that were deemed not in line with our objectives, i.e. articles dealing with treatment and interventions or other aspects, were not evaluated further. The following word combinations were used in the electronic search: “deaf and vision”, “hearing impairment and vision”, “vision and hearing impairment”, “deaf and ocular”, “hearing impairment and ocular”, “deaf and ophthalmological”, and “hearing and ophthalmological”. Ages included in studies evaluated here ranged from 8 months[7] to 38 years[14]. Studies with a broader age range were deemed to be eligible due to their large cohort numbers with a predominant paediatric population.

Results

The findings of these selected studies show that visual defects are more prevalent in deaf children ranging from 9%[9] (n=435) up to 60%[10] (n=302).

Of the identified visual defects, the majority were refractive errors. Most of these studies compare the findings with previous studies carried out on normal hearing children but two of the studies compared the results with their own control group[8,10]. On the other hand in addition to identifying eye problems one of the studies also looked for the impact of corrections after providing spectacles and low vision devices and noted a significant improvement[3]. The following are the commonly encountered visual problems in deaf or hard of hearing children. Note the percentages mentioned in the results are calculated by considering the total number of the cases identified in the study having eye problems not the total number of subjects participated in the study.

Table 1: Population characteristics

Study	Number (n)	Study population	Male	Female	Age	Eye problems %	Country
Guy et al 2003[7]	122	Child Development centre	61	61	8m-16yr	43%	UK
Hanioglu-kargi et al 2003[2]	104	School for Deaf	68	36	7-20	40%	Turkey
Al-abduljawad et al 2005[10]	302	Rehabilitation medical centre	199	103	2-15yr	60%	KSA
Khandekar et al 2009[11]	223	School for Deaf	142	81	>5yr	34%	Oman
Gogate et al 2009[12]	901	School for Deaf	554	347	4-21yr	24%	India
Bist et al 2010[1]	279	School for Deaf	154	125	5-20yr	28%	Nepal
Onakpoya and omotoye et al 2010[13]	156	School for Deaf	75	81	6-25yr	34%	Nigeria
Abah et al 2011[14]	608	School for Deaf	373	235	5-38yr	21%	Nigeria
Khorrami Nejad et al 2014[15]	158	School for Deaf	158	0	8-24yr	53%	Iran
Al-Ani et al[16]	50	Hospital	30	20	1-18yr	32%	Iraq
Bakhshaee et al 2009[17]	50	Hospital	19	31	3-7yr	32%	Iran
Johnston et al 2010[18]	77	Hospital			Mean age 7.3yr	32%	USA
Salem et al 2014[19]	138	School for Deaf	90	48	3-23yr	58%	Yemen
Dhungana AP et al 2014[20]	87	School for Deaf	58	29	6-25yr	26%	Nepal
El Aziz et al 2014[9]	435	School for Deaf	47	188	6-18yr	9%	Egypt
Inderjit Kaur et al 2014[21]	100	Hospital	56	44	5-14yr	47%	India
H.Ostadimoghaddam et al 2015[8]	254	School for Deaf	134	120	7-22yr		Iran
Gogate et al 2016[3]	929	School for Deaf	560	369	8-18yr	38%	India

Table 2: Results

Study	Myopia %	Hypermetropia %	Astigmatism %	Amblyopia %	Strabismus %	Retina+ Disc %	Color Vision %	Cornea+ lense %	Anisometropia %
Guy et al 2003[7]	47.9%	22.9%	16.6%	8.3%	14.5%	37.5%		2%	2%
Hanioglu-kargi et al 2003[2]	14%	23%	35%	38%	45%	21%	14%	4%	12%
Al-Abduljawad et al 2005[10]	34%	8%	19.5%	8%	6%	10%		3.8%	5%
Khandekar et al 2009[11]	56% had refractive errors						1.3%		
Gogate et al 2009[12]	52%	19%	6%	1.4%	5.5%	4.6%			
Al-Ani et al 2009[16]	43.7%	18.7%	6.25%		12.5%	12.5%			
Bakhshaee et al 2009[17]	25%	25%	62.5%		18.7%	25%			
Johnston et al 2010[18]	16%	28%	24%		52%	20%		8%	20%
Bist et al 2010[1]	59% have refractive errors			7.7%	19.2%	8.9%		2.5%	13%
Onakpoya and Omotoye 2010[13]	34%	20.7%			5.6%	20%		3.7%	
Abah et al 2011[14]	37% have refractive errors				4%	4%	11%	2%	
Khorrami Nejad et al 2014[15]	23.4%	25%	58%	26%	21.4%	22.6%	12%	4.7%	35.7%
Salem et al 2014[19]	13.7%	17.2%	34.4%		3.4%	17%		6.9%	
Dhungana AP et al 2014[20]	56% have refractive errors				8.6%	8.6%		4.3%	
El-Aziz et al 2014[9]	13%	23%	48%	5%	5%	7.6%			
Inderjit kaur et al 2014[21]	39.4%	14%	17%	11.2%	15.5%		5.6%	4.2%	14%
h.Ostadimoghaddam et al 2015[8]	5.5%	57%		12.2%	3.1%				
Gogate et al 2016[3]	71% have refractive errors			2.5%	15%	1%	6%	3%	

Refractive errors

By far the most common finding recorded among deaf or hard of hearing children was a refractive error. The refractive errors include myopia, hypermetropia, astigmatism with some of the studies also including anisometropia. These were measured commonly using Snellen's E chart with cycloplegic and non cycloplegic refraction. For the younger and preverbal children Cardiff cards[7] and kay picture charts[12] were used. Auto refractometer was also used in one of the studies[8]. Myopia was found to be the most common refractive error ranging from 13%[9] (n=435) up to 52%[12] (n=901). Hypermetropia was the second most common refractive error with a prevalence ranging from 8%[10] (n=302) to 57%[8] (n=254). Astigmatism was third in this category with cases ranging from as low as 6%[12] (n=901) to as high as 62.5%[17] (n=50). Seven of these studies also measured anisometropia ranging between 2%[7] (n= 122) up to 35%[15] (n=158).

Strabismus

Strabismus was the second most common finding after refractive errors. Researchers commonly used cover and uncover tests to identify strabismus. A deviation of 10 prism dioptres[12,.19] was used as criteria to diagnose strabismus. Like the errors of refraction percentages of the strabismus also vary from one study to another ranging from 6%[10] (n=302) to 52%[18] (n=77).

Amblyopia

Amblyopia was also reported as a common visual defect found in deaf and hard of hearing children. Researchers used different cut-offs to diagnose amblyopia ranging from 20/30[1,2] to 20/200[12] with incidence ranging from 1.4%[12] (n=901) up to 38%[2] (n=104).

Retina and optic disc anomalies: Retinal and optic disc anomalies were also frequently reported in deaf and hard of hearing children. These included pigmentry retinopathy (Rubella) retinal dystrophy, optic atrophy, retinitis pigmentosa and were mostly diagnosed using direct and indirect fundoscopy and electroretinogram (ERG), with one of the researchers also using electro-oculogram[7]. The percentage of children having retinal and optic disc changes ranged from 4.6[12] (n=901) to 37.5%[7] (n=122).

Cornea and lens

Cataract, micro cornea, keratoconus, corneal opacities were seen in deaf or hard of hearing children using pen torch and slit lamp examination. Collectively they ranged from 2%[1] (n=279) up to 8%[18] (n=77) in different studies.

Colour vision

Only a small number of the researchers looked for colour vision. Colour vision abnormality detections ranged from 1.3%[11] (n=223) up to 12%[15] (n=158).

Discussion

According to the World Health Organisation's estimates for 2020, 34 million children all over the world have disabling hearing loss[22]. If we consider the birth rate in Ireland, that is estimated at 61,000, having a prevalence of 1-2 per 1,000 newborns would result in 60 to 120 newborn babies each year being diagnosed as having hearing loss[23]. It is estimated that between 3000-4500 preschool age children in Ireland are deaf or hard of hearing[24]. This gives us an idea of the extent of the problem. We were unable to find any Irish study related to eye problems in deaf and hard of hearing children. Previous studies completed on the population of the United Kingdom estimated that 43% of deaf and hard of hearing children had eye problems as compared to the normal counterparts which showed a prevalence of 15%, so these are reported to be almost three times more commonly found in deaf and hard of hearing children[7]. When we looked at the results, and yield of the eye problems, we found a wide range of positive results from as low as 9%[9] (n=435) to as high as 60%[10] (n=302) but that can likely be explained by the fact that firstly the classical or standard ophthalmological testing may not be appropriate and need significant variability to assess these children correctly. Secondly, some authors applied different criteria to diagnose certain problems. For example, myopia was defined widely as 0.5 diopters up to >4 diopters. Similarly, with hypermetropia where crieteria ranged from 1D up to >4D [table 2]. Thirdly, the study populations are also different with studies carried out on different continents and most of these relied on selecting population from schools for the deaf and hard of hearing [table 1]. Despite these differences all researchers were convinced that there is a clinically and statistically significant occurrence of eye problems in deaf and hard of hearing children compared to their normal hearing counterparts. This highlights the fact that assessment for the ophthalmological problems in children who are deaf and hard of hearing is of great importance and early detection and intervention is vital in terms of speech motor and other aspects of development[5,6].

On the basis of above data, we found that refractive errors are the most common abnormality. Myopia is the most frequently reported refractive error followed by hypermetropia and astigmatism. The second common abnormal finding was strabismus, followed by amblyopia and retinal and optic disc abnormalities with a small number of children having cataract and corneal abnormalities. There is already a program of universal screening for newborn hearing in Ireland and other developed countries. Recommendations made by the British Association of Audiovestibular Physicians in their recent guidelines for aetiological investigation into progressive permanent childhood hearing impairment suggest ophthalmological assessment include formal testing and recording of visual acuity, functional assessment of vision, refraction, visual field assessment, assessment of ocular alignment and eye movements, fundoscopy and assessment of binocular vision as soon as is feasible after hearing loss is confirmed[26]. This study emphasises the need for such an ophthalmological assessment as part of the workup done for those who are diagnosed as deaf and hard of hearing in screening or on later assessment of hearing function.

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

Corresponding Author:
Jonathan Clarke
Cavan General Hospital
E-mail: jonathandaclarke@gmail.com

References:

1. Bist J, Adhikari P, Sharma AK. Ocular morbidity in hearing impaired schoolchildren. Child: care, health and development. 2010; 37, 3, 394-397.
2. Hanioglu-Kargi S, Koksal M, Tomac S, Hayri Ugurbas S, Alpay A. Ophthalmologic abnormalities in children from a Turkish school for the deaf. The Turkish Journal of Pediatrics. 2003; 45: 39-42.
3. Gogate P, Bhusan S, Ray S, Shinde A. Impact of correcting visual impairment and low vision in deaf-mute students in Pune, India. Indian J Ophthalmol. 2016; 64: 898-903.
4. Wiley S, Parnell L, Belhorn T. Promoting early identification and intervention for children who are deaf or hard of hearing, children with vision impairment, and children with deafblind conditions. The Journal of Early Hearing Detection and Intervention. 2016; 1(1): 26-33.
5. Verhaert N, Willems M, Van Kerschaver E, Desloovere C. Impact of early hearing screening and treatment on language development and education level: Evaluation of 6 years of universal hearing screening in Flanders, Belgium. International Journal of Pediatric Otorhinolaryngology. 2008; 72, 599-608.
6. Moeller M. Early Intervention and Language Development in Children Who Are Deaf and Hard of Hearing. Pediatrics. 2000 Sept 1 [cited 2020 Apr 20]; 106 (3): e43. Available from: https://pediatrics.aappublications.org/content/106/3/e43.
7. Guy R, Nicholson J, Pannu SS, Holden R. A clinical evaluation of ophthalmic assessment in children with sensori-neural deafness. Child: Care Health & Development. 2003; 29 (5): 377-384.
8. Ostadimoghaddam H, et al. Eye problems in children with hearing impairment. Journal of Current Ophthalmology. 2015; 27: 56-59
9. El-Aziz A, Ellakwa A, Sarhan A, Farahat H. Prevelence of Visual Impairment among Deaf and Mute Schools Children. Ophthalmology Research: An International Journal. 2014; 2 (4): 204-211.
10. Al-Abduljawad A, Al-Hussain Hela, Dasugi A, Zakzouk S. Ocular profile among hearing impaired children. Saudi Medical Journal. 2005; 26 (5): 738-740.
11. Khandekar R, Al Fahdi M, Al Jabri B, Al Harby S, Abdulamgeed T. Visual function and ocular status of children with hearing impairment in Oman: A case series. Indian J Ophthalmol. 2009; 57 (3): 228-229.
12. Gogate P, Rishikeshi N, Mehata R, Ranade S, Kharat J, Deshpande M. Visual impairment in the hearing-impaired students. Indian J Ophthalmol. 2009; 57 (6): 451-453.
13. Onakpoya O, Omotoye O. Screening for Ophthalmic Disorders and Visual Impairment in a Nigerian School for the Deaf. European Journal of Ophthalmology. 2010; 20 (3) : 596-600.

14. Abah ER, Oladigbolu KK, Samaila E, Merali H, Ahmed AO, Abubakar TH. Ophthalmologic abnormalities among deaf students in Kaduna, Northern Nigeria. Annals of African Medicine. 2011; 10 (1): 29-33.
15. Khorrami Nejad M, et al. The Prevalence of Refractive Errors and Binocular Anomalies in Students of Deaf Boys Schools in Tehran. Iranian Journal of Ophthalmology. 2014; 26 (4): 183-188.
16. Al-Ani R, Mohsin T, Hassan Z, Al-Dulaimy H. Importance of ophthalmological examination in children with congenital sensorineural hearing loss. Saudi Med J. 2009; 30 (9): 1197-1201.
17. Bakhshaee M, et al. Ophthalmic disturbances in children with sensorineurl hearing loss. Eur Arch Otorhinolaryngol. 2009; 266: 823-825.
18. Johnston D, et al. Ophthalmologic Disorders in Children With Syndromic and Nonsyndromic Hearing Loss. Arch Otolaryngol Head Neck Surg. 2010; 136 (3): 277-280.
19. Salem R, Basaleh S, Mohammed S. Ocular Abnormalities among Deaf Students in Aden City, Yemen. Iraqi j Med Sci. 2014; 12 (3): 209-215.
20. Dhungana AP. Ocular morbidity in hearing impaired school children in Eastern Nepal. Journal of Kathmandu Medical College. 2014; 3 (1): 4-7.
21. Kaur I, Singh J, Kaur P, Thakare AN. Ophthalmologic abnormalities in children with impaired hearing. Journal of Evolution of Medical and Dental Sciences. 2014; 3 (8): 2008.
22. World Health Organisation. Deafness and hearing loss. Geneva: World Health Organisation; 2020 [updated 2020 March 1; cited 2020 April 21]. Available from: https://www.who.int/news-room/fact-sheets/detail/deafness-and-hearing-loss
23. Central Statistics Office. Number of Births, Deaths and Marriages. Cork: Central Statistics Office; 2019 [undated; cited 2020 April 21]. Available from: https://statbank.cso.ie/multiquicktables/quickTables.aspx?id=vsa02_vsa09_vsa18
24. Irish Society of Hearing Aid Audiologists. About Hearing Loss. Limerick: Irish Society of Hearing Aid Audiologists; 2020 [undated; cited 2020 April 21]. Available from: https://www.ishaa.ie/hearing
25. American Association for Pediatric Ophthalmology and Strabismus. Down Syndrome. San Francisco, California: American Association for Pediatric Ophthalmology and Strabismus; 2019 [updated 2020 April 17th; cited 2020 October 27th]. Available from: https://aapos.org/glossary/down-syndrome
26. British Association of Audiovestibular Physicians. Guidelines for aetiological investigation into progressive permanent childhood hearing impairment. London: British Association of Audiovestibular Physicians; 2018 [undated; cited 2020 November 15]. Available from: https://www.baap.org.uk/uploads/1/1/9/7/119752718/guideline_progressive_hl_final.pdf

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The Factors That Influence Medical Students When Deciding on a Career in General Practice

M. O' Tuathail[1], C. McNicholas[1], E. Synnott[2]

1. HSE Dublin Mid Leinster General Practice training Scheme, UCD, Dublin 4, Ireland.
2. Department of Sport, Exercise and Rehabilitation, Northumbria University at Newcastle upon Tyne, UK.

Abstract

Aims

Irish General Practice is experiencing a crisis in the recruitment and retention of its General Practitioners (GPs). The aim of this study was to determine Irish final year medical students' current career intentions, attitudes towards General Practice and the factors influencing their career decisions.

Methods

Questionnaires were distributed to five Irish medical schools. Students' undergraduate experience of General Practice, their likelihood of pursuing a career in General Practice and the individual and occupational aspects influencing their career intentions towards a career in General Practice were assessed.

Results

Ninety-four students completed the survey in its entirety. Approximately 50% (44/94) of students indicated their intention to pursue a career in General Practice. Eighty-six percent (86%) reported having positive General Practice placements. Contact with GPs, either their own GP (56% 54/94) or during their studies (69% 64/94), was found to have the most positive influential impact on students' aspirations to specialise in General Practice. The perception of General Practice portrayed by other specialities (43% 41/94) and classmates (31% - 29/94) was found to be the most influential factor deterring students from General Practice.

Discussion

With increasing demand for GP's, strategies aiming to promote General Practice as a speciality and that address negative perceptions of the specialty are crucial.

Introduction

General Practice in Ireland is experiencing a crisis in the recruitment and retention of its GPs [1]. The introduction of universal access to free GP care to children under the age of six and its proposed extension, as envisaged by slaintecare, will further exacerbate this crisis [2].

Ireland has a lower number of GPs when compared with other countries, with a 2015 OECD report putting this figure at 63 per 100,000 population [3]. This falls well below international best practice standards of 80 per 100,000 population [3].

How GPs work is also changing. In Ireland 10% (17/175) of current GP graduates do not see themselves working in General Practice within the next 5 years [3,4]. 66% (116/175) of newly qualified GPs don't see themselves working fulltime in General Practice in 5 years [3].

Furthermore, large-scale dissatisfaction with current working conditions, frustration surrounding limited career progression and the search for better working environments has resulted in high levels of emigration by Irish doctors [2]. General Practice is experiencing similarly high rates of emigration with 33% (72/217) of current GP trainees considering emigrating in addition to the 18% (30/175) of recent graduates who have already emigrated [3]. This will further aggravate the manpower crisis in General Practice.

Medical students are the future of the medical workforce in Ireland. Therefore, an understanding of their attitudes towards General Practice, and the factors that influence their decision to choose GP as a career are crucial in addressing the growing shortage of GPs in Ireland.

An accumulating body of literature exists on the factors influencing the opinion and attitude towards pursuing a career within General Practice internationally[5]. Amongst these, several common sociodemographic [older age, female gender, growing up in a rural background], professional [interest in community orientated practice, structured and shorter training scheme, flexibility of working conditions, work-life balance], and systemic influencing factors have been identified [5].

A consistent finding linked to an increased likelihood of medical students choosing General Practice as a career was exposure to, and positive experiences of, General Practice placements throughout their studies [6]. Furthermore, medical students' own GP, and GP's encountered during their time at medical school were shown to have a strong influence on the perceptions medical students had towards General Practice [7]. Denigration of General Practice by hospital based specialities has been routinely encountered by medical students on hospital rotations within the United Kingdom [8]. This has been shown to have a strong influence on medical students' negative perceptions of General Practice as a career [9].

Currently, in Irish medical schools, medical training is predominantly focused on hospital medicine, with medical students getting less exposure to General Practice, with the exception of the University of Limerick.

This approach limits the exposure to General Practice based education and training, and the positive influence it conveys on medical student's career aspirations. Further, it remains unclear if Irish medical students encounter denigration of general practice during hospital rotations. The purpose of this study was to investigate final year Irish medical students' perception of general practice as a career and the factors influencing these career decisions.

Methods

A cross-sectional structured questionnaire study of final year medical students was conducted across five Irish medical schools. Ethical approval was provided by the Irish College of General Practitioners.

Following a literature review, a 46-item questionnaire was developed. Research questions addressed in the survey were grouped into three main categories: student demographics, undergraduate exposure to General Practice and an exploration into the factors influencing medical students' perception and consideration of, General Practice as a career. The questionnaire combined dichotomous, multiple choice and likert response scale questions.

A sample size of 90 responses was determined to provide an accurate representation of Irish final year medical students at a confidence level of 95% with a 10% margin of error with oversampling performed to account for possible dropouts.

An invitation was sent to all six-medical schools within the Republic of Ireland. Five of the six universities consented to the study. Minor refinements to the questionnaire were made based on feedback from universities' ethical committees until consensus was reached and a standardised document created.

Each University facilitated the distribution of the questionnaire to their final year medical students via their various virtual learning environments followed by an email inviting the students to participate. Information regarding the purpose and aim of the study in addition to data protection information was included.

An online survey tool (survey monkey) was used to collect the required data. Informed consent was obtained by interested participants prior to completing the survey on survey monkey by participants checking a box confirming they had read the information provided and were happy to participate. The survey was open for 12 weeks. Reminders to complete the questionnaire were sent by each of the Universities virtual learning environments until the required number of responses was reached. To maintain anonymity, students email addresses and identifiable data was not stored.

Completed questionnaires were analysed using the online survey tool. Weighted averages of responses influencing student's career decision were calculated using the proportion of the type of reason, weighted by the total number of responses in each applicable survey response. This was used to determine the most important attributes influencing the decision-making process of students towards choosing a career in General Practice.

Results

Ninety-four students completed the survey in its entirety, a response rate of 30%. Ethics precluded individual response rates from being disclosed. 56% (53/94) of those completing the survey were female and 43% (40/94) male. One percent (1/94) preferred not to disclose their gender. Most participants (74% 70/94) were aged between 20-25 years with 26% (24/94) over the age of 25, 20% (18/94) between 25-30 and 6% (6/94) aged over 30 years of age. 81% (76/94) consisted of European student entrants with the remainder being born outside of the Europe. Eighty five percent (80/94) of participants were undergraduate level medical students.

Exposure to General practice

All participants reported exposure to General Practice. Medical students' exposure to General Practice ranged from periods of 4-6 weeks (33% - 31/94) 6 to 8 weeks (25% 23/94) and over 8 weeks (16% - 15/94). Of these, 86% (80/94) of respondents reported their exposure to General Practice to be an overall positive experience and 88% (82/94) reported that this exposure was sufficient to provide an impression of General Practice as a career.

Over half of students (55%, (51/94) described their exposure to General Practice as influential in their consideration of whether to pursue a career in General Practice.

Current career intentions towards pursuing a career in General Practice

Twenty three percent (22/94) stated that they were very likely to pursue a career in General Practice with a further 23% (22/94) stating that they were likely to do similarly. Eleven percent (10/94) were uncertain of their intention to pursue careers in General Practice. Equally, 23% (22/94) of participants reported being unlikely or 20% (20/94) being very unlikely to pursue a career in General Practice.

Factors influencing student's perception of General Practice

General Practitioners, either the students own GP (56% 52/94) or other GP's encountered through their medical education (68% - 64/94) were found to have the greatest and most important positive influence on student's perception of General Practice with weighted averages of 1.74 and 1.49 respectively.

Sixteen percent (15/94) of respondents had a first degree relative who was a General Practitioner. Of those that had 68% (64/94) stated that this had positive impacted on their perceptions of general practice as a career.

The negative perception of General Practice by doctors from other specialities (43% - 41/94) and classmates (31% -29/94) were the most important attributes negatively influencing student's perception of General Practice with weighted averages of 2.39 and 2.37 (Table 1).

The perception of General Practice by the media (81% - 76/94), general public (67% - 65/94) and respondents' parents (64% - 63.94) were found to be non-influential in shaping student's perception of General Practice.

	Yes- this had a positive influence on my perception of general practice (%)	**Yes- this had a negative influence on my perception of general practice (%)**	**No – this has not had any influence on my perception of general practice (%)**	**Weighted average**
The medias portrayal of general practice	4.26	13.83	81.91	2.78
Negative perception and portrayal of GP from doctors of other specialities	8.51	43.62	47.87	2.39
My classmates' portrayal of general practice	16.13	31.18	52.69	2.37
My parent's portrayal of GP	30.85	4.26	64.89	2.34
My local GP portrayal of general practice	56.38	11.70	31.91	1.76
Other GP's portrayal of general practice	69.15	12.77	18.09	1.49
The public portrayal of general practice	23.40	9.57	67.02	1.44

Table 1: Attributes influencing medical student's perception of General Practice.

How perception of General Practice influencing students career decision

Table 2 illustrates that the factors positively influencing student's perception of General Practice as a career in order of importance were: perceptions that General Practice is a challenging and rewarding speciality (36% - 34/94; weighted average 2.99) that it provides the opportunity to become involved in academia/teaching (53% - 49/94; weighted average of 2.6) , that it does not have a competitive training scheme (37% -34/94; weighted average of 2.53), that it is intellectually stimulating (73% - 68/94; weighted average score of 1.64), and that it involves psycho-social medicine (59% 55/94 with weighted average of 1.44).

The majority of respondents considered General Practice to involve more paperwork in comparison to other specialities. This was found to the most important factor deterring students from choosing General Practice (61% - 57/94; weighted average of 2.38).

	Agree- makes me more likely to choose GP as a career (%)	Agree- makes me less likely to choose GP as a career (%)	Disagree- makes me more likely to choose GP as a career (%)	Disagree- makes me less likely to choose GP as a career (%)	Weighted Average
GP is easy vs. other specialities	12.90	11.83	38.71	36.56	2.99
GP doesn't provide many opportunities to get involved in academia/teaching	8.60	30.11	53.76	7.53	2.6
GP is a competitive training scheme to obtain a place on	22.83	20.65	36.96	19.57	2.53
GP involves more paperwork vs. other specialities	4.30	61.29	26.88	7.53	2.38
GP is intellectually challenging	73.40	7.45	1.06	18.09	1.64
GP involves a lot of psycho-social medicine	59.57	38.30	1.06	1.06	1.44
GP allows regular working hours	80.85	6.38	3.19	9.57	1.41

Table 2: Individual attributes influencing student's decision to choose General Practice as a career.

Influence of Government initiatives

Final year medical students represent the workforce that will be central to the Sláintecare reform of the health service. Therefore, their attitudes and opinions towards Sláintecare prove pivotal in determining if it will have an influential effect on their decision to choose General Practice as a career.

The proposal of transitioning chronic disease management from secondary to primary care was found to be a positive influential factor of greatest importance for students choosing General Practice with a weighted average of 2.26 (table 3). The under six's universal access and its proposed extension was found to be non-influential.

The potential reduction in private practice was cited as a reason deterring 47% (44/94) of medical students with 45% (45/94) reporting that it had no influence on their decision with an associated weighted average of 1.61.

	Makes me less likely to want to do GP (%)	Doesn't influence my decision regards a career in GP (%)	Makes me more likely to want to do GP (%)	Weighted Average
Chronic disease management in the community	19.15	27.66	53.19	2.26
Access to free primary care for all	28.72	50.00	21.28	1.71
No private practice in GP in the future	47.87	45.74	6.38	1.61
Free GP care for under six's	35.11	55.32	9.57	1.54

Table 3: Influence of Government initiatives on student's decision making.

Discussion

This study has a number of important implications for medical education in Ireland. Of greatest importance is the need to develop measures to address the negative depictions of General Practice by other specialities and other medical students as this has been confirmed to negatively influence medical students' perceptions of the specialty. This paper recommends that a strategy be implemented within hospitals that educates specialities on the detrimental impact denigration of General Practice has on medical students' perceptions of General Practice as a career. Following this, the authors suggest that a zero-tolerance approach should be enacted throughout medical schools inclusive of all clinical training settings to tackle the undermining of General Practice as a career choice [13].

The study highlighted the pivotal role GP's play in shaping medical students' perception of General Practice as a career with the vast majority of students having positive GP placements and that GPs themselves exert a very positive influence on career choice. Furthermore, it reinforced the responsibility that Irish GP's have in sustaining the future of their specialty by continuing to be positive and enthusiastic role models of the speciality [13].

It is vital that medical schools ensure a more balanced curriculum. This should involve increased amounts of time devoted to high quality General Practice placements with motivated GP's to provide students with positive insights into the specialty. This will help to shape and encourage students to pursue a career within General Practice [13].

There were several strengths and limitations to the study. Incorporation of sample size calculations ensured results were generalisable to the entire medical student population and accurate conclusions could be drawn. The recorded response rate of 95% satisfies the 80% threshold required to ensure results are representative of the population and provide clinically relevant information.

The use of voluntary, self-administered questionnaires minimised the risk of response bias. The distribution of the questionnaire throughout all Irish medical schools mitigated the risk of selection bias while increasing generalizability. However, responder bias must be considered including the potential for one medical school to be overly representative based on accumulated responses.

A response rate under 60% gives rise to sampling bias. The lack of opportunity for students to provide free text limited the study's ability to gain an in-depth exploration into the reasoning behind student's perception of General Practice and why certain attributes shape desire and/or disinterest in specialising in general practice once graduated. The survey documented the likelihood of student's career aspirations towards General Practice. However, the actual enrolment in General Practice residency and retention rates was not recorded. Thus, further studies are required to explore the findings further.

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

Corresponding Author:
Dr Maitiu O' Tuathail,
HSE Dublin Mid Leinster General Practice training Scheme,
UCD,
Dublin 4,
Ireland.
E-mail: maitiuotuathail@rcsi.ie

References:

1. Pericin, I., Mansfield, G., Larkin, J., & Collins, C. (2018). Future career intentions of recent GP graduates in Ireland: a trend analysis study. *BJGP open*, *2*(1).
2. Burke S, Barry S, Siersbaek R, Johnston B, Fhallúin M.N, Thomas S. Sláintecare–A ten-year plan to achieve universal healthcare in Ireland, Health Policy, 2018; 122(12): 1278-1282.
3. Yates, Scott W. "Physician stress and burnout." *The American journal of medicine* 133, no. 2 (2020): 160-164
4. Mansfield G, Collins C, Larkin J, Foy F. Is the face of Irish general practice changing ? A survey of GP trainees and recent GP graduates 2017. 2017;1–29.
5. Humphries N, McAleese S, Matthews A, Brugha, R. Emigration is a matter of self-preservation. The working conditions... are killing us slowly': qualitative insights into health professional emigration from Ireland, Human Resources for Health, 2015; 13(1):35-48.
6. Barber S, Brettell R, Perera-Salazar R, Greenhalgh T, Harrington R. UK medical students' attitudes towards
   their future careers and general practice: a cross-sectional survey and qualitative analysis of an Oxford cohort, BMC Medical Education, 2018; 18(1): 160.
7. Kiolbassa K, Miksch A, Hermann K, Loh A, Szecsenyi J, Joos S, Goetz K. Becoming a general practitioner- Which factors have most impact on career choice of medical students?, BMC Family

Practice, 2011; 12(1): 25-32.
8. Firth A, Wass V. Medical students' perceptions of primary care: The influence of tutors, peers and the curriculum. Educ Prim Care. 2007;18(3):364–72.
9. Alberti H, Banner K, Collingwood H, Merritt K, Just a GP': a mixed method study of undermining of general practice as a career choice in the UK, BMJ Open, 2017; 7(11): p.e018520
10. Chellappah M. and Garnham L. Medical students' attitudes towards general practice and factors affecting career choice: a questionnaire study, London Journal of Primary Care, 2014; 6(6):117-123.
11. Olid A.S, Zurro A.M, Villa J.J, Hijar A.M, Tuduri X.M, Puime Á.O, Dalmau G.M, Alonso-Coello P. Medical students' perceptions and attitudes about family practice: a qualitative research synthesis, BMC
Medical Education, 2012; 12(1): 81-97.
12. Marchand C. Peckham S. Addressing the crisis of GP recruitment and retention: a systematic review, British
Journal of General Practice, 2017; 67(657): e227-e237.
13. Wass V, Gregory S, Petty-Saphon K. By choice – not by chance: supporting medical students towards future careers in general practice. 2016.
https://hee.nhs.uk/sites/default/files/documents/By%20choice%20%20not%20by%20chance.pdf Accessed 15 October 2020.

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Knowledge and Training Needs of Paediatric Trainees in Mental Health

N. Oketah[1], V. Sewell[2], E. Barrett[3]

1. Department of Paediatrics, The Royal Belfast Hospital for Sick Children (RBHSC), Belfast, BT12 6BE.
2. Children's Health Ireland (CHI) at Temple Street, D01 YC76, Ireland.
3. University College Dublin, Ireland.

Abstract

Aims

To evaluate perceived skill level and training needs of paediatric trainees regarding the assessment and initial management of mental health presentations commonly seen in paediatric settings.

Methods

An anonymous survey link was sent out to paediatric trainees with the Royal College of Physicians of Ireland.

Results

There was a total of 99 respondents representing 92% of Irish paediatric hospitals. 98% of trainees (n=96) reported previously being involved in the management of a child with a mental health disorder. Although the vast majority of trainees (93.6%, n=78) reported seeing an increase in the number of paediatric patients presenting to hospital with a mental health component to their presentation, only 8% of trainees felt well prepared in dealing with child and adolescent mental health issues.

Conclusion

Trainees report seeing an increasing number of young people with mental health struggles in the context of paediatric illness. With the increase in presentations of young people to the emergency departments with mental illness as a presenting complaint or as a component of their presentation trainee respondents recognise the need to have good skills in mental health concern detection and initial management. The results of this study indicate needs for more training supports in this area.

Keywords: mental health, paediatric training, medical education, paediatrician, behavioural health

Introduction

Mental health disorders affect 10-20% of children and adolescents worldwide[1] and childhood behavioural and emotional problems have been identified as increasing risk of mental health disorders in later life[2]. The WHO recognises mental illness as the single biggest cause of morbidity in adults.

For these adults, half will have experienced the start of their mental illness by the age of 14 years although this may be undetected and untreated[1,3,4].

Globally, there has been an increase in the number of young people presenting to the paediatric hospitals and emergency departments primarily with mental health problems or as a component to their presentation[3,5,6,7]. There is a clearly recognised shortage in the number of child psychiatrists and a recognised need for the role of paediatricians to narrow this gap in supporting these young people and in early intervention[5,8].

Paediatricians have holistic involvement in caring for children and young people acutely and in the long term. This provides a unique opportunity for detecting the onset of mental health problems which may develop during this time[3]. In previous surveys, they have cited inadequate training, lack of knowledge and confidence as barriers to adequately addressing mental health concerns in their patients[4,9].

It is essential that training provides an opportunity for future paediatricians to develop essential skills required in prevention, early recognition, identification and possible intervention for mental health problems[2]. With appropriate training and support paediatricians can make a valuable contribution to effective multidisciplinary and integrated care in collaboration with other clinicians and child and adolescent psychiatrists.

Methods

Paediatric specialist training in Ireland is a centralised national scheme which is supported by the Royal College of physicians (RCPI) and runs as two tiers – a basic specialist training (BST) over a two to three year period and a higher specialist training (HST) over five years. The RCPI holds a data base of contacts of all paediatric trainees

Quantitative research methods were used to explore the educational and learning needs of paediatric trainees in Ireland. Ethical approval was granted by the ethics and research committee, Children's Health Ireland (CHI) at Temple Street. The survey was conducted via a questionnaire created with survey monkey with an online link sent to all the trainees through the college and also distributed in hard copy at trainee study days. The questionnaire was developed based on literature review, discussion with team and formulated by the supervising consultant for this study. They were initially piloted locally.

The survey consisted of 18 questions. Basic demographic information regarding stage of training, subspecialty and training site were collected. The majority of questions were multiple choices as well as questions rated by importance on a four-point Likert scale (strongly agree to strongly disagree). Quantitative data was analysed using Excel and SPSS software.

Results

Ninety-nine responded to the survey (n=99), representing 92% of Irish paediatric hospitals. One participant initially opened and registered but as they did not provide answers to any questions were removed from analysis. Ninety-nine responses were analysed. 40.8% of respondents (n=40) were BST level, 34.7% of respondents (n=34) were at the lower years HST (years 1 to 3) and 20.4% of respondents (n=20) were at the higher years of HST (years four and five). 4.1% of respondents (n=4) were classified as "other".

These included fellows or trainees in posts outside of Ireland. At the time of the survey, 53.1% (n=52) of respondents were training in general paediatrics, with 8.2% (n=8) in neonatology. 2% in research, with all remaining respondents (34.7%, n=34) training in emergency paediatrics, nephrology, immunology, cardiology and nephrology. 98% of trainees (n=96) reported previously being involved in the management of a child with a diagnosed mental health disorder.

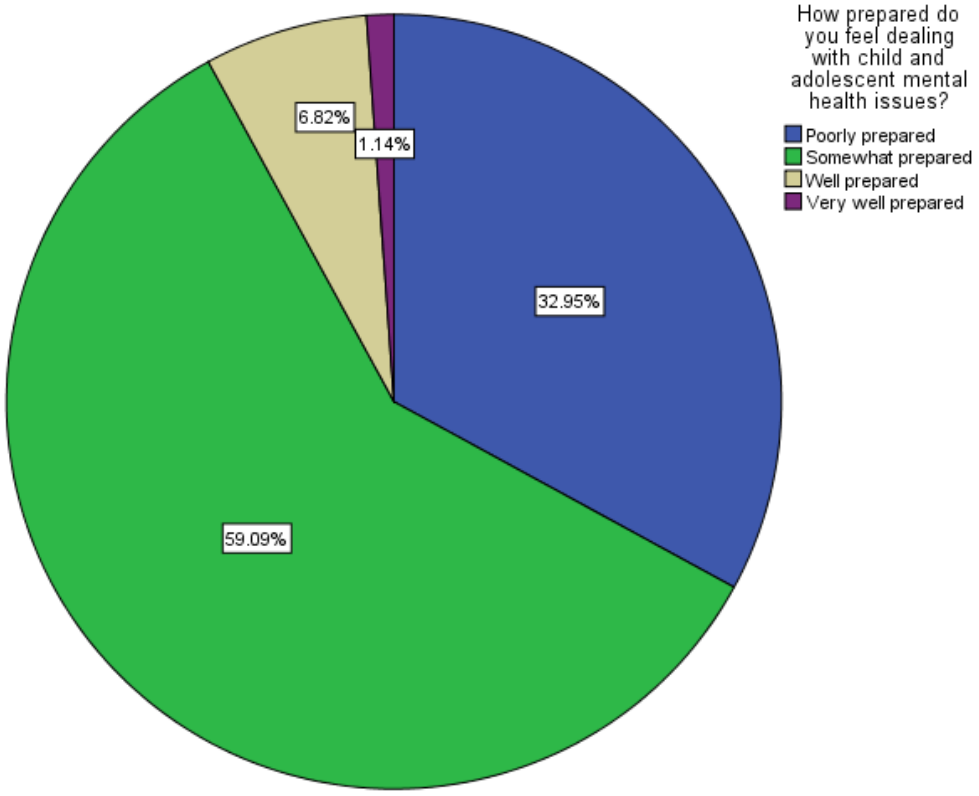
73.5% (n=72) of respondents reported their view that between 5% and 20% of their paediatric patients have a comorbid psychiatric disorder, while 4.1% (n=4) reported that more than 50% of their paediatric patients have a comorbid psychiatric disorder. The most commonly reported mental health issues which respondents had experience of managing were Autism Spectrum Disorder (84.7%, n=83); Eating Disorders (82.6%, n=81); Deliberate Self Harm (76.5%, n=75), Depression (67.4%, n=66) and ADHD (65.3%, n=64). Experience in management of mental health disorders is summarised in Table 1.

Table 1: Responses to the question "Have you previously had experience in the management of?" (Tick all that apply)

Experience in management of child and adolescent mental health disorders		
Diagnosis	**Frequency**	**Percent**
Anxiety	63	65.63%
Depression	66	68.75%
Deliberate self harm	75	78.13%
Psychosis	31	32.29%
Mood disorder	39	40.63%
Eating disorder	81	84.83%
ADHD	64	66.67%
Autism Spectrum Disorders	83	86.46%
Somatoform Disorder	24	25.00%
Tic/Tourette disorders	40	41.67%
Adjustment disorders	13	13.54%
Conduct disorders	35	36.46%
Other	4	4.17%
Total	96	
Skipped	3	

Although the vast majority of trainees who responded (93.6%, n=78) reported seeing an increase in the number of children and young people presenting to hospital with a mental health component to their presentation only 8% (n=7) of trainees felt well prepared in dealing with child and adolescent mental health issues. (Figure 1)

Figure 1: *How well prepared do you feel dealing with child and adolescent mental health issues?*

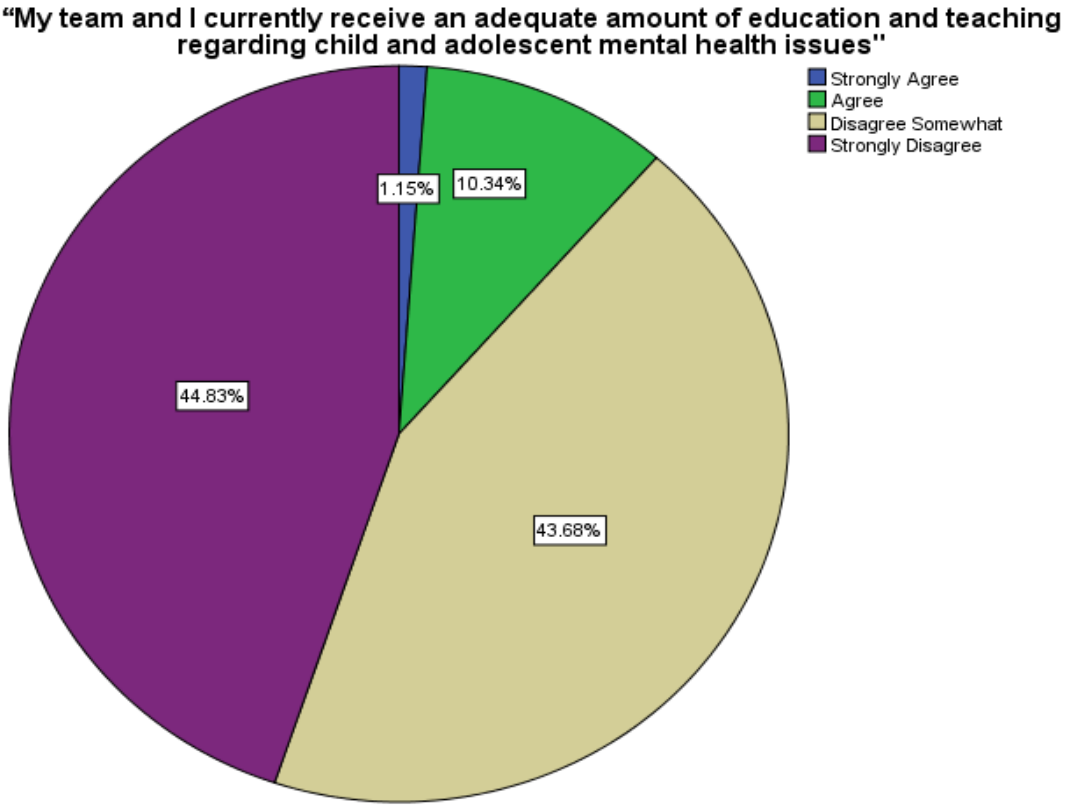


Self-reported responses show that while 97.7% of respondents agreed or strongly agreed that mental health teaching and training for staff members is important, only 36.5% felt their teams were well supported in dealing with child and adolescent mental health issues in their hospital. 11% of trainees felt that their team currently received an adequate amount of education and teaching regarding child and adolescent mental health issues (Figure 2) 60% of trainees reported not having any education or training opportunities in mental health at their current training site. Responses to teaching opportunities in training sites are reported in table 2.

Table 2: *Responses to the question: "What education and teaching opportunities are you aware of regarding child and adolescent mental health in your hospital?" (Tick all that apply)*

ANSWER CHOICES	RESPONSES
Grand rounds teaching by Child and adolescent psychiatry	25 (28.74%)
Journal clubs with psychiatry	7 (8.05%)
Tutorials/Seminars	11 (12.64%)
CPD courses	9 (10.34%)
Post graduate teaching	7 (8.05%)
None	50 (57.47%)
Total Respondents	87

***Figure 2**:* Responses to the statement *"My team andlink I currently receive an adequate amount of education and teaching regarding child and adolescent mental health issues"*



The most commonly suggested additional education and training initiatives which respondents would like to see introduced were mental health tutorials and seminars (54.1%, n=53), Child and adolescent mental health clinic exposure for paediatric trainees (49%, n=48), Joint paediatric-child psychiatry teaching sessions for postgraduates (48%, n=47) and CPD courses looking at mental health issues of relevance to paediatricians (41.8%, n=41).

Discussion

Our study is the first survey of trainees regarding the needs of paediatric trainees for mental health educational interventions in Ireland. This self- report survey includes a large number of trainees at different sites and stages of training, who self-report a gap in skills of paediatric trainees, and who identify that this needs addressing for further training. This gap has been previously reported in a similar study by Hampton and colleagues[10]. Most participants underestimated the percentage of paediatric patients with a co-morbid disorder as 5-10%; 20-30% of children presenting to the paediatric out-patients have a diagnosable mental health disorder[11] and up to 42% of children and young people with chronic physical conditions have been shown to have a mental health problem[12,13], and in recurrent abdominal pain this percentage may be up to 80%[14].

Our study reveals that a lot of trainees reported very low confidence levels in dealing with child and adolescent mental health disorders despite the fact that a lot of trainees had a rich experience of paediatrics and were seeing patients with mental health co-morbidity regularly. Only 6 participants expressed a good level of confidence. Trainees identified that they required more education on dealing with mental health presentations.

More than half of trainees said they had no education or training on child and adolescent mental health in their training sites and showed great interest in having more mental health and teaching sessions. Training in mental health can provide paediatric trainees opportunities to develop clinical relationships with mental health physicians and psychologists, helping them to gain skills in recognising and managing common conditions like ASD and ADHD. Access to CPD courses and joint training sessions help trainees to also understand effective ways of communicating with children and adolescents who may struggle mentally with their chronic health conditions. Trainees highlight roles in teaching at grand rounds, in informal and formal teaching and indeed some trainees are interested in spending time in psychiatry clinics. In a psychiatry rotation, they may observe assessment and treatment of common disorders such as anxiety or depression, which could scaffold the development of competency in effective early interventions that can be incorporated into their own general paediatric clinics. Skills with regard to non- organic presentations were recognised by paediatric trainees as valuable.

In our survey, we found that most trainees were exposed to a range of child and adolescent medical disorders. Most commonly, they were involved in the management of autism spectrum disorders, followed by eating disorders and depression. The fact that a lot of trainees report they were exposed to children with autistic spectrum disorders perhaps highlights the why trainees feel that paediatricians should be more involved in the primary care of these children with a more specific role for psychiatrists[2,5].

Suicide is the second most common cause of death in adolescents and although the proportion of children presenting to paediatric hospitals with mental health problems has steadily risen in Ireland and equally in many parts of the world[6,7], less than 50% will receive specialist attention. In the UK it has been reported that although an estimated 850,000 children and young people have mental health problems only 25% will receive specialist attention[8]. There is a call for paediatricians to get more involved.

One of the major strengths of this study is that 47% of the total number of higher specialist trainees participated in it. All paediatric units except two participated; however, most participants were from the urban areas. The urban skew was impossible to avoid as the majority of trainees are located in the urban hospitals. This study has several limitations. Firstly, this is a self-report by adult learners. Secondly, we did not explore the frequency at which trainees are involved with young people with mental health co-morbidity, though most respondents said they had seen a rise in presentations in their own experience. This survey only involved registered trainees (excluding non-consultant doctors in non-training posts) so may not necessarily represent the views of all non-consultant

In summary, we believe that this is the first survey done in Ireland to assess paediatric trainees' views on their confidence in recognising and dealing with mental health disorders in children and young people given that they are encountering more and more of these cases. We were able to survey a large group of trainees at different stages of the nationalised training scheme. Paediatric trainees' unmet education and training needs in child and adolescent psychiatry have been identified in this study. Trainees are keen to learn more about this area. Early intervention has clinical utility. Additionally, trainees recognise the key roles paediatricians have in this, and in referring more complex mental health needs to a specialist in a timely manner. Key opportunities to prevent the negative sequelae of untreated childhood mental health disorders by filling this gap in the training of paediatricians should not be missed. Paediatricians are trained to assess the way children and young people grow, develop and function within the family and in the wider community, providing opportunities for prevention, early diagnosis and early intervention for mental health problems. They can play a role in advocacy by promoting the importance of mental health in child health, promotion of good mental health by giving consistent advice, early detection and referral to specialist

services. They can also screen for mental health difficulties at history taking and in addition provide helpful advice in dealing with behavioural problems, sleep disorders, anxiety and mild mood disorders. The rising number of children presenting with mental health problems demands a coordinated role between paediatricians and mental health professionals' thus making collaborative work between both services crucial.

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Declaration of Conflicts of Interest:

None to declare.

Corresponding Author:

Dr Ngozi O. Oketah
Consultant in Paediatrics and Adolescent Medicine
Department of Paediatrics,
The Royal Belfast Hospital for Sick Children (RBHSC),
180 Falls Road,
Belfast,
BT12 6BE.
E-mail: Ngozi.oketah@nhs.net

References:

1. World Health Organisation. Adolescent Mental Health: Key facts. Available from: https://www.who.int/news-room/fact-sheets/detail/adolescent-mental-health
2. The role of paediatricians in the provision of mental health services to children and young people. The Royal Australasian College of Physicians, 2016. Available from: https://www.racp.edu.au/docs/default-source/advocacy-library/racp---the-role-of-paediatricians-in-the-provision-of-mental-health-services-to-children-and-young-people.pdf
3. Davie M. Doing more for mental health. *Arch Dis Child Edu Pract Ed* 2015;0:1-5 doi:10.1136/archdischild-2015-308344
4. Stein REK, Horwitz SM, Storfer-Isser A, Hehegan A, Olson L, Hoagwood KE. Do Pediatricians think they are responsible for identification and management of child mental health problems? Results of the AAP Periodic survey. Ambulatory Pediatrics 2008;8(1): 11-17
5. Traisman ES. Paediatricians as Psychiatrists. Paediatric Annals. 2016;45(12):e408-e411
6. Sawyer SM, Patton GC. Why are so many more adolescents presenting to our emergency departments with mental health problems? *Med J Aust* 2018; 208 (8): 339-340

7. Fitzgerald E, Foley D, McNamara R, Barret E, Boylan C, Butler J et al. Trends in Mental Health Presentations to a Paediatric Emergency Department. *Ir Med J*; 2020; 113(2):20
8. Position Statement on children and young people' mental health; RCGP/RCPCH/RCPSYCH. 2017. Available from: https://www.rcpch.ac.uk/sites/default/files/2018-04/position_statement_on_children_and_young_peoples_mental_health.pdf
9. Olson AL, Kelleher KJ, Kemper KJ, Zuckerman BS, Hammond CS, Dietrich AJ. Primary care pediatricians' roles and perceived responsibilities in the identification and management of depression in children and adolescents. *Ambulatory Pediatrics* 2001;1:91–8
10. Hampton E, Richardson JE, Bostwick S, Ward MJ, Green C. The current and ideal state of mental health training: Pediatric resident perspectives. *Teach Learn Med*. 2015;27(2):147–154
11. Glazebrook C, Hollis C, Heussler H, Goodman R, Coates L. Detecting emotional and behavioural problems in paediatric clinics. *Child Care Health Dev* 2003; 29(2):141-9.
12. Rhodes A, Sciberras E, Oberklaid F, South M, Davies S, Efron D. Unmet developmental, behavioral, and psychosocial needs in children attending pediatric outpatient clinics. Journal of Developmental and Behaviorial Pediatrics 2012; 33:469–78.
13. Davies S, Heyman I, Goodman R. A population survey of mental health problems in children with epilepsy. *Dev Med Child Neurol* 2003;45(5): 292-5.
14. Dufton LM, Dunn MJ, Compas BE. Anxiety and somatic complaints in children with recurrent abdominal pain and anxiety disorders. *J Pediatr Psychol* 2009;34(2):176–86
15. Raval GR, Doupnik SK. Closing the gap: Improving access to mental health care through enhanced training in residency. Pediatrics 2017: 139(1)

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Day Case Neck Surgery: The Southampton Experience

M. Jog, E. Crossley, T. Biggs, D. Passley, T. Singh

Department of Otolaryngology Head & Neck Surgery, University Hospital Southampton NHS Foundation Trust, Southampton, UK.

Abstract

Introduction
The majority of head and neck surgery is traditionally performed as a planned inpatient procedure. We present our experience of day case neck surgery at a tertiary center.

Methods
We performed a retrospective chart review of consecutive patients who underwent neck surgery from June 2017 to June 2019, under the same senior surgeon. The patients who had day case neck surgery were identified, and their records were analysed.

Results
A total of one hundred and forty-five (145) patients had neck surgery in the form of a neck exploration involving dissection deep to the superficial layer of deep investing fascia with some major vessel exposure and or dissection, forty-one (41) were day cases without insertion of a drain or use of adjuncts such as glues. Twenty-nine (29, 71%) of these cases were neck dissection and twelve cases (12, 29%) were parotidectomy. No patient has had hematoma, haemorrhage, or wound infection.

Conclusion
Our study demonstrates that neck surgery can be performed safely on a day case basis. This is particularly relevant in the COVID-19 era, where inpatient admission should be prevented as much as possible, but cancer treatment is not delayed.

Introduction

The majority of head and neck surgery is traditionally performed as a planned inpatient procedure due to a variety of reasons namely, but not limited to, the complexity of the surgical procedure, perioperative management, patient factors, and surgeon preference. One of the common reasons for an inpatient hospital stay is due to the insertion of a surgical drain.

Some surgical units make use of community-based nursing teams to remove a patient's surgical drain at their home, facilitating day case care.

There is an impetus in the UK National Health Service (NHS) to perform head and neck surgery on a day case basis. Increasingly, there is a shift toward ambulatory services, directed by patient choice, technological advances, and the opportunity for cost savings.[1] Day case care can be cost effective and, in addition, can make head and neck units more efficient.[2]

Furthermore, during the present unprecedented COVID-19 crisis, when the majority of elective surgical work has been suspended or postponed, suspected cancer or cancer case work is still going on, under a case-by-case basis. The British Association of Head & Neck Oncologists (BAHNO) have recommended prioritizing day case head and neck cancer surgery where feasible.[3]

We present our experience of day case neck surgery from the University Hospital Southampton NHS Foundation Trust, a tertiary center in the United Kingdom. We believe that our findings from performing a variety of multi-level neck dissections (including neck exploration or dissection deep to the superficial layer of deep investing fascia with some major vessel exposure and or dissection) will provide an evidence-base to support safe day case neck cancer surgery during the COVID-19 crisis and beyond, but these protocols are equally applicable to the broad range of non-cancer head and neck procedures in routine day-to-day practice. The unit has an extensive practice treating substance abuse patients who presented with metastatic neck disease. The senior author (TS) noted that several patients despite having adequate analgesia and detoxification would abscond from the hospital on recovery within hours of surgery only to return a few days later for suture removal. In this cohort of patients, no complications were observed leading to the hypothesis that if this early self absconsion discharge to the community was possible in this vulnerable group, could straightforward neck surgery patients also benefit from early discharge in the absence of any intra-operative contraindications. The main advantages would include reduction of nosocomial infections, early normalization of habitus and better throughput of patient numbers due to freeing up of beds. A nurse led discharge protocol with safety criteria and analgesia pack was agreed and it has now become his established practice when treating neck disease since 2017.

The data presented here is part of our larger and broader case series of 145 consecutive patients who underwent head and neck surgical procedures at the University Hospital Southampton NHS Foundation Trust without the use of percutaneous drains or any associated adjuncts, but this report particularly focuses on those undertaken on a day case basis.[4]

Methods

A retrospective audit was undertaken, registered, and approved by the University Hospital Southampton NHS Foundation Trust's audit and clinical research department (Audit number 6582). All consecutive patients undergoing Head and Neck surgery on a day surgery basis, between June 2017 and June 2019, under the practice or supervision of the senior author (TS) at the University Hospital Southampton NHS Foundation Trust were included.

As per the hospital policy majority cases, except e.g. single level diagnostic lymph node excision, were listed as an inpatient as standard practice of neck surgery entails a drain insertion and or over night stay. This cohort was reviewed to identify those who had undergone day case surgery. Day case surgery was defined as surgery where the patient was admitted and discharged on the same day i.e. there was no overnight stay.[2] Any patient under the practice or supervision of another consultant was excluded.

In terms of the senior author's operative practice, patients requiring neck dissection surgery (benign, malignant or unknown despite repeated fine needle aspiration cytology) underwent dissection of required full nodal groups (level 1, 2, 3, 4, 5, 6, 7 individual or a combination there of) as per normal department practice and MDT recommendation, to limit further surgery in an already dissected field, should samples subsequently return malignant. The extent of any parotid and neck surgery was dictated by the senior author (TS) in combination with MDT recommendation where available but was usually in the form of a neck exploration or dissection deep to the superficial layer of deep investing facia with some major vessel exposure and or dissection.

The data was gathered from retrospective review of the electronic patient records (EPR) of all included day case patients. The data was independently collected and checked (MJ and TB). The data was entered into Excel® (Microsoft, Redmond, WA, US) and analysed using GraphPad Prism 7 (GraphPad Software Inc, La Jolla, CA, US).

Results

One hundred and forty-five (145) head and neck surgeries were performed from June 2017 to June 2019, within the Department of Otolaryngology, Head and Neck Surgery, at the University Hospital Southampton NHS Foundation Trust, under the named consultant. Of these, forty-one (41/145, 28%) were undertaken as day surgery.

Twenty-nine cases (29/41, 71%) were neck dissections and twelve cases (12/41, 29%) were parotidectomy. The age range was three to ninety-three years (3 to 93 years). There were eight children i.e. age less than sixteen years (8/41, 20%) and thirty-three adults. The procedures were undertaken by various grades of surgeon, including the consultant in thirty-three cases, the fellow in two cases and a training registrar (resident) in six cases, under direct supervision. No drains were placed at the time of surgery for all cases. No adjuncts such as glues, adhesives or specialized dressings were used. The ultimate histological diagnosis was benign for thirty-six cases (36/41, 88%, neurofibroma, branchial cyst, dermoid cyst, thyroglossal duct cyst, parathyroid cyst, lipoma, pleomorphic salivary adenoma of submandibular gland, schwannoma of vagus nerve) and malignant for remaining five cases.

Out of twenty-nine cases of neck dissection, nineteen cases (19/29, 66%) had a complete single-level neck dissection and the remaining ten had multi-level neck dissections (10/29, 34%). Tables 1 provides information on age, levels of neck dissections, diagnoses and TNM (Tumour, Node, Metastasis) staging, on multi- level neck dissection cases.

Table 1: Multi-level day case neck dissection cases.

Number	Age	Levels of neck dissection	Diagnosis
1	48	II, III	Benign
2[†]	48	II, III	SCC (Tx N1 M0)
3[† ‡]	59	III, IV & V	Benign
4	25	I, II	Benign
5	62	II, III, IV	Benign
6	45	II, III	Benign
7[§]	76	II, III	Neck recurrence (rT3N2b)
8	14	II, III	Benign
9	88	III, IV	Benign
10	71	II, III, IV	SCC (T1 N2a M0)

[†] Performed by a trainee, [‡] Revision case,
[§] Post CT RT Recurrence Carcinoma tonsil- rT3N2b, previous T3 N0 M0.

Out of twelve parotidectomy cases, nine were of superficial parotidectomy, one of deep lobe parotidectomy and two were revision cases. The revision cases were of recurrent mucoepidermoid carcinoma and recurrent pleomorphic adenoma. The final histology was benign in eleven cases and there was one malignant case of recurrent mucoepidermoid carcinoma.

There was one case of an expected accessory nerve weakness following a level II & III neck dissection for neurofibroma of the carotid sheath. None of the forty-one-day case patients had post-operative haemorrhage or hematoma, but we acknowledge the limitations in this cohort's size.

Discussion

This study reports consecutive cases of neck surgery comprising of single- and multi-level neck dissections (in the form of a formal neck exploration or dissection deep to the superficial layer of deep investing facia with some major vessel exposure and or dissection) or parotidectomy procedures performed as day case surgery without insertion of a surgical drain.

The patients' age ranged from three to ninety-three years (3 to 93 years) and twenty percent (20%) were paediatrics cases. The neck dissection cases involved a broad range of intention to treat ENT diagnoses e.g. metastatic lymphadenopathy, and among benign pathologies neurofibroma, branchial cyst, dermoid cyst, thyroglossal duct cyst, parathyroid cyst, lipoma, pleomorphic salivary adenoma of submandibular gland, schwannoma of vagus nerve.

This demonstrates the wide patient population and various pathologies which safely have had day surgery without the use of a surgical drain. The study also highlights the feasibility of undertaking day case drainless surgery practice by a trainee, under the supervision of an experienced surgeon.

In terms of complications, though it can be argued that this is a relatively small sample size, no patient in this cohort of 41 patients have had a haemorrhage or haematoma or deep space infection or airway problems. However, even in our larger case series of 145 patients which included cases of – neck dissection, thyroidectomy (hemi, total or revision), parotidectomy (superficial, deep or total) or a combination of some or all of these procedures, only 2/145 (1.4%) patients had complications potentially attributable to lack of post-operative drain use.[4] One hemithyroidectomy patient had some surgical emphysema following a bout of heavy coughing after the procedure, requiring local anaesthetic drain insertion, and one case of parotidectomy with level 2-4 neck dissection had a small post-operative haematoma which required a pressure dressing and oral antibiotics, but no surgical intervention. This patient was taking aspirin at the time of surgery but had stopped his clopidogrel 5 days' prior, restarting it on the first postoperative day.

For intermediate risk groups i.e., risk of haemorrhage in the first eighteen hours post-surgery, a nonclinical overnight stay within close range to the hospital may be commended but no one in the study group required this. However, we do recommend access to vehicle transport, a working mobile phone with good reception and adherence to the discharge emergency planning advice in case of issues. Once again no one in this cohort required such emergency admission. Thus, appropriate case selection and meeting discharge criteria is paramount if patient were to undergo day case neck surgery.

We also used loupe magnification and the HARMONIC FOCUS®+ Shears (Ethicon, J&J Medical Devices, NJ, USA) for the majority of the dissection, in combination with monopolar and bipolar dissection. It could be postulated, anecdotally, that these devices seal vascular and lymph vessels better than cold steel and monopolar/bipolar, avoiding insertion of a surgical drain, thus, aiding a day case surgery.

'Day case surgery in Scotland - Reviewing progress - Audit Scotland'[2] states that if same-day care directly substitutes for inpatient surgery and inpatient beds are reduced, then cost savings will be achieved. However, in many cases these beds will be made available for other patients. If this happens, although cost savings are not achieved, resources are released that can be put to alternative use. For example, much of the surgical team's time will transfer from inpatient to day case treatment. In this situation total costs may stay the same or rise but more patients will have been treated in a less expensive way so the cost per case will fall. Both these scenarios are cost-effective; the reduction in the use of inpatient beds achieves a real cost reduction and the substitution of day case treatment for inpatient treatment makes the head & neck unit and the hospital more efficient.[2] Thus, the consideration of our procedures as potentially day case candidates and then the safe realization of that hypothesis goes some way to demonstrate the beneficial cost implications and improvement in efficiency of a hospital.

Cunniffe et al.[5] have shown that parotidectomy can be undertaken safely as a day-case procedure with the application of ARTISS fibrin sealant. Furthermore, they stated that this new approach to parotid surgery not only offers less morbidity for patients but also positive financial revenue for public health institutions. Chua et al. [6], in a randomized case control study, demonstrated that partial superficial parotidectomies could be performed drainless with fibrin sealant and a pressure bandage - however, their patients stayed overnight.

Coniglio et al.[7], in retrospective review of 91 parotidectomies, demonstrated that outpatient drainless parotidectomy is a viable procedure with comparable outcomes to traditional extended-stay parotidectomy with drains. However, this study was isolated to a single surgeon's outcomes, and only reviewed parotidectomies.[7] In contrast to other research papers, our study represents different head and neck operations and surgeons of varying seniority, and also did not require the use of fibrin sealant, pressure bandage or other adjuncts suggested in the literature. Our study, as a result, raises possibility to change conventional neck surgery practice.

During the COVID-19 crisis such a protocol has allowed the continued safe surgical treatment of patients with reduced risks of inpatient infection and reduced bed utilization. Loupe magnification combined with meticulous anatomical planer surgical dissection and detailed attention to haemostasis (head down, Valsalva, and wound irrigation to observe and eliminate any minor bleeding points) along with sensitive would closure without the use of a surgical drain. Such surgery requires a significant team cooperation especially between surgeon and anaesthetist but also with recovery and discharge staff. We now perform the majority of our neck surgery (multi-level neck dissection, thyroidectomy, parotidectomy on their own or in any combination of above) without using surgical drains and more cases are discharged safely on day basis.[4]

Our retrospective consecutive patient study demonstrates that neck surgery, including multi-level neck dissection and parotidectomy procedures, can be performed safely without the use of percutaneous drains or other adjuncts, on a day case basis. Our practice, therefore, has potential for cost-effectiveness and improvement in efficiency for head and neck units and hospital performance. We believe that our findings have potential impact on delivery of head and neck cancer care in the ongoing restrictions of the COVID-19 crisis period.

Declaration of Conflict of interest:
The authors have no conflict of interest to declare.

Corresponding Author:
Mr Mandar Jog FRCS(ORL-HNS)
Department of Otorhinolaryngology Head & Neck Surgery
University Hospital Southampton NHS Foundation Trust, Tremona Road, Southampton, SO16 6YD, United Kingdom.
E-mail: Mandar.Jog@nhs.net

References:

1. Coates ML, Carrie S. A local safety standard for invasive procedures for out-patient endonasal procedures performed under local anaesthetic: a template from Newcastle upon Tyne hospitals. J Laryngol Otol. 2019 May;133(5):441-444.
2. Day surgery in Scotland- Reviewing progress- Audit Scotland https://www.audit-scotland.gov.uk/docs/health/2008/nr_080904_day_surgery.pdf Accessed 11 April 2020.

3. BAHNO statement on COVID-19, Issued 17 March 2020. https://mcusercontent.com/e386d81be4a76bada89909666/files/7a72db3e-5580-4fcd-b4e4-a7c9d5978e8e/BAHNO_Covid_19.pdf Accessed 11 April 2020.
4. Crossley EJ, Biggs TC, Jog M, Marinakis K, Sipaul F, Brown P, Singh T. Drainless head and neck surgery: a retrospective review of 156 procedures (thyroidectomy, parotidectomy and neck dissections in a tertiary setting), The Southampton Experience. Clin Otol. 2020 Nov; 45(6): 946-951.
5. Cunniffe HA, Wong BLK, Hilger AW, Burgan OT. Drain-free parotidectomy: a pilot study using ARTISS fibrin sealant. Eur Arch Otorhinolaryngol. 2019 Jul;276(7):2025-2029.
6. Chua DYK, Goh CHK. Drainless parotidectomies versus conventional parotidectomies: randomised control study on efficacy and safety. Annals Academy of Medicine. 2016 Nov; 45(11): 513-515.
7. Coniglio AJ, Deal AM, Hackman TG. Outcomes of drainless outpatient parotidectomy. Head Neck. 2019 Jul; 41(7): 2154-2158.

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Non-consultant Hospital Doctors Views' of Covid-19 Measures in Irish Maternity Units

S. Elsayed, J. Magandran, S. Hassan, E. Akpan, V. Ciprike, M. Milner

Our Lady of Lourdes Hospital, Drogheda, Co. Louth, Ireland.

Abstract

Aims

To access the views of non-consultant hospital doctors (NCHDs) on measures taken in Irish maternity units in response to the COVID-19 pandemic.

Methods

The survey, conducted between 1/4/2020 and 15/5/2020, was designed using Survey Monkey™ and distributed via mailing lists and social media to Obstetric and Gynaecology NCHDs in 19 Irish maternity units.

Results

Eighty NCHDs accessed the survey. Forty respondents participate in a training scheme, comprising 26% of the total. Most doctors reported major changes to work rostering (92%, 68/74); gynaecological services (76%, 56/74) and antenatal care (68%, 50/74). Up to April 22nd, 32% (11/34) reported PPE/masks use was recommended in antenatal clinics compared to 33% (11/33) throughout labour or in the second stage. From April 23rd, when HSE guidance on PPE changed, these figures increased to 74% (28/38, $p<0.001$) and 46% (17/37) respectively. Nearly all (96%, 68/71) felt their personal and family life was affected. The majority (89%, 63/71) felt their anxiety level was somewhat (44/71) or much higher (19/71) than that before the pandemic.

Conclusion

Many NCHDs felt their units were slow to implement protective measures including PPE use, and they had high levels of anxiety. These findings should inform decision-makers to mitigate the impact of psychological distress on healthcare workers in further crises.

Introduction

The Corona Virus Disease 2019 (COVID-19) outbreak was declared a pandemic by the WHO on March 11, 2020. In Irish maternity units, responses were initially unit-specific, with hastily assembled multidisciplinary teams guiding healthcare practitioners and management in an unprecedented situation.

On March 9th, the Royal College of Obstetricians & Gynaecologists (RCOG) published National Guidance on managing coronavirus in pregnancy in the United Kingdom and the Institute of Obstetricians and Gynaecologists/Royal College of Physicians in Ireland produced guidelines for Irish maternity units on May 5th. [1,2]

In addition to the personal and societal concerns created by this rapidly evolving situation, the anxiety and distress of healthcare staff has been heightened by medical and professional uncertainty. While exact numbers remain unclear, thousands of healthcare workers worldwide have been infected with Covid-19 and many have died. Infection rates among Irish healthcare staff account for one-third of all Covid-19 infectons.[3]

Methods

The aim of our study was to assess how Obstetrics and Gynaecology NCHDs viewed and were affected by measures taken in Irish maternity units in response to Covid-19 pandemic.

The survey (link) was carried out using Survey Monkey™ and comprised 31-questions [**Survey Link**]**.** It was distributed through mailing lists (Junior obstetrician and gynaecologist society) and social media across maternity units nationwide (reaching approximately 230 NCHDs) and was active from 21/4/2020 to 15/5/2020. The results were analysed using Microsoft Excel 365 and chi-square test was used to assess differences between two times points with a p value of 0.05 deemed statistically significant.

Results

Eighty NCHDs accessed the survey link, giving a 35% response rate (80/230): six were excluded as they did not complete the survey. Sample comments are included below each section of results.

A quarter (26%, 40/153) of all NCHDs on the obstetrics and gynaecology basic (BSTs) or higher (HSTs) specialist training schemes filled the survey; at least one respondent from each unit replied [Figure-1]. NCHDs were more likely to be on training schemes (40/74) than not (34/74). Most were at registrar level (53/74), with over half (28/53) in the HSTS.

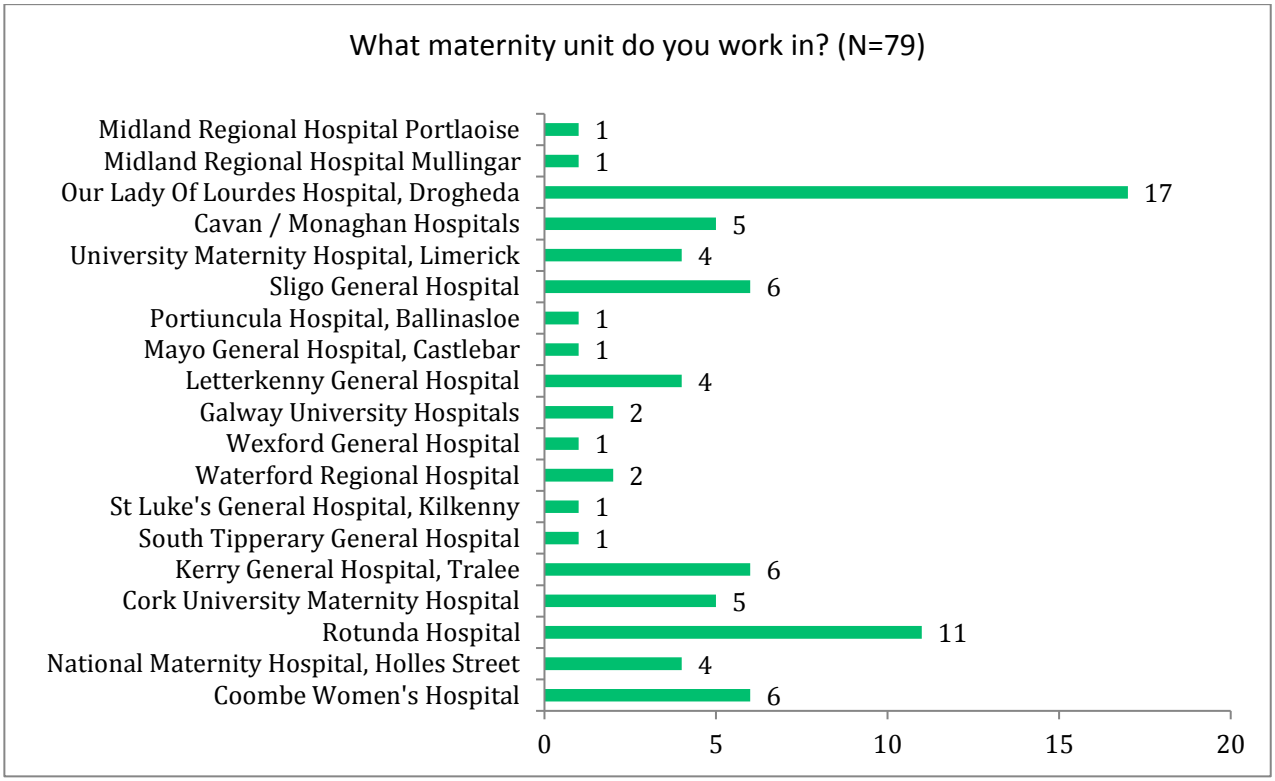

Figure 1: *Responses from Maternity Units in Ireland.*

More than two-thirds (67%, 47/70) believed measures taken were adequate to protect staff. In total, 77% (54/70) felt they had received the necessary training. Most (80%, 6/70) believed reasonable personal protective equipment (PPE) had been provided for treating positive patients and 65% (48/74) felt that isolation facilities were adequate for staff protection. Furthermore, 70% (49/70) felt they received the correct level of support and guidance.

NCHD roster changes

Nearly all respondents (92%, 68/74) reported roster changes. These included reduced daytime staffing or additional back-up rotas. Many units moved from team-based to ward/clinical area-based care to reduce cross-contamination. Other units introduced 12-hour shifts with weekly rotations to different clinical areas and the fourth a “clean week”. Some NCHDs working in gynaecological units were redeployed to obstetric units. Three NCHDs were redeployed to non-maternity departments to look after COVID 19 positive patients, while nine anticipated future redeployment (17%, 12/71).

Gynaecology services

Three-quarters of NCHDs (76%, 56/74) said gynaecology clinics were virtual, with non-urgent visits and referrals postponed. Return gynaecological oncology services were significantly reduced with virtual clinics and a small number of urgent visits. Some units had a weekly emergency clinic for urgent cases and a virtual clinic for urgent referrals while cancelling all other appointments.

Antenatal care

Antenatal care had been modified according to 68% (50/74). Nearly all, 96%, (n = 71/74) said social distancing had been facilitated by staggering visits and not allowing partners and children to attend. Half of NCHDs, 51% (37/73) confirmed patient encounters were limited to 15 minutes, twenty percent (14/73) thought there was no time limit, and 30% (22/73) were unsure if one was in place. A further half (54%, 39/72) said PPE was recommended during antenatal care. Other measures included increasing numbers of clinics, especially offsite and outreach, spacing out appointments, rescheduling and virtual appointments. Some units experienced increased workload as General Practitioner practices and peripheral hospital outpatient departments closed.

Overall, most (76%, 55/72) felt that measures taken regarding antenatal care were sufficient. However, ten commented that maternity was slow to implement the use of masks/PPE in antenatal clinics:

> *"I strongly feel that the use of masks…should have been recommended in the national guideline. Obstetrics remained one of the only specialities where the same volume of patients was seen in clinics …for antenatal care. That is unique to our speciality and I believe that we asked our patients to feel safe presenting to hospital but did not take enough steps to protect them from potentially infected asymptomatic HCWs. We should have been wearing masks from the start."*

> *"Should be used in ANC. Felt I couldn't wear them until a few weeks into the pandemic when colleagues went off sick...it then became more acceptable"*

> *"More care and support for healthcare workers and sufficient PPE provision"*

Health Service Executive (HSE) advice on masks for patient encounters where social distancing was not possible changed on April 22nd, and findings before and after this change of advice were compared. Up to April 22nd inclusive, 35 NCHDs filled the survey. Only 11/34 (32%) said use of PPE/masks was recommended in a routine antenatal clinic. This increased to 74% (28/38) after April 22nd. This difference was statistically significant ($p<0.001$, chi-square).

Labour and Delivery

Many NCHDs (70%, 48/69) felt that COVID-19 did not affect care for labouring women. In most units, partners were not allowed onto wards or during induction of labour (94%, 67/71). Almost all noted that partners could attend delivery (97%, 69/71).

Over one-third (39%, 28/71) said the use of PPE in the labour ward for patient encounters was recommended; 46% (13/28) for all stages of labour and 54% (15/28) only in the second stage. Where PPE was used, it was mainly surgical masks (93%, 26/28), and eye protection (71%, 20/28).

In total, NCHDs from 12 units said that PPE was used throughout labour or at least for the second stage. However, NCHDs from the same unit in several cases said PPE was only used in positive or suspected cases.

Up to April 22nd, 33% (11/33) said their units used PPE throughout labour or at least in second stage. From April 23rd, this increased to 46% (17/37).

Isolation facilities

Most NCHDs (92%, 65/71) said their maternity units had their own isolation facilities for suspected or confirmed COVID-19 cases. One third (31%, 23/71) said their units had a separate COVID ward, while 63%, (45/71), said the isolation rooms were contained within existing clinical areas. Two of the units based in a general hospital shared a common COVID ward with the rest of the hospital.

COVID-19 related training

Most NCHDs (94%, 67/71) received COVID-19 related training. Topics included PPE (92%, 62/67), presentations and triaging of positive patients (48%, 32/67), obstetric emergencies (48%, 32/67), anaesthetic issues (37%, 25/67) and taking a COVID swab (31%, 21/67).

"Improved communication on new policies implemented in our hospital needs to happen"

NCHD Wellbeing

Two thirds (62%, 44/71) felt their anxiety/stress levels were "slightly or somewhat higher" since the onset of the pandemic, while a quarter (27%, 19/71) felt it was "much higher", [Figure-2]. While the majority (59%, 42/71) had health concerns, 24% were "extremely concerned" [Figure-3]. However, half (51%, 36/71) were "extremely concerned" about their family members' health, [Figure-4]. Nearly all (96%, 68/71) felt their personal and family life was affected, more than half (56%, 40/71) to an 'extreme' degree.

'Unit effort has been impressive in supporting all its staff….'

'It may not be perfect but hospital is doing the best they can with the infrastructure they have'

'It's a very uncertain and fluid situation. More work needs to be done to look after psychological health of healthcare workers. I'm not sure if what we are doing is enough. It has started making me very anxious especially because I live on my own in this foreign land away from my loved ones…there are a lot of people in a similar situation. Consultants and team leaders should be trained to help keep the morale of junior doctors high. Unexpected shift works are common. It's just taking its toll on the mental health now, I feel'

'Our NCHD cohort were very disappointed by the leadership shown by our consultants - they gave us no guidance/training so we had to adjust our rota and figure out how to see/treat/manage Covid and? Covid patients ourselves. Communication was also very poor- new algorithms and policies were implemented without telling/explaining to NCHDs. NCHDs also expressed numerous concerns re: PPE only addressed in 6th week of lockdown'

'Social issues- childcare/commuting/making food for children with longer hours contributes to stress +++'

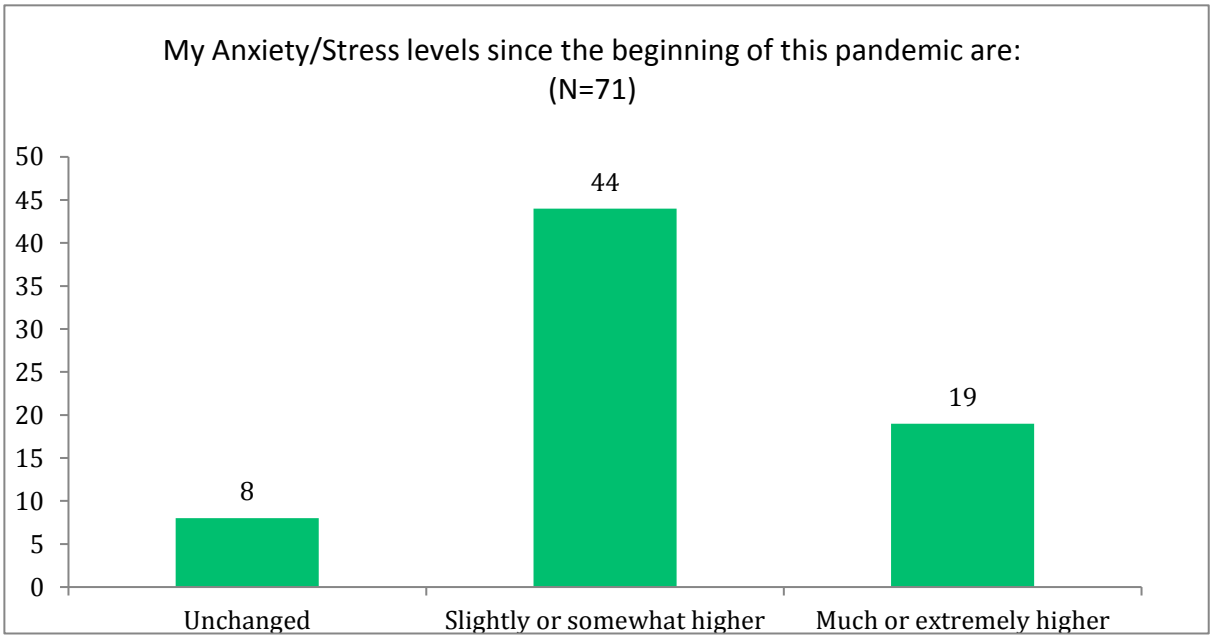

***Figure 2**: Anxiety level in NCHDs*

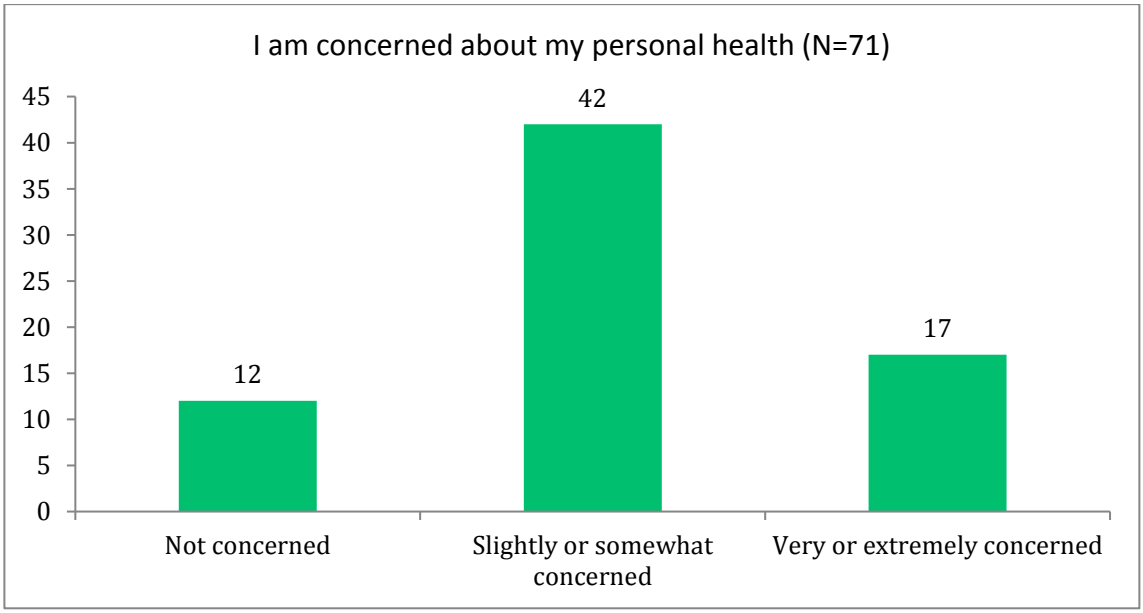

***Figure 3:** Concern regarding personal health among NCHDs*

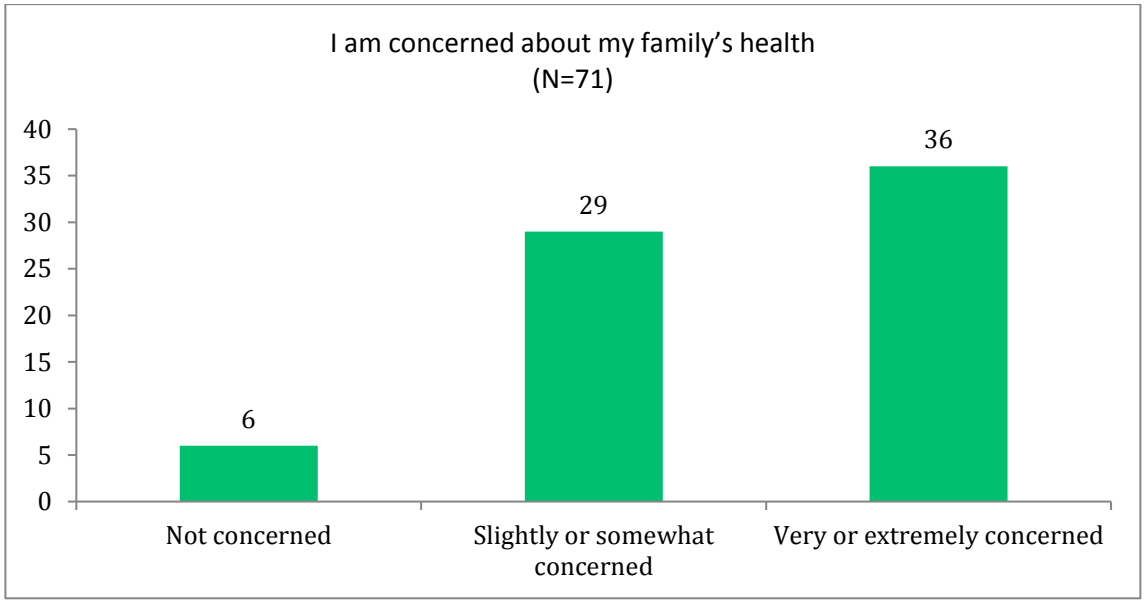

Figure 4: *Concern about family's health among NCHDs*

Discussion

Maternity services require a multidisciplinary approach, and provision of high-quality care is dependent on a staff-rich environment. Accordingly, potential staff changes need careful consideration, even in the context of a pandemic. Since direct entry to midwifery education, a growing number of midwives have no general training, and most NCHDs have had little exposure to anaesthesia. Thus, training to facilitate the necessary redeployment in the Covid-19 response, has been an additional onus on staff.

Rosters were significantly remodelled in a bid to suppress transmission, and cancellation of elective surgical lists and outpatient activity allowed staff numbers to be reduced. The dramatic drop in emergency department presentations, due to patients' concern regarding contracting Covid-19, further reduced activity. Rostering models varied, with some allowing for a "clean" week at home: this was welcome at a time of a general embargo on annual leave.

The RCOG's guidance on coronavirus in pregnancy[1] is continuously updated as understanding of the virus develops, and the RCPI's guide[2] to obstetric management underlines the importance of staff wellbeing. Our survey was conducted after their publication, yet maternity units were reported as slow to implement protective measures, with many not confident in levels of protection. This corresponded not only to increased levels of NCHD anxiety, but also to high staff infectivity rates in their units: i.e. their fears were well-founded. Critical comments underscored the importance to staff morale of leadership and good communication in a crisis, some NCHDs felt they were less than adequate. Others noted the novelty of the pandemic and felt that protective measures were optimal. It is important to acknowledge that although the sample is likely to be generally representative of NCHDs, there may be a response bias, i.e. more anxious doctors may be more likely to respond to a survey which asks about their concerns.

The second stage of labour poses a high transmission risk, yet wearing a mask was initially discouraged. It is probable that NCHDs' anxiety in part reflected changing HSE recommendations on PPE. Prior to the change only one third said that PPE was routinely used for intrapartum and outpatient care. Although this improved, approximately half still noted no Delivery Ward-specific regulation on PPE. The increase was not as expected and could reflect slow uptake of the recommendation, or poor communication with NCHDs. That NCHDs from the same unit gave conflicting accounts, demonstrates variance in practise at least. Even after HSE guidance, labour wards have been slow to implement PPE use which is concerning given the proximity of staff to patients and corresponding infectivity risk.

Virtual clinics, with telephone consultations, avoid personal contact, and appear acceptable to patients. Face-to-face interactions are necessary for antenatal clinics, albeit with social distancing and mask wearing, but consultation times are curtailed. In some units a telephone conversation takes place after ultrasound and physical examination. The quality of communication and reassurance achieved versus in-person is unknown: non-verbal signs, and clues to domestic violence, may not be elicited, and women with any communication difficulty are disadvantaged. Finally, telemedicine has specific medicolegal issues.[4,5]

High levels of distress and burnout have been noted in healthcare workers internationally during the pandemic.[6,7,8,9,10] Depression, anxiety and insomnia were prominent in both Chinese[11] and Italian healthcare workers[12], and increased suicide rates have been reported in nurses across Europe.[13] Our survey chimes with this: NCHDs reported high levels of stress and anxiety, and concern was greatest for family. Foreign nationals working in Ireland might face additional stressors due to being away from their families and the inability to travel and might require more support. Our hospital conducted regular "Schwartz rounds" and "Coping with COVID'' workshops in association with psychiatry[14] and staff were notified of on-site psychological supports via email, but our evidence suggests that support was not consistent across the country. Our study may inform decision makers at all levels of hospital management and training bodies about the importance of interventions to mitigate the impact of sustained psychological distress on healthcare workers facing the possibility of another wave of infection.

Declaration of Conflicts of Interest:
All authors declare no conflict of interest

Corresponding Author:
Somaia Elsayed
Our Lady of Lourdes Hospital,
Drogheda,
Co. Louth,
Ireland.
E-mail: somaia88@gmail.com

References:

1. Coronavirus (COVID-19) infection and pregnancy. Version 10.1 updated 19/6/2020; RCOG, Royal College of Midwives, Royal College of Paediatrics and Child Health, Public Health England, and Public Health Scotland. Available from: https://www.rcog.org.uk/globalassets/documents/guidelines/2020-06-18-coronavirus-covid-19-infection-in-pregnancy.pdf
2. Covid-19; Guidance for Maternity Services. Updated 6/5/2020, Institute of Obstetricians & Gynaecologists. Available from: https://rcpi-live-cdn.s3.amazonaws.com/wp-content/uploads/2020/05/COVID19-pregnancy-Version-4-D2-final.pdf
3. Epidemiology of Covid-19 in Ireland; Report prepared by HPSC 23/6/2020 for National Public Health Emergency Team; available from https://www.hpsc.ie/az/respiratory/coronavirus/novelcoronavirus/casesinireland/epidemiologyofcovid19inireland/COVID19_Daily_epidemiology_report_(NPHET)_26062020%20v1%20website.pdf
4. Webinar- Telemedicine: Navigating the risks. Online event. June 5, 2018 1830
5. Telephone Consultations: Hanging up on the Risks. Casebook, Medical Protection Society, September 2013. Available from: https://www.medicalprotection.org/southafrica/casebook/casebook-september-2013/telephone-consultations-hanging-up-on-the-risks
6. Preserving Organisational Resilience, Patient Safety, and Staff Retention during COVID-19 Requires a Holistic Consideration of the Psychological Safety of Healthcare Workers. Rangachari P, Woods JL. International Journal of Environmental Research and Public Health. Published 15/6/2020; available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7345925/
7. Understanding and Addressing Sources of Anxiety Among Healthcare Professionals during the Covid-19 Pandemic. Shanafelt T, Ripp J, Trockel M. Journal of American Medical Association. Published 7/4/2020. Available from: https://jamanetwork.com/journals/jama/fullarticle/2764380
8. In fight against Covid- 19, Nurses Face High-Stakes Decisions, Moral Distress. John Hopkins Magazine. Published 6/4/2020. Available from: https://hub.jhu.edu/2020/04/06/covid-nursing-cynda-rushton-qa/
9. Coping with Covid-19. Ventilator splitting with medical differential driving pressure using standard hospital equipment. Anesthesia 2020 volume 75 issue 7. Published 9/4/2020. Available from: https://onlinelibrary.wiley.com/doi/full/10.1111/anae.15078
10. Hospitals Scramble to Keep Up with CDC 95 Mask Guidance. Centre for Infectious Disease Research & Policy. Published 23/3/2020. Available from: https://www.cidrap.umn.edu/news-perspective/2020/03/hospitals-scramble-keep-cdc-n95-mask-guidance
11. Factors Associated with Mental Health Outcomes Among Healthcare Workers Exposed to Coronavirus Disease 2019. J Lai, S Ma, Y Wang, JAMA Network Original Investigation Psychiatry; March 23 2020; available from https://jamanetwork.com/journals/jamanetworkopen/fullarticle/2763229
12. The psychological and mental impact of coronavirus disease 2019 (Covid-19) on medical staff and general public- A systematic review and meta-analysis. Min L, Guo L, Yu M, Jiang W, Wang Y. Psychiatry Res 2020 Sep; 291: 113190. Published online 7/6/2020. Available from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7276119/
13. Nurse suicides rise in Europe amid stress of COVID-19 pandemic; Smith A; World Socialist Website; published 31/3/2020. Available from: https://www.wsws.org/en/articles/2020/03/31/trez-m31.html
14. Psychological Response Action Group for Staff in Our Lady of Lourdes Hospital, Drogheda and Louth County Hospital. Covid-19 Staff Support. Available from: https://www.rcsihospitals.ie/covid-19-staff-support/support/psychological-response-action-group-for-staff-in-our-lady-of-lourdes-hospital-drogheda-and-louth-county-hospital/

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Consulting Patterns of Children at a General Practice During the Coronavirus Pandemic

N. Maguire[1], D. Mac Colgáin[2], E. Maguire[3]

1. Bedford Medical Centre, Navan.
2. Northeastern Specialist Training Programme for General Practice, Navan.
3. St. Vincent's Hospital, Elm Park, Dublin 4.

Abstract

Aim

We sought to measure the change in the use of the general practitioner (GP) service by paediatric patients of our group practice, following the introduction of pandemic restrictions in March 2020. We aimed to determine the causes for the observed reduced consulting frequency and whether telephone advice is acceptable to parents as an alternative to face-to-face consultation.

Methods

We interrogated the electronic medical record for a count of surgery and out of hours (OOH) contacts between January 2019 and June 2020. We interviewed 10 parents of children under six years of age as to their reasons for consulting or not at this time. This informed an on-line survey of 108 parents.

Results

Consulting frequency fell by three quarters from an average of 12 visits/day to 3. OOH visits also declined from an average of 3 to 1/day. Telephone contacts with the GP did not increase.

Parents gave a number of reasons for not consulting: absence of illness (90%, 62/69), fear of coronavirus infection (28%,19/69), wishing to protect the front-line service (21%,14/68) availability of a parent to monitor a sick child (20%,13/66)

Many parents (73%, 74/102) wished to continue to avail of telephone triage following the ending of pandemic restrictions.

Conclusion

Much of the consulting of children at our surgery relates to infective illness. Telephone triage for children with minor illness is welcomed by parents.

Introduction

In our group medical practice, we noticed a marked decline in paediatric consulting coincident with the institution of the delay phase of the response to the coronavirus pandemic in mid-March 2020.[1]

Children with eligibility for free general practitioner (GP) care, under six years of age, consult more frequently than fee-paying children.[2,3] They attend more often, both during surgery hours and in the out of hours (OOH) service, since the removal of out of pocket payments in 2015, with an increase of 9% and 20% respectively in one study.[4] The Growing Up in Ireland study measured a 25% increase use of the GP service where children gained medical card or doctor visit card eligibility.[5] It is known that out of pocket costs are a barrier to the use of GP services and that access probably predicts better long term outcomes[5] On the other hand greater access and use of the GP service has implications for cost to the State and for workload planning[3,4,6,7]

A sudden change in demand for children's appointments was of interest as we felt it might inform our approach to providing care in the future. We wished to know whether the pandemic related reduced attendance was part of a public response to a unique population health crisis or the result of a true decrease in need relating to incident illness.

We therefore sought to document the change in consulting during the pandemic and to identify what factors contributed to consulting decisions. We also aimed to determine whether the enforced move to remote consulting by telephone due to Covid-19, might be acceptable as a lasting alternative to in-person consulting with children.

Methods

Bedford Medical Centre is a group general practice serving a mixed urban and rural population in Navan, Co. Meath. Nine GPs and five nurses serve a population of 18,000 patients of whom 7,400 are eligible for free care under Ireland's General Medical Services (GMS) scheme. There are 1009 eligible children aged less than six years.

The practice electronic medical record (*Health.one™, Clanwilliam Health Ltd.)* was interrogated to provide a daily count of all consultations with the GPs as well as all out of hours (OOH) visits for individuals aged less than 6 years, between January 1st, 2019 and June 1st, 2020. Nurse visits, such as for immunisations, were excluded. Consultations by telephone were also counted separately over this interval. The database was searched on July 1st, 2020.

Telephone interviews were conducted by two authors (DM and NM) with a purposeful sample of ten parents of an under six-year-old child, reflecting family size and previous consulting frequency. A table was generated of all children who had consulted along with the number of their consultations over the preceding year. The files of children with high, median and low consulting frequency were reviewed and a list of of patients was created by selecting equally from each frequency as well as single and multiple children families at each frequency.

The selection was not random, and the interviewers contacted parents of these children in batches. Interviews were recorded and reviewed by both authors and agreement was reached as to emergent themes, all of which were apparent by the tenth interview.

This analysis provided the basis for an 11-item online questionnaire (*Surveymonkey®*). Questionnaire items were GP usually attended, family composition, parental employment status, child minding arrangements, whether and where child had consulted since pandemic, reasons for not consulting, experience of telephone consulting and future consulting choices.

We contacted the parents of all 280 under sixes, who had permission to use their mobile phone number documented in their file. One parent of each of these children was sent a text message informing them of the survey. They were invited to access the survey through a link in a second text message. Ninety-eight parents responded initially with a further ten responding to a single reminder text message. Responses were anonymous. Simple descriptive statistics were used to analyse responses.

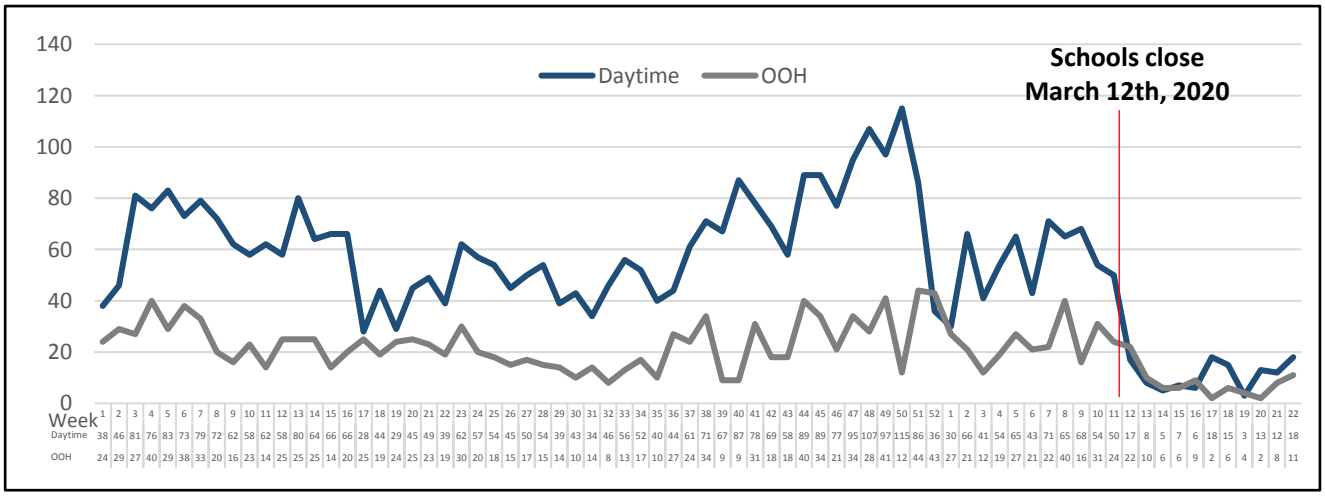
The study was undertaken as part of a quality improvement initiative around the care of children at the practice and was deemed not to require review by a research ethics committee according to Medical Council guidance.[8]

Results

Consulting patterns

The weekly number of consultations in person, at the surgery and OOH is reported in figure 1. The mean number of surgery consultations per day dropped from 12 in February to three in April with the lower rate reached within a fortnight of March 12th. Consultations at the OOH service declined from three to one per day in the same interval. Telephone consultations with GPs at the surgery in relation to these children did not rise as face-to-face visits fell, with a mean number of three and two recorded per day in the month before and after March 12th, 2020 respectively.

Fig. 1: No. of consultations each week by children <6 y.o. in daytime and OOH service (Jan 2019-Jun 2020).



Survey of parents

The response rate to the online survey was 39% (108/280). Households were described as having two parents (94%) with one (21%), two (48%) and three (21%) children. In a majority of families, all parents worked (64%) In 36% one parent was at home. Thirty percent of parents reported having attended the surgery since the pandemic lockdown and a further 3% had attended the OOH service.

Parents of the 73 children who had not visited the surgery or OOH service recently were asked to indicate their reasons: 90% (62/69) stated that the main reason was that their child had not been unwell; 28% (19/69) that a main or partial reason was concern that they could contract or transmit coronavirus ; 20% (13/66) that because they were on furlough at home they could monitor a child's illness without seeing the GP and 19% (14/68) that they wished to spare the GP as a front-line service. The reasons given did not differ between families where one parent was at home before the pandemic and those where all parents were at work, X^2 (1,N=73)= 0.59, p=0.89.

Twenty four percent of parents (28) had availed of a telephone consultation since the pandemic: with the GP at the surgery (23/28) with the Practice Nurse (1/28) and with the out of hours GP or Nurse (4/28.)

When parents were asked how they would act in case of a child becoming sick, 6 (5%) stated they would avoid seeing the GP and 57 (58%) that they would telephone for advice before attending. A majority of respondents (73%, 74/102) favoured the continued option of telephone consultation once the pandemic restrictions ended.

Discussion

The extension of free GP care to the whole population commenced in 2015 with provision of free-at-the-point-of-access care to children under six. It is expected that this will be expanded by degrees under the national blueprint for health policy, *Sláintecare.*[9]

The predictable increase in use of the GP service following removal of financial barriers, has generated increased workload in the daytime surgery as well as out of hours.[4]

Our results show a marked reduction in consulting frequency at the onset of the pandemic crisis. This not confined to the daytime practice or to our clinic alone, as attested by the fact that the OOH contacts for children across the Northeast region numbered 2113 in April 2019 compared to 622 in April 2020. (A Fitzsimons, Manager NEDOC Ltd, personal communication.)

In our interviews with parents and subsequent survey, the absence of illness among children was the most important reason advanced for not consulting since the start of the pandemic.

Consulting fell to a level of one to two surgery visits daily over twelve days from the announcement of school closure. This would be consistent with the incubation of most childhood viral illnesses.[10]

In-person consultations were not replaced by an increase in the number of telephone consultations tends to confirm a reduction in incident illness.

The use of the telephone or video consultation has become widespread as a result of the coronavirus pandemic. Respondents in this survey want a continued telephone option after the crisis and a majority stated that they would seek to have a telephone consultation as a first step if their child became ill.

Our results are limited to an approximate ten percent sample of children in a single practice and may be especially subject to selection, response and acquiescence biases. Our survey included only 73 children who had not consulted during the pandemic and they may have been a healthy cohort in any event. On the other hand, in our telephone interviews and survey, there was a consistency in the findings that (a) decisions not to consult were mostly because children were not sick and (b) that the telephone consultation was a welcome alternative. This consistency may lend some plausibility to our results.

Consulting among children, as for adults has a number of drivers other than illness but is determined by parents rather than the patient themselves. Nolan and Layte have shown that besides health need, eligibility for care, free at the point of access and maternal self-reported health determine the consulting rate of Irish children.[5] In this cohort, eligibility was not a barrier. We did not study maternal health. We hypothesised that the increased availability of parental supervision of their sick children due to pandemic restrictions on work might have reduced consulting. A fifth of parents gave this reason for not having consulted but there was no difference between households with one stay-at-home parent and those with both parents at work in the response to this question.

If minor childhood illnesses, usually infections, are the greatest driver of paediatric consulting, are there better ways to deliver the necessary reassurance once children are again contracting viral illness?

Our practice during the pandemic and the preferences of parents suggests that the telephone might supply some of this need. However, while this is safe, it has not been shown to reduce consulting time or costs, rather redistributing work without reducing clinician consulting time.[11] The substitution of the nurse or nurse practitioner is another solution to GP workload pressure but about which we did not enquire. This is also safe and does reduce physician workload and may reduce overall service costs.[12]

We conclude that in our practice, a large part of the daily paediatric workload reflects incident infective illness and is therefore likely to rebound when social isolation is relaxed. Telephone consulting would be acceptable to many parents in response.

That demand for GP services in daytime and OOH could be moderated in the longer term, by ongoing attention among children to the sort of hygiene measures seen during the coronavirus pandemic, is a prospect raised by these results and which might warrant further investigation.

Corresponding Author:
N. Maguire,
Bedford Medical Centre,
Convent Rd,
Navan,
Co. Meath.
E-mail: niallpmaguire@yahoo.com

Declaration of Conflicts of Interest:
The authors declare that they have no conflict of interest.

References:

1. Statement from the National Public Health Emergency Team (March 12th 2020) [Online] Available at: https://www.gov.ie/en/press-release/ef869a-statement-from-the-national-public-health-emergency-team/[Accessed 21 Jun. 2020]
2. Behan W, Molony D, Beame C,Cullen W.Does Eliminating Fees at Point of Access Affect Irish General Practice Attendance Rates in the Under 6 Years Old Population? A Coss Sectional Study at Six General Practices. Ir Med J 2014;107(4):121-2
3. O'Regan A, Cullen W, O'Gorman C,Hickey L,O Neill E, O'Doherty J, Hannigan A. What effect do point of care fees have on childhood consultations in general practice? BMC Health Services Research 2018;18:979
4. O'Callaghan M, Zgaga L, O'Ciardha D, O'Dowd T. Free Children's Visits and General Practice Attendance. Annals of Family Medicine 2018;16(3): 246-249
5. Nolan A, Layte R Growing Up in Ireland: Understanding use of general practitioner services among children in Ireland. Dublin: The Stationery Office; 2017.84
6. Prior S, Duff N,Scott R. Costing framework for the expansion of GP care- Department of Public Expenditure and Reform. [Internet]. 2020 Available from: htttp://budget.gov.ie/Budgets/2020/Documents/Budget. [Accessed 5 July 2020].
7. Teljeur C, Thomas S, O'Kelly FD, O'Dowd T. General practitioner workforce planning: assessment of four policy directions. *BMC Health Serv Res*. 2010;10:148.
8. Medical Council - Practice Audit [Internet]. Medicalcouncil.ie. 2020. Available from: https://www.medicalcouncil.ie/existing-registrants-/professional-competence/guidelines-on-the-implications-of-gdpr-on-clinical-practice-audit.html. [Accessed 4 July 2020]
9. Committee on the Future of Healthcare. Sláintecare Report.. [Internet]. 2020 Available from: http://budget.gov.ie/Budgets/2020/Documents/Budget. [Accessed 5 July 2020].
10. Lessler J, Reich NG, Brookmeyer R, Perl TM, Nelson KE, Cummings DA. Incubation periods of acute respiratory viral infections: a systematic review. Lancet Infect Dis. 2009 May;9(5):291-300.
11. Campbell JL, Fletcher E, Britten N, Green C, Holt T, Lattimer V, et al. The clinical effectiveness and cost-effectiveness of telephone triage for managing same-day consultation requests in general practice: a cluster randomised controlled trial comparing general practitioner-led and nurse-led management systems with usual care (the ESTEEM trial). Health Technol Assess 2015;19(13).
12. Laurant M, Reeves D, Hermens R, Braspenning J, Grol R, Sibbald B. Substitution of doctors by nurses in primary care. *Cochrane Database Syst Rev*. 2005;(2):CD001271.

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Learning from Covid-19 to Control Droplet & Airborne Transmitted Disease in Healthcare Environments

J. Dromey[1], B. Dromey[2], M. Dromey[3]

1. Waterfall Medical Centre, Waterfall, Cork.
2. EGA IfWH, University College London, London, UK.
3. Beacon Hospital, Sandyford, Dublin 18.

Abstract

Aim

From a literature review, to ascertain what controls can be recommended to mitigate spread of Covid-19 to health-workers.

Methods

Using PubMed, a key-word search produced 82 articles, 14 of which we used to study transmission and controls recommended to mitigate nosocomial spread. We used Biological control guidance from WHO, EU and statistics from Health Protection Surveillance Centre (HPSE) publications.

Results

Surface fomite transmission was reported to be less than by droplet or aerosol. The search indicates that provision of negative pressure ventilation, isolation zones and local exhaust ventilation, in Covid-19 wards, would likely mitigate spread to health-carers.

Conclusion

Engineering controls including placing suspected or confirmed patients in airborne-infection isolation rooms (AIIR), maintaining adequate ventilation, and using physical barriers to prevent transmission between patients and health-workers are recommended. Use of administrative controls and environmental engineering, having personal-protective-equipment (PPE) as the final line of protection, is advocated to protect health-workers from SARS-CoV.

Introduction

The aim of this study is to ascertain from a literature review what controls can be recommended to mitigate spread of Covid-19 to health care workers. The EU directive 2000/54/EC on the protection of workers from risks of exposure to biological agents requires employers to identify associated hazards, assess risks and implement control measures resulting from the assessment.

Based on the data, health-workers are proportionately more infected, and many are hospitalised, treated in ICU or die of Covd-19. The number of infected health care workers (HCW) in Ireland notified to the Health-Protection-Surveillance-Centre (HPSC) is 11722 of 71019(16.59%) up to 21/11/2020. Three hundred and eighty-seven (3.3%) of Covid-19 HCW cases were hospitalised and fifty-nine (15.2 %) of these were treated in ICU. (Table A)

The national Covid-19 incidence is 71019 of 4,977,400[1] (1.4%), to 21/11/2020. Among HCWs the incidence is 11722 of 118090[2] (9.92%); i.e. 7 times greater than the general population.

Table A: Summary of healthcare worker COVID-19 cases notified to HPSC, week 10 (01/03/2020 - 07/03/2020) - week 47 (15/11/2020 – 21/11/2020), Ireland, (n=11,722).

Characteristics of HCW COVID-19 cases	**Number**	**%**
Total number of COVID-19 cases	71,019	
Total number of HCW cases	11,722	16.59
Median age (IQR)	41 (31-50) years	
Total number hospitalised	387	3.3
Total number admitted to ICU	59	15.2*
The median age (IQR) of HCW in ICU	51 (44-59) years	
Total number of deaths	8**	0.07
The median age (range) for deaths	54 (30-68) years	

**This relates to hospitalised cases and it is 0.5% of all HCW cases. **Seven confirmed and 1 probable COVID-19 case.*

Of 3480 healthcare worker Covid-19 cases notified to HPSC between weeks 32 to 48, 2020, 2313 (66.5%) were transmitted in the healthcare setting or close contact with a confirmed case. (Table B). Jones et al report that evidence suggests 20% of SARS-CoV-2 infections among patients in UK hospitals and up to 89% of infections among HCWs may have originated in hospitals[3].

Table B: Healthcare worker Covid-19 cases notified to HPSC, Ireland, by mode of transmission, from week 32-week 48, Ireland, (n=3480)

Mode of transmission	**Number of HCW cases**	**Proportion of all HCW cases (%)**
Healthcare setting acquired: staff	1163	33.4
Close contact with a known confirmed case	1040	29.8
Community transmission	733	21
Healthcare setting acquired: patient*	110	3.2
Travel related	40	1.2
Under investigation	394	11.4

*Requires data validation.

HSE Health Protection Surveillance Centre. www.hpsc.ie

Our objective is to review attempted approaches at reducing the rate of Covid-19 transmission in the healthcare setting, the safety requirements and recommend controls to mitigate spread to healthcare staff.

Methods

A systematic review was conducted of Covid transmission & controls in the healthcare setting, using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) criteria. We used an open date strategy up to November 2020 for searching the literature. The search was made on the PubMed database.

The search terms used are as follows:

(SARS AND Transmission AND health workers AND engineering controls), which yielded 30 articles and 5 from their references.

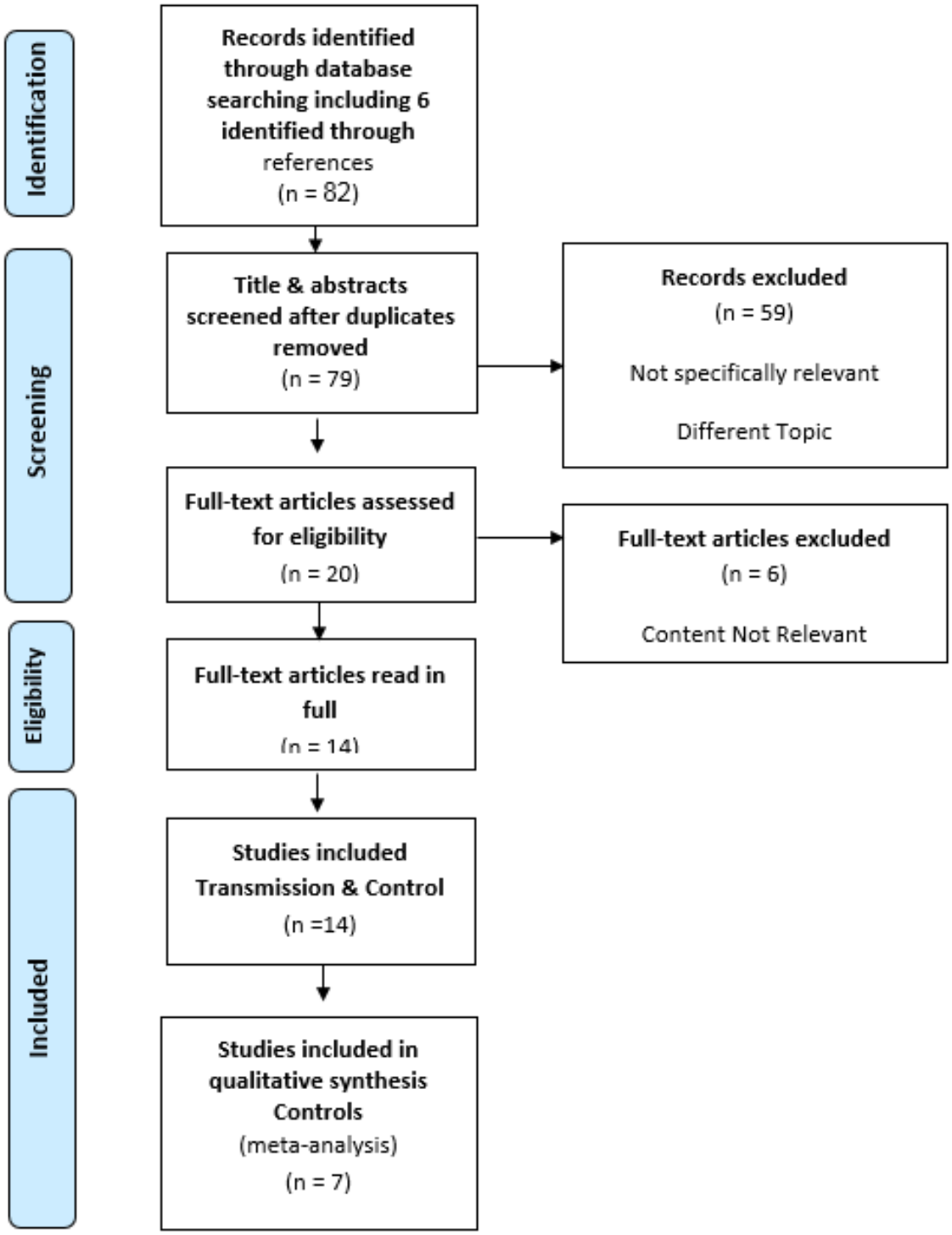
OR (SARS AND Local exhaust ventilation), which yielded 2 articles.

OR (SARS AND Healthcare Facilities AND Control AND Health-workers AND Transmission), which yielded 44 articles.

As per the PRISMA Diagram fig 1, we identified 14 original articles dealing with nosocomial coronavirus transmission and control for inclusion in this review. We also consulted EU, World Health and Centre for Disease Control (CDC) publications related to control of Biological agents.

Figure 1: PRISMA 2009 Flow Diagram**.**

(Covid-19, HCW, Transmission, Control) – PUB Med 82, Grey and H&S guidance 5 – Total 87



Results

Table C summarises the results of the review of 14 PubMed articles in terms of means of nosocomial transmission and recommended controls. The findings of these articles suggest droplet and aerosol virus transmission is greater than fomite. In regard to controls they contain original research into the role of ventilation, negative pressure isolation zones, local exhaust ventilation (LEV) systems and filtration. They indicate that LEV controls both aerosols and droplets.

Table C: Results of the review of 14 PubMed articles.

Author	Location	HCW risk stats	Ventilation measures	Local Exhaust Ventilation	LEV method	Droplet mode	Airborne mode	Fomite mode	Negative pressure	Filter Air or drops
Li Y	Honk Kong		1	1	Head height & floor exhaust.		1		1	
Phu H T	USA		1	1	Aerosol Hood	1	1		1	1
Borro L	Vatican		1	1	Above mouth exhaust	1	1			
McDonald L	Toronto		1						1	1
Lai H Y	USA		1	1	Aerosol box	1			1	1
Matava C	Toronto		1	1	Portable air extractor	1	1		1	1
Segar C D	USA			1	Suction containment chamber	1	1		1	
Xiao S	Honk Kong						1	1		
Bahl P	USA					1	1			
Park S H	Korea						1			
Song Z G	China		1			1		1	1	
Yu IT	Honk Kong						1			
Christian MD	Toronto		1			1	1	1	1	1
Jones NK	UK	1								
Total		1	8	6		8	10	3	8	5

Of 14 PubMed literature reviewed articles related to nosocomial transmission and control:
1 considers epidemiological transmission of Covid-19 to HCWs. 8 recommend ventilation measures to control spread of the virus while 6 recommend forms of local exhaust ventilation. 8 articles consider droplet and 10 consider airborne nosocomial transmission and 3 consider fomite transmission. 8 advocate ventilation systems including negative pressure isolation rooms, while 5 recommend methods of droplet or air filtration.

Transmission

Our data suggests that SARS virus transmission can be by droplet, airborne or fomite routes. Xiao et al concluded from modelling scenarios, of airborne, and fomite transmission routes, that Sars-CoV was less probable to transmit via the fomite route alone. The airborne route was predominant, but it was more probable that the virus could transmit in combined routes[4]. A systematic review for evidence of horizontal distance travelled by respiratory droplets found that seasonal CoVs were more commonly emitted in aerosols than in droplets, even through normal tidal breathing. The maximum distance recorded was 8 meters. SARS-CoV-2 can be detected in the air 3 hours after aerosolisation. They conclude that droplet precautions alone are not appropriate for SARS-CoV-2.

Evidence supports airborne precautions for the safety of health-workers[5]. Yu et al studied the association between location and the probability of airborne infection in a residential complex. Using Computational Flow Dynamic (CFD) modelling they conclude that airborne spread from an index case appears to explain a large community outbreak of SARS. They recommend consideration of prevention and control[6]. A hospital study, using CFD simulations, showed that there was an association between the concentration decay from an index patient's bed and the spatial SARS infection pattern. This provided environmental evidence of an airborne transmission route for SARS[7].

Prevention and Control

McDonald et al studied the SARS outbreak among health-workers. Facilities were constructed or retrofitted to create SARS evaluation centres. Dedicated entrances, exits and marked patient pathways segregated patients. Adequate ventilation, air exhaust & negative pressure infection isolation rooms were provided, to reduce droplet or airborne transmission. No transmission was reported in those facilities[8]. Another study describes controls in AIIRs. The directional top-to-bottom airflow in AIIRs greatly reduced the transmission of respiratory droplets and the high air change rate prevented the accumulation of virus aerosols. No virus was detected on the face shields or coveralls of HCW's or from air samples inside the AIIRs. They identified surface contamination with SARS-CoV-2 in isolated wards. None of 290 HCWs was infected in AIIRs at that hospital[9].

Exhaust Ventilation

Prototype controls are being devised to contain and extract airborne and droplet particles directly from patient's breathing zones. A number of these have been constructed and tested experimentally.

Li Y et al studied a 40-bed hospital ward, having 4 cubicles, with 1 infected patient. Using CFD simulation, they studied the distribution of virus laden bio-aerosol concentrations at a height of 1.1m at the time of infection and after modifications involving provision of new floor level and bed-head level exhausts. They correlated the results of aerosol concentration zones with persons who subsequently became infected and later charted the reduction or elimination of aerosol contamination after modifications. They assumed the virus source was the index patient. They found an association between the spatial infection pattern and the dispersion of virus-containing bio-aerosols from the index patient.

Study of the ward air distribution design at the time of exposure was necessary to provide environmental evidence of airborne transmission and to identify and develop engineering control systems[7]. In simulated hospital scenarios, another investigated transmission using CFD. They felt that heating, ventilation and air-conditioning may have a role in spreading the virus from infected persons' exhalation. A LEV system placed above the coughing patient's mouth, simulated in the hospital room, was associated with a complete reduction of infected droplets within 0.5 seconds following the cough event. The LEV system completely reduced the index computed for the bed next to the spreader, with a decreased possibility of contagion. The presence of a LEV system located near the patient markedly reduced droplet and airborne contaminant dispersion[10]. Similarly, another describes a portable high flow air extractor, high efficiency filtration unit allowing up to 235 L/ s, used to transform a regular room into a negative pressure room.

The high-efficiency-particulate-filter (HEPA) filter removes 99.97% of all airborne pathogens > 0.3 µm. The filtered air can be adapted to an existing exhaust system or vented outside. Placed 25–30 cm above the manikin's head, the extractor device was 99% effective at removing aerosols near the source, resulting in no levels detected at the clinician's head. During an uncovered cough, the extractor was 97% effective[11]. This technique is consistent with current recommendations from the CDC to augment room air exchanges[12].

We found that LEV containment hoods greatly mitigate dispersion of droplets and airborne virus from the patient's breathing zone. They are connected to exhausts which extract and filter contaminated aerosol and droplets, mitigating transmission outside the hood. Phu et al designed and evaluated a portable negative pressure hood with HEPA filtration to protect health care workers treating patients with transmissible respiratory infections. The hood provides access to patients via iris ports. Less than 1% of aerosol particles generated in the hood escape. They propose that enclosing patients in negative pressure systems with HEPA filtration would address concerns regarding non-invasive positive pressure ventilation for Covid-19 patients. Such devices may provide isolation spaces, without the need for building HVAC system reconfiguration. A portable negative pressure system to isolate patients in existing environments reduces the potential for aerosol transmission. This prototype has a flow profile similar to fume or inexpensive residential kitchen ventilation hoods. It can collect large droplets via impaction and aerosol particles via HEPA filtration. Room air enters the hood at rates exceeding the flow rate of all non-invasive ventilation (NIV) procedures[13]. Another describes a device for infected aerosols. It is a single use suction-assisted local aerosol containment chamber, which creates a negative pressure microenvironment surrounding the patient's head and upper torso. The device ships flat and folds into a chamber[14]. Finally, another describes an aerosol box which protects healthcare providers against aerosol spread during endotracheal intubation. It is a partial negative pressure container which facilitates the removal of droplet nuclei and captures them with a ULPA filter to reduce the risk of exposure. It captures particles of 0.12µm or higher at an efficiency of 99.97%[15].

Discussion

Regarding transmission to health workers, it appears that airborne and droplet containing virus may cause fomite deposition as well as directly infect mucus membranes. Also, it appears that airborne virus can travel long distances exceeding 8 meters and remain airborne for over 3 hours.

Per EU directive 2000/54/EC, SARS Cov-2 is a group 3 biological agent. Hence extract air from the workplace should be filtered. Air pressure should be negative unless the risk assessment indicates otherwise. The risk of exposure must be reduced to protect the workers concerned, by designing work processes and engineering control measures, to avoid or minimise the release of biological agents into the workplace. Where exposure cannot be otherwise avoided, individual protection measures must be provided[18].

The WHO, hospital control guidance, recommends that probable SARS cases should be isolated and accommodated in descending order of preference as follows: Negative pressure rooms with the door closed, Single rooms with their own bathroom facilities, Cohort placement in an area with an independent air supply, Exhaust system and bathroom facilities[19].

Our data indicates that high-efficiency particulate air filtration in a rigid flow geometry system is greatly more efficient in collecting particles than are N95 respirators. In most settings, engineering controls are preferred to PPE, which is regarded as the least effective method of exposure mitigation. Our results suggest negative pressure hoods can protect health care workers from airborne disease transmission. We believe the engineering bench tests and simulated hospital environments described provide strong support for the efficacy of a number of recently developed localized negative pressure systems in response to the COVID-19 pandemic.

This may be the first attempt to review findings suggesting the benefit of various environmental engineering solutions in mitigating hospital Covid-19 transmission to HCWs. Standardised testing is lacking for validation of competing research protocols. We have no specific data in relation to what standardised engineered infection control exists in health care facilities.

We consider this review illustrates the benefit of environmental engineering controls in health care settings to mitigate nosocomial transmission of Covid-19. The use of mechanical ventilation may be a better, more compliant and safer strategy which works to mitigate transmission and PPE should be the last line of defence.

Engineering controls including placing suspected or confirmed patients in airborne-infection isolation rooms, maintaining adequate ventilation, and using physical barriers to prevent transmission between patients and HCWs are recommended. This systematic approach using administrative controls and environmental engineering, having PPE as the final line of protection is advocated to prevent Sars-CoV transmission to health-workers[16,17].

Declaration of Conflicts of Interest:
This is to declare that none of the Authors have any conflict of interest in relation to this article.

Corresponding Author:
Dr J. Dromey,
Waterfall Medical Centre,
Waterfall,
Cork.
E-mail: dromey.john@gmail.com

References:

1 Cso.ie. 2021. *Population and Migration Estimates April 2020 - CSO - Central Statistics Office*. [online] Available at: <https://www.cso.ie/en/releasesandpublications/er/pme/populationandmigrationestimatesapril2020/> [Accessed 3 March 2021].

2 Ec.europa.eu. 2021. *Category:Health care - Statistics Explained*. [online] Available at: <https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Category:Health_care> [Accessed 3 March 2021].

3 Jones NK. Effective control of SARS-CoV-2 transmission between healthcare workers during a period of diminished community prevalence of COVID-19. Elife. 2020 Jun 19;9:e59391. doi: 10.7554/eLife.59391. PMID: 32558644; PMCID: PMC7326489.

4 Xiao S, Li Y, Wong T, Hui D. Role of fomites in SARS transmission during the largest hospital outbreak in Hong Kong. PLoS One. 2017 Jul 20;12(7):e0181558. doi: 10.1371/journal.pone.0181558. PMID: 28727803; PMCID: PMC5519164.

5 Bahl P. Airborne or droplet precautions for health workers treating COVID-19? J Infect Dis. 2020 Apr 16:jiaa189. doi: 10.1093/infdis/jiaa189. Epub ahead of print. PMID: 32301491; PMCID: PMC7184471.

6 Yu IT. Evidence of airborne transmission of the severe acute respiratory syndrome virus. N Engl J Med. 2004 Apr 22;350(17):1731-9. doi: 10.1056/NEJMoa032867. PMID: 15102999.

7 Li Y, Huang X, Yu I, Wong T, Qian H. Role of air distribution in SARS transmission during the largest nosocomial outbreak in Hong Kong. Indoor Air. 2005;15(2):83-95. [Accessed 18 September 2020].

8 McDonald L, Simor A, Su I, Maloney S, Ofner M, Chen K et al. SARS in Healthcare Facilities, Toronto and Taiwan. Emerging Infectious Diseases. 2004;10(5):777-781. doi: 10.3201/eid1005.030791 PMID: 15200808 [Accessed 18 September 2020].

9 Song ZG, Chen YM, Wu F, Xu L, Wang BF, Shi L, et al. Identifying the Risk of SARS-CoV-2 Infection and Environmental Monitoring in Airborne Infectious Isolation Rooms (AIIRs). Virol Sin. 2020 Sep 28:1–8. doi: 10.1007/s12250-020-00301-7. Epub ahead of print.

10 Borro L, Mazzei L, Raponi M, Piscitelli P, Miani A, Secinaro A. The Role of Air Conditioning in the Diffusion of Sars-CoV-2 in Indoor Environments: a First Computational Fluid Dynamic Model, based on Investigations performed at the Vatican State Children's Hospital. Environ Res. 2020 Oct 14:110343. doi:
11 Matava C, Collard V, Siegel J, Denning S, Li T, Du B, et al. CLEARANCE Group. Use of a high-flow extractor to reduce aerosol exposure in tracheal intubation. Br J Anaesth. 2020 Oct;125(4):e363-e366. doi: 10.1016/j.bja.2020.07.014. Epub 2020 Jul 28. PMID: 32792136; PMCID: PMC7386470.
12 Centers for Disease Control and Prevention. 2021. *Healthcare Workers*. [online] Available at: <https://www.cdc.gov/coronavirus/2019-ncov/hcp/infection-control-recommendations.html> [Accessed 3 March 2021].
13 Phu HT, Park Y, Andrews AJ, Marabella I, Abraham A, Mimmack R, et al. Design and evaluation of a portable negative pressure hood with HEPA filtration to protect health care workers treating patients with transmissible respiratory infections. Am J Infect Control. 2020 Oct; 48(10):1237-1243. doi: 10.1016/j.ajic.2020.06.203. Epub 2020 Jun 27. PMID: 32603849; PMCID: PMC7320700.
14 Seger CD, Wang L, Dong X, Tebon P, Kwon S, Liew EC, et al. Negative Pressure Isolation Device for Aerosol Transmissible COVID-19. Anesth Analg. 2020 Sep;131(3):664-668. doi: 10.1213/ANE.0000000000005052. PMID: 32541251; PMCID: PMC7302060.
15 Hsu SH, Lai HY, Zabaneh F, et al Aerosol containment box to the rescue: extra protection for the front line. Emergency Medicine Journal 2020;37:400-401. [Accessed 10 January 2021].
16 Park SH. Personal Protective Equipment for Healthcare Workers during the COVID-19 Pandemic. Infect Chemother. 2020 Jun;52(2):165-182. doi: 10.3947/ic.2020.52.2.165. PMID: 32618146; PMCID: PMC7335655.
17 Christian MD, Loutfy M, McDonald LC, et al. Possible SARS coronavirus transmission during cardiopulmonary resuscitation. Emerging Infectious Diseases. 2004 Feb;10(2):287-293. DOI: 10.3201/eid1002.030700.PMID: 15030699; PMCID: PMC3322904.
18 Eur-lex.europa.eu. 2021. *DIRECTIVE 2000/54/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 18 September 2000 on the protection of workers from risks related to exposure to biological agents at work(seventh individual directive within the meaning of Article 16(1) of Directive 89/391/EEC)*. [online] Available at: <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2000:262:0021:0045:EN:PDF> [Accessed 3 March 2021].
19 2021. *World Health Organization. Hospital infection control guidance for severe acute respiratory syndrome (SARS).*. [online] Available at: <http://www.who.int/csr/sars/infectioncontrol/en/.> [Accessed 3 March 2021].

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Current Practice and Attitudes Towards Key Investigations in Acute Kidney Injury

A.R. Ahmed[1], C.A. Ebad[1], M.M. Satti[2], M. Khalid[3], A. Habib[3], C. O'Seaghdha[1]

1. Nephrology Department, Beaumont Hospital, Dublin, Republic of Ireland.
2. Connolly Hospital Blanchardstown, Dublin, Republic of Ireland.
3. Our Lady's Hospital, Navan, Republic of Ireland.

Abstract

Aim

To identify the current practice of performing key initial investigations of acute kidney injury (AKI) before a nephrology referral in hospitalised patients and assess the attitudes towards these investigations amongst non-consultant hospital doctors (NCHDs).

Methods

Retrospective data was collected using the intra-hospital online consults system between the period 1st November 2019 and 31st December 2019. Followed by a prospective survey of NCHDs using a standardised online tool to assess attitudes towards key AKI investigations.

Results

A total of 75 renal referrals were included. Baseline serum creatinine values were provided in 42 (56%), urine dipstick results in 11 (15%), renal ultrasound results in 15 (20%), and blood pH/ serum bicarbonate/potassium in 20 (27%). Amongst 47 NCHDs surveyed,15 (32%) did not consider urine dipstick as an important AKI investigation and 24 (51%) did not always consider reporting urine dipstick before placing a renal consult. Twenty-three participants (49%) did not have a framework to assess AKI. Fluid balance chart and venous blood gas results were considered important before renal consult by 39 (83%) and 30 (64%) participants, respectively.

Conclusion

Key investigations in AKI, particularly urine dipstick, are insufficiently done before a nephrology referral. Assessment of attitudes of NCHDs suggest gaps in knowledge regarding the value of urine dipstick in AKI.

Introduction

Acute kidney injury (AKI) is a clinical syndrome with an incidence of 3-18% in adult hospitalised patients [1]. AKI is associated with 10-20% mortality in the non-intensive care hospital setting and up to 50% mortality in the intensive care setting[2]. AKI leads to an increase in the length of hospital stay and costs [3, 4]. Early identification and investigations can potentially reduce adverse outcomes associated with AKI[5, 6]. We aim to identify the current practice of performing key initial investigations in the management of AKI before referring for a nephrology specialist review in hospitalised non-critically ill patients and assess the attitudes towards key investigations amongst non-consultant hospital doctors (NCHDs).

Methods

Retrospective data was collected using the intra-hospital online consults system between the period 1st November 2019 and 31st December 2019. The consults were given by the medical and surgical teams to the nephrology department. All patients above 18 years of age with AKI and inpatient for more than 24hours were included in the study. AKI was defined as per The Kidney Disease: Improving Global Outcomes (KDIGO) guidelines and where hourly urine output or serum creatinine values were not provided terminologies that suggested a recent acute worsening of renal function such as 'rising creatinine' or 'decreased urine output' were included. Referrals regarding chronic dialysis patients, simple electrolyte abnormalities (e.g., hyponatraemia without kidney injury) and chronic kidney disease follow-up were excluded. A standardised proforma was used to collect data which included: urine dipstick results, creatinine baseline (before acute deterioration) and current value, blood pH, serum bicarbonate, serum potassium (venous blood gas result was considered adequate) and renal ultrasound result.

A prospective survey was done using a standardised online tool (SoGoSurvey©) to assess attitudes towards key AKI investigations and included interns and senior house officers (SHO) from various hospitals.

Results

A total of 75 renal referrals met the inclusion criteria to identify the current practice of performing key initial investigations. Baseline serum creatinine values were provided in 42 (56%) referrals, urine dipstick results in 11 (15%) referrals, renal ultrasound results in 15 (20%) referrals, and blood pH/ serum bicarbonate/potassium in 20 (27%) referrals (figure 1). Medical teams were involved in 43 (57%) consults, while surgical teams were in 32 (43%) consults.

Survey of NCHDs to assess attitudes towards key investigations included 47 participants (figure 2). The group composed of 24 (51%) interns and 22 (46%) SHOs, while 1 (3%) did not disclose the rank. All the participants were within 48 months of graduating from medical school. Thirty-three (70%) represented the medical department, while 14 (30%) represented the surgical department.

Almost half the participants (49%) did not have a framework to assess AKI, and nearly one third (32%) did not consider urine dipstick a vital assessment tool in AKI. The majority (52%) did not always consider a urine dipstick before a specialised renal consult. Most NCHDs considered getting blood pH/ serum bicarbonate/ venous blood gas (VBG) (64%) and fluid balance chart (83%). Thirteen (28%) did not feel confident when managing AKI in an on-call setting. All the 47 participants (100%) agreed that having an AKI proforma or algorithm would benefit their practice when assessing patients with AKI, and 43 (91%) would like further practical tutorials in AKI management.

Figure 1: Results demonstrating the frequency of key investigations done before a nephrology referral. N=75

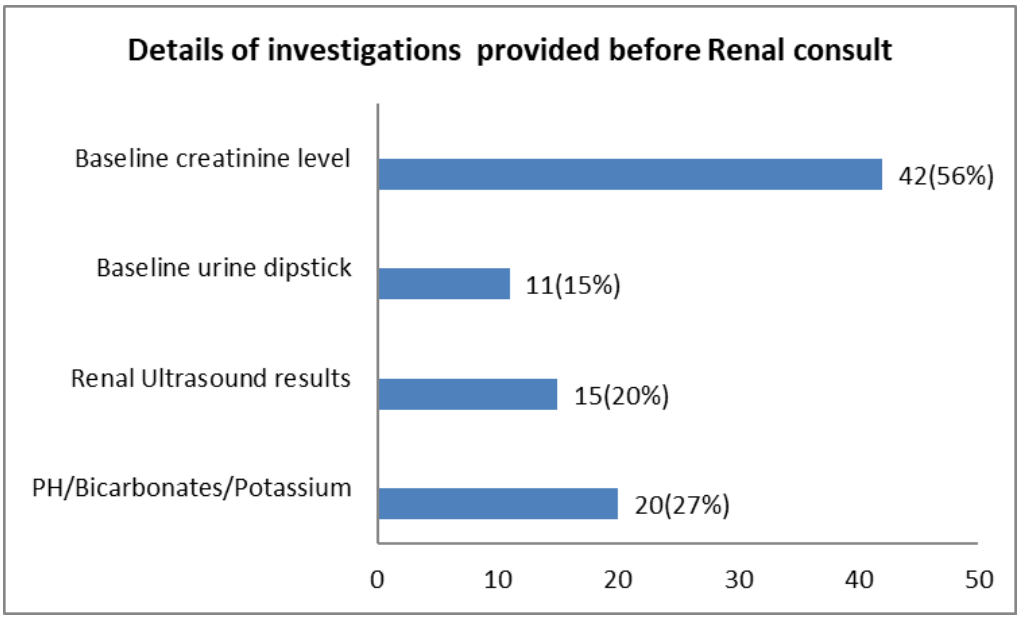
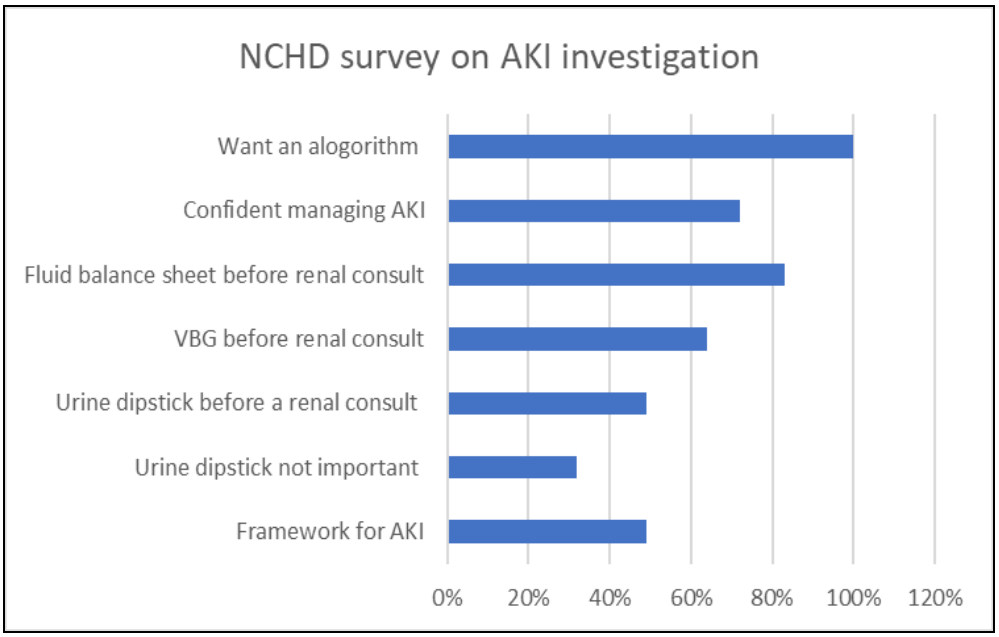


Figure 2: Survey of NCHDs to assess attitudes towards key investigations. N= 47



Discussion

A high proportion of NCHDs who participated in the study do not consider urine dipstick as a valuable investigation in the assessment of AKI. This is further reflected by the limited referrals to the nephrology department containing the result of urine dipstick (15%). The incidence of AKI is rising, particularly in the hospital setting, in the Republic of Ireland [7]. There is substantial evidence to suggest AKI is associated with adverse long- and short-term outcomes, including the high economic burden on the health care system [8-10]. A delay in doing baseline AKI investigation such as urine dipstick can impede timely diagnosis and management of patients. Poor compliance with AKI investigations, particularly urine dipstick, is consistently seen in other European studies[6]. This may reflect knowledge gaps amongst NCHDs and support staff not taking a timely urine sample for assessment. The urine dipstick and urinalysis are simple and economic investigations that can provide crucial information such as distinguishing between intrinsic renal injury from other causes [11, 12].

Several management strategies are being employed around the world for prevention, early detection and initiation of appropriate investigations concerning AKI [13]. There is some evidence to suggest that introduction of AKI care bundles (proforma/algorithms/checklists) with relevant compliance by NCHDs, educational programs, and automated electronic alert system may improve outcomes associated with AKI [5, 6, 14-16].

Most NCHDs are willing to engage with educational programs and apply available local guidelines when managing AKI. The practice of maintaining a fluid balance chart and obtaining a venous blood gas is encouraging in our study as the majority of acute complications of AKI revolve around volume status and electrolyte disturbances[17].

This study has certain limitations that need to be considered when interpreting the present results. The intra-hospital online consults system was used to collect data on AKI investigations before renal consults and not the patient charts; thus, there is a possibility that some data may have been available at the time of placing a renal consult. The survey questionnaire did not include registrars and other senior clinicians which will affect its generalisability. Responses to certain questions, such as having a framework for AKI management, are subjective and may not be reproducible.

This study has many strengths, particularly identifying an important clinical area of improvement, both objectively and subjectively through retrospective analysis and prospective survey. This study can be used as a basis to improve AKI education and management at an undergraduate and postgraduate level. To our knowledge, this is the first study evaluating a part of AKI management and NCHD attitude towards AKI investigations in an Irish hospital setting.

In conclusion, key initial investigations in AKI, particularly urine dipstick, are not being appropriately done before a renal referral. Assessment of attitudes of NCHDs suggest gaps in knowledge regarding the value of urine dipstick in AKI. However, the majority of NCHDs are driven to improve their understanding of AKI management and consider AKI proforma or algorithm provided by the renal department would be beneficial to their practice. A national AKI quality improvement program and guideline need to be established.

Declaration of Conflicts of Interest:
No potential conflicts of interest. No financial support.

Corresponding Author:
Adeel Rafi Ahmed
Mb BCh BAO MRCPI MRCP(UK)(ESENeph) PGDip(ClinEd) ECNeph
Nephrology Registrar
Beaumont Hospital Dublin,
Ireland.
Orcid number: Adeel Rafi Ahmed:0000-0002-5910-6980
E-mail: adeel.r.ahmed@gmail.com

References:

1. Susantitaphong P, Cruz DN, Cerda J, Abulfaraj M, Alqahtani F, Koulouridis I, et al. World incidence of AKI: a meta-analysis. Clinical journal of the American Society of Nephrology : CJASN. 2013;8(9):1482-93.
2. Hoste EAJ, Kellum JA, Selby NM, Zarbock A, Palevsky PM, Bagshaw SM, et al. Global epidemiology and outcomes of acute kidney injury. Nature reviews Nephrology. 2018;14(10):607-25.
3. Silver SA, Long J, Zheng Y, Chertow GM. Cost of Acute Kidney Injury in Hospitalised Patients. J Hosp Med. 2017;12(2):70-6.
4. Kerr M, Bedford M, Matthews B, O'Donoghue D. The economic impact of acute kidney injury in England. Nephrology, dialysis, transplantation : official publication of the European Dialysis and Transplant Association - European Renal Association. 2014;29(7):1362-8.
5. Kolhe NV, Staples D, Reilly T, Merrison D, McIntyre CW, Fluck RJ, et al. Impact of Compliance with a Care Bundle on Acute Kidney Injury Outcomes: A Prospective Observational Study. PloS one. 2015;10(7):e0132279-e.
6. Ebah L, Hanumapura P, Waring D, Challiner R, Hayden K, Alexander J, et al. A Multifaceted Quality Improvement Programme to Improve Acute Kidney Injury Care and Outcomes in a Large Teaching Hospital. BMJ Qual Improv Rep. 2017;6(1):u219176.w7476.
7. Stack AG, Li X, Kaballo M, Elsayed ME, Johnson H, Murray PT, et al. Temporal trends in acute kidney injury across health care settings in the Irish health system: a cohort study. Nephrology Dialysis Transplantation. 2018.
8. Coca SG, Yusuf B, Shlipak MG, Garg AX, Parikh CR. Long-term risk of mortality and other adverse outcomes after acute kidney injury: a systematic review and meta-analysis. American journal of kidney diseases : the official journal of the National Kidney Foundation. 2009;53(6):961-73.
9. Bagshaw SM, George C, Gibney RTN, Bellomo R. A multi-center evaluation of early acute kidney injury in critically ill trauma patients. Renal failure. 2008;30(6):581-9.
10. Chertow GM, Burdick E, Honour M, Bonventre JV, Bates DW. Acute Kidney Injury, Mortality, Length of Stay, and Costs in Hospitalised Patients. Journal of the American Society of Nephrology. 2005;16(11):3365-70.

11. Rhee RL, Davis JC, Ding L, Fervenza FC, Hoffman GS, Kallenberg CGM, et al. The Utility of Urinalysis in Determining the Risk of Renal Relapse in ANCA-Associated Vasculitis. Clin J Am Soc Nephrol. 2018;13(2):251-7.
12. Cavanaugh C, Perazella MA. Urine Sediment Examination in the Diagnosis and Management of Kidney Disease: Core Curriculum 2019. Am J Kidney Dis. 2019;73(2):258-72.
13. Sykes L, Nipah R, Kalra P, Green D. A narrative review of the impact of interventions in acute kidney injury. Journal of nephrology. 2018;31(4):523-35.
14. Chandrasekar T, Sharma A, Tennent L, Wong C, Chamberlain P, Abraham KA. A whole system approach to improving mortality associated with acute kidney injury. QJM : monthly journal of the Association of Physicians. 2017;110(10):657-66.
15. Tsui A, Rajani C, Doshi R, De Wolff J, Tennant R, Duncan N, et al. Improving recognition and management of acute kidney injury. Acute Med. 2014;13(3):108-12.
16. Selby NM, Kolhe NV. Care Bundles for Acute Kidney Injury: Do They Work? Nephron. 2016;134(3):195-9.
17. Ahmed AR, Obilana A, Lappin D. Renal Replacement Therapy in the Critical Care Setting. Crit Care Res Pract. 2019;2019:6948710-.

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The Impact of the COVID-19 Pandemic on Surgical Emergencies

T.M. Connelly, G.A. Bass, H. Earley, M. Umair, O. Barrett, J. O'Riordan
Department of Surgery, Tallaght University Hospital, Dublin 24.

Abstract

Aims

The COVID-19 pandemic has had an enormous impact on elective surgical activity worldwide; however, its effect on emergency surgical referrals and admissions is not well documented. Understanding the volume and nature of such presentations is key to future resource allocation and guideline creation.

Methods

Surgical handovers from a 9-week period from the commencement of the first government restriction of non-essential travel (March 8th–May10th 2020) were studied. A corresponding time period of usual surgical activity (March 10th-12th May 2019) was studied for comparison.

Results

During the pandemic period, 447 referrals (mean age 54, 4.9% COVID-19 positive) were received representing a 16.5% decrease compared to 2019 (n=521). The most common referral in each period was abdominal pain (n=255 vs 259). The duration of symptoms prior to admission and overall number of traumas did not differ between the periods. Fewer referrals for traumatic brain injuries and polytraumas and more symptomatic hernias, cellulitis and blocked/dislodged lines/tubes were seen during the pandemic.

Conclusion

The volume of surgical referrals and admissions was significantly decreased during the first wave of the COVID-19 pandemic. Traumas and abdominal pain were unaffected. An increase in several referrals for which patients would typically visit their general practitioner or have an expedited hospital appointment was seen.

Keywords: COVID19, SARS-CoV-2, emergency surgery, surgical admissions, general surgery, coronavirus

Introduction

The global Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2, COVID-19) pandemic began in China in 2019, reached Europe in early 2020 and Ireland in March 2020. Through a quick government response, the majority of businesses began closures the week of March 9th. Concomitantly, multiple international guidelines to inform elective surgery were drafted in response to the crisis. Several European hospitals, including our academic medical centre, ceased elective surgical activity shortly thereafter. The worldwide decrease in elective surgery that followed was expected and is well documented.

Due to the nature of emergency surgical presentations, the required response during the pandemic was far less predictable. Guidelines such as the European Society of Trauma and Emergency Surgery (ESTES) guidelines for trauma and emergency surgery preparation were created to inform perioperative procedures and the allocation of resources during the pandemic.[1] Out of necessity, all such emergency surgery statements and guidelines were drafted based upon an unknown quantity of incoming patients. In the present study, we aimed to determine the impact of the pandemic on the number and nature of emergency surgical referrals. Understanding the volume and nature of presentations during a pandemic is key to future resource allocation and guideline planning.

Methods

Daily electronic surgical sign out handovers from a nine-week period encompassing the commencement of the government-imposed restriction of non-essential travel and two bank holidays (March 8 to 10th May 2020) were reviewed. Our institution distributes secure daily surgical electronic handovers to all members of the Department of Surgery.[2] All Emergency Department referrals to the Surgical Service were identified on the handovers and analysed. Outcomes recorded included: number of daily admissions, patient demographics, nature of presentations, duration of symptoms before presentation and procedures/operations performed. A second corresponding time period (March 10 to 12th May 2019) was studied for comparison. As these data were retrospective and observational and no change to patient care was made, formal Research Ethics Committee approval was not required. Approval was received from the Tallaght University Hospital Clinical Audit Registry. All data were stored securely on a hospital computer in a locked room, behind a hospital IT firewall.

Descriptive and inferential statistical analyses were performed using the jamovi project version 1.2.22 (www.jamovi.com; 2020) using R 4.0.0 Arbor Day (The R Foundation for Statistical Computing, Vienna, Austria). Measures of central tendency are presented as mean+/-standard deviation (s.d), range or median (i.q.r.) values. Comparisons were made with the $\chi 2$ test or ANOVA, as appropriate. An α significance level of 0.05 was used throughout.

Results

During the 2020 pandemic study period 447 patients (mean age 54, range 17-91 years) were referred to the Surgical service. Males and females were referred equally (46.3 vs 53.7% of referrals, NSD, Table 1). Of the patients referred, 4.9% were confirmed COVID positive on admission. A time-dependent trend in referrals was noted, with a statistically significantly lower number of referrals received during the first three weeks of containment measures (March 9-28 2020) compared with the equivalent three week period in 2019 (41.7±8.39 versus 75.3±5.03; median=46, 39 – 46.5 versus 76, 73–78. t (df) =-4.52 (2), p=.046). The number of referrals recovered to normal levels in weeks 4-9. No difference was detected. In the comparison, during the 2019 surgical activity time period, 521 referrals were received. This represents a 16.5% greater number of referrals compared to 2020. Median patient age in the 2020 and 2019 cohorts was 52 and 54 years respectively (p=0.149). In both study periods the majority of referrals were received directly from the Emergency Department (80.5% in 2020 vs 98.8% in 2019, Table 2). A significant increase in inbound inter-hospital transfers was seen during the pandemic (10 in 2020 vs 1 in 2019, χ^2=9.39, p=.0022). In the 2020 cohort, 56.1% of referrals resulted in admission vs 64.2% in 2019. There was no difference in mean symptom duration prior to presentation (8.45+/-30.3 days for 2020 vs 9.00+/-25.54 days for 2019, p=NSD). In the cohort of patients presenting with abdominal pain, symptom duration was also the same (8.45+/-21.09 days for 2020 vs 9.12+/-25.00 days for 2019, p=NSD).

Table 1: Demographics (age, sex) between patients referred in 2019 (usual activity) versus 2020 (COVID-19 pandemic). No significant difference was seen in the male:female ratio of 5:3 (n = 968, χ^2 = 0.161, df = 1, p < .688), nor in median (iqr) age at presentation (t = 1.14, df = 961, p < .256).

	Year*		
Sex	2019 n=521	2020 n=447	Total
Male	248 (47.6%)	207 (46.3%)	455 (100%)
Female	273 (52.4%)	240 (53.7%)	513 (100%)
Total	521 (100%)	447 (100%)	968(100%)
Age (years)	54 (17 – 91)	52 (17 – 95)	53 (36 – 70)

Table 2: Referral Source, comparing 2019 (usual activity) with 2020 (COVID-19 pandemic). Significantly greater overall activity was seen in 2019. A greater proportion of cases in 2020 utilized the Acute Surgical Assessment Unit pathway (n = 968, $\chi^2 = 92.9$, df = 2, $p < .001$).

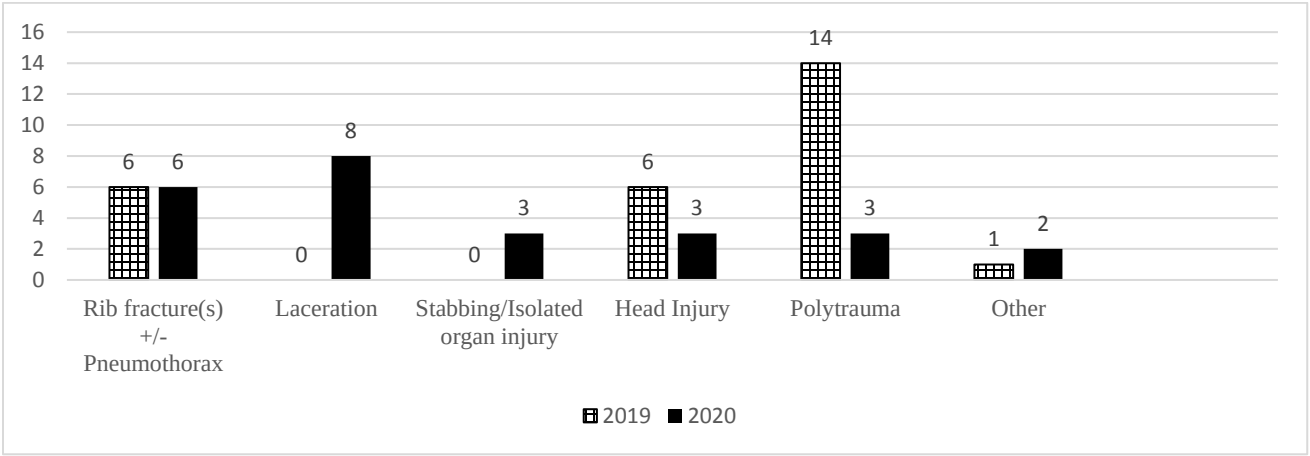
	Year		
Referral Source	**2019**	**2020**	**Total**
Emergency Department	515 (98.8%)	360 (80.5%)	875 (90.4%)
Acute Surgical Assessment Unit	5 (1.0%)	77 (17.2%)	82 (8.5%)
Transfer from outside hospital	1 (0.2%)	10 (2.2%)	11 (1.1%)
Total	521 (100%)	447 (100%)	968 (100%)

The most common referral in each study period was abdominal pain (n=255/59.7% of referrals in 2020 vs 259/49.7% in 2019, Table 3). In 2020, the second most common referral was skin abscesses including pilonidal and perianal abscesses (7.5% of presentations vs 4.5% in 2019). In 2020, trauma and gastrointestinal bleeding were the 3rd and 4th most common presentation (6.6% and 4.9% respectively). The overall number of traumas did not differ between the time periods (27 vs 28 traumas, Table 3) Although the numbers are relatively low, fewer referrals for traumatic brain injuries and polytraumas were seen in 2020 (Figure 1). Additionally, although not significantly different, more symptomatic hernias, cellulitis and blocked or dislodged intravascular access lines, intraabdominal drains and gastrostomy or jejunostomy tubes were reviewed in 2020.

Table 3: Most Common Presenting Complaints in 2019 (usual activity) with 2020 (COVID-19 pandemic). **No significant difference was seen in any complaint, NSD)

Presentation	Year	N(%)
Trauma	2019	27 (5.1%)
	2020	28 (6.6%)
Abdominal pain	2019	259 (49.7%)
	2020	255 (59.7%)
Gastrointestinal bleed	2019	19 (3.6%)
	2020	21 (4.9%)
Skin abscess	2019	21 (4.3%)
	2020	32 (7.5%)
Symptomatic hernia	2019	13 (2.5%)
	2020	19 (4.4%)
Cellulitis	2019	13 (2.5%)
	2020	20 (4.7%)
Food bolus/ingested foreign body	2019	12 (2.3%)
	2020	12 (2.8%)
Perianal pain	2019	15 (2.9%)
	2020	14 (3.3%)
Blocked or Displaced tube/stent/line	2019	11 (2.1%)
	2020	18 (4.2%)

Figure 1: Traumas 2020 during the COVID-19 Global Pandemic vs 2019 (usual activity).



Discussion

During this unprecedented crisis in modern Europe, the creation of emergency surgery guidelines presented an extreme challenge. In the early stages of the pandemic, The American College of Surgeons issued a statement on the importance of maintaining the emergency care system during the pandemic.[3] Journals such as the Annals of Surgery swiftly created online collections of COVID-19 related resources for surgeons.[4] In this study, we aimed to analyse our referrals and activity to provide important data for the drafting of future pandemic guidelines and allocation of resources.

We hypothesised that only a small decrease in the number of surgical referrals would be seen throughout the crisis. The decrease of 16% was greater than expected. Abdominal pain remained the most common presentation. This encompasses a myriad of pathologies and is historically the mainstay of surgical referrals. The overall numbers of trauma presentations were similar between the 2 periods; however, in 2020, less traumatic brain injuries and polytraumas were seen. This was likely due to government travel restrictions. The majority of the traumatic brain injuries and pneumothoraces were due to falls from heights including ladders and scaffolding in those performing work in their own homes.

Surprisingly, the numbers of symptomatic hernia presentations increased. The majority (>96%) were reduced in the acute setting and discharged home. When questioned, the majority of patients cited difficulty with access to their community physician (general practitioner, GP) and/or advice from their GP to bypass their services and attend the Emergency Department. Similarly, potentially for the same reason, we saw more skin abscesses requiring drainage during the pandemic. In fact, an overall increase in patients presenting directly to the hospital without first seeing their GP was noted. This is for several reasons including reduced GP face-to face patient hours due to policy changes and/or staff sickness, increased GP phone consultations precluding physical examination and patients' concern about 'double potential COVID exposure' where they believed that the GP would see them and ultimately refer them to the Emergency Department anyway. During this time, hospital outpatient appointments were also cancelled. As a result, patients who could have been seen urgently in an expedited clinic appointment for an exacerbation of a known condition or mild to moderate new symptoms requiring physical examination and further investigations were frequently told to attend the Emergency Department. However, despite these factors, an overall decrease in surgical referral numbers was seen.

We saw a marked increase in uptake in our Acute Surgical Assessment Unit (ASAU) utlisation. Our ASAU, previously purposed as a review clinic attached to the Emergency Department, was re-designated in March 2020 for rapid triage and assessment of patients with surgical pathologies. Two routes of referral are permitted: direct GP access and 'direct from nurse-led triage' ED referral, using documented referral criteria. We saw an increase in both. The ASAU provided a key service to decrease footfall in GP surgeries and in the ED which was experiencing a reduction in overall physical space due to re-allocation of rooms and cubicles for COVID-19 confirmed and suspected cases.

The numbers would have been much higher; however, a predetermined number of referrals to the ASAU are allowed per day due to a lack of physical space and, at present, the ASAU operating hours are limited to Monday to Friday from morning until early evening.

A significant increase in the number of inbound patient transfers in from surrounding rural hospitals was demonstrated. No patient had a diagnosis of COVID-19 on transfer. The increased inflow was secondary to policy changes in rural hospitals with smaller intensive care units (ICUs) in order to create ICU beds availability for COVID-19 positive admissions.

Of the patients referred, 4.9% were confirmed COVID positive on admission. Overall, only 38.7% of patients were tested. This number is representative of early hospital policy of only swabbing patients who were symptomatic with cough or fever. The number of patients swabbed subsequently increased to 100% by the last week of the study period as the policy changed to include all admissions in accordance with national guidelines. The cohort of COVID-19 positive surgical referral patients represents: 1) dual pathologies (ie both COVID-19 and a surgical pathology) and 2) the asymptomatic presence of COVID-19 in patients presenting with a surgical pathology.

The SARS outbreak in 2003 is the only recent global pandemic to provide a platform to compare our data with. Chen *et al* investigated the impact of the 2003 SARS outbreak on a urban emergency department in Taiwan.[5] Analysing total number of presentations, not exclusively surgical patients as in our study, they found that after the first date of hospital associated transmission the number of ED patients declined 33.4%. Heiber *et al* studied the effect of the SARS outbreak on visits to an emergency department in a Toronto community hospital over a 4-week period and documented a 21% decline over the study period.[6]

Our results represent a single academic medical institution in an urban setting with a catchment area which includes nearby rural areas providing a mix of patients. The data was derived from retrospective review of detailed electronic handovers written by and for the surgeons at our hospital. Details of patient medications and fine details on comorbidities are not provided. Our paediatric service was moved off site during the start of the pandemic to create more physical space for adult COVID-19 patients. Therefore, our results are representative of an adult population only. Our trauma numbers in both time periods are under representative of all traumas presenting to the ED as traumas with orthopaedic injuries only or neurosurgical injuries requiring immediate transfer to a neurosurgical unit are not captured in this data.

In the current study, we did not address other aspects of surgical care during the pandemic including delaying surgery, medical management of traditionally surgical pathologies such as appendicitis, resource reorganization or the use of technology in response to the pandemic.[7] We believe these are all important topics and warrant further study. Additionally, a comparison between these initial data and data from the current peak is warranted. The effects of prolonged lockdown, the possibility that patients may have become more willing to attend ED over time and the effects of the vaccination programme on referrals are all pertinent topics for future study.

Overall, we saw a marked decrease in surgical referrals during the COVID-19 global pandemic when compared to the same time period the previous year. There was no change in the rate of abdominal pain or trauma referrals. However, there was an increase in pathologies for which patients would likely visit their general practitioner or an expedited surgical outpatient appointment. These results demonstrate the persistence of the most common, classic surgical referral of abdominal pain during a pandemic, the effect of decreased GP contact and the importance of vigilance for concomitant viral infection and surgical pathology.

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All authors have no financial disclosures and no conflicts of interest.

Corresponding Author:
TM Connelly
Department of Surgery,
Tallaght University Hospital,
Dublin 24.
E-mail: Tarconnelly@rcsi.ie

References:

1. Coimbra R, Edwards S, Kurihara H, Bass GA, Balogh ZL, Tilsed J et al, European Society of Trauma and Emergency Surgery (ESTES) recommendations for trauma and emergency surgery preparation during times of COVID-19 infection. Eur J Trauma Emerg Surg 2020;17:1-6.
2. Ryan S, O'Riordan JM, Tierney S, Conlon KC and Ridgway PF, Impact of a new electronic handover system in surgery. Int J Surg 2011;9:217-20.
3. American College of Surgeons. ACS Statement on the Importance of Maintaining the Emergency Care System during the COVID-19 Pandemic 2020 [Available from: https://www.facs.org/covid-19/clinical-guidance/statement-maintaining. Accessed 20 July 2020,
4. American College of Surgeons. COVID-19 Moving Forward 2020 [Available from: https://journals.lww.com/annalsofsurgery/pages/covid-19.aspx. Accessed 20 Oct 2020.
5. Chen WK, Cheng YC, Chung YT and Lin CC, The impact of the SARS outbreak on an urban emergency department in Taiwan. Med Care 2005;43:168-72.
6. Heiber M and Lou WY, Effect of the SARS outbreak on visits to a community hospital emergency department. CJEM 2006;8:323-8.
7. Tallaght University Hospital. How Technology is helping TUH during the COVID-19 Pandemic 2020 [Available from: https://www.tuh.ie/News/How-Technology-is-helping-TUH-during-the-COVID-19-Pandemic-.html. Accessed 20 Oct 2020.

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Intensity and Frequency of Physician Interventions to Nursing Home Residents Before and During the COVID-19 Pandemic

P. Doyle, D.J. Ryan, S. Kennelly, D. O'Neill
Trinity College Dublin, Dublin, Ireland.

Abstract

Introduction

The COVID-19 pandemic has disproportionately affected nursing home residents internationally, with 62% of COVID-19 related deaths in Ireland occurring in residential care facilities. The increased care needs of nursing home residents with COVID-19 has stimulated discussions related to transfer to hospitals for higher intensities of care. However little focus has been given to calculating physician care needs of residents who remain in the nursing home, an ethical imperative for advance care planning which ensures adequate medical care for those not transferring. This study profiled the frequency and intensity of medical intervention.

Methods

Retrospective review of 51 residents' healthcare records from January-May 2020. We assessed the frequency and intensity of medical intervention, compared pre-pandemic and pandemic periods.

Results

Of 51 residents (31 women, mean age 84.1±8.2), 19 (37%) acquired COVID-19. Most residents were maximum dependency (n=32, (55%)) with over half diagnosed with dementia (n=31, 51%) and 29 (47%) with stroke. The average number of medical interventions per month for all residents almost doubled, from 89 during the pre-pandemic period to 176 during the 3-month pandemic period: Chi-squared test: p=0.02. Average monthly night-time and week-end interventions increased by 189% (28 vs 81).

Conclusion

The total frequency of physician interventions for nursing home residents increased significantly during the COVID-19 pandemic. This highlights the importance of ensuring increased access to physicians, including night-time and weekends, in pandemic planning for nursing home residents.

Keywords (MeSH): Nursing Home; Standard of Care; Physicians; COVID-19

Background

There are significant concerns world-wide over the appropriate provision of care for nursing home residents during the COVID-19 pandemic [1]. Delineation of medical standards of care in nursing homes has been poorly defined until recently in Europe, with first standards outlined in 2015 and updated in 2020 in light of the pandemic [2].The increased care needs of residents with COVID-19 during the pandemic has sparked discourse on the issue of transferring to hospitals largely on the basis of ventilatory needs, but without a significant focus on provision of physician care for needs of those who stay, important in terms of planning both for these care needs, but also for calculating the parameters for adjudicating potential transfer on the basis of intensity of medical and care needs other than those related to non-invasive and invasive ventilation.

Our nursing home provides a unique opportunity to observe this in view of both constant on-site trainee doctor cover and regular consultant overview. We sought to investigate the intensity of medical review and intervention in a fifty-bedded unit over a period of five months during the pandemic to outline the degree of resilience required in terms of medical manpower.

Methods

A retrospective cohort study was carried out on our fifty bedded nursing home unit from January 2020 to May 2020. Data was collected from residents' healthcare records – a combination of paper records and electronic nursing and multidisciplinary epicCare® web-based records. Basic demographic data included age and gender. Data was collected on level of dependence as determined by Barthel Index (independent (20/20, low (16-19), medium (11-15), high (6-10), maximum (0-5))[3]. Residents' healthcare records were assessed for diagnosis of stroke and dementia.

The frequency of medical intervention was collected from healthcare records. The interventions were divided into normal hours and out-of-hours (outside of 09.00-17.00 hours Monday-Friday) and subdivided into type of interaction – clinical review, medication review/prescription, ordering/review of investigation and discussion with nursing staff i.e. clarification of plan/update regarding status. The period of the study was divided into pre-pandemic (January-February) and pandemic period (March-May). Frequency of medical interventions was averaged over the pre-pandemic (two months) and pandemic (three months) period.

Statistical analysis was carried out using JASP, an open-source statistics program. Normally distributed data was described as means and standard deviations. Categorical variables were compared used chi squared tests.

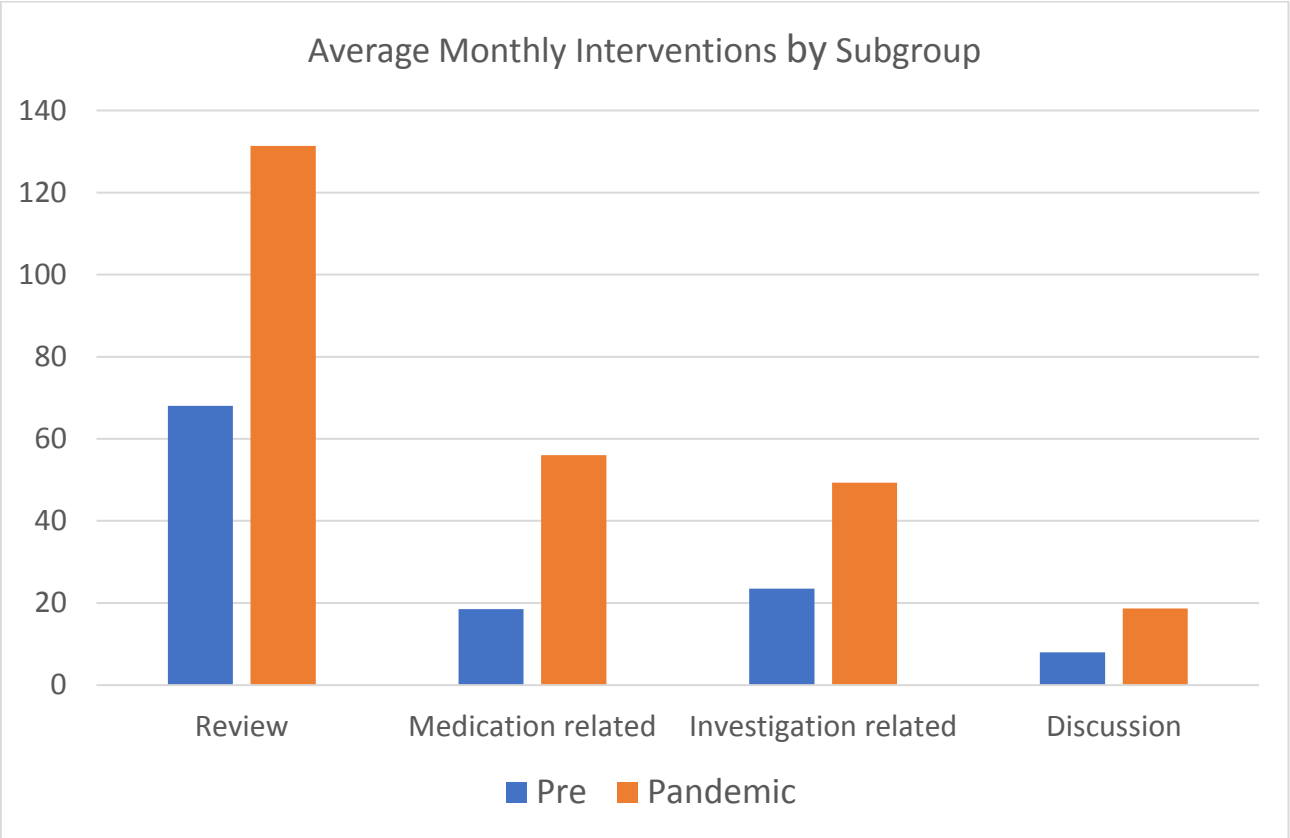
Ethical approval for this retrospective cohort study was obtained from the Tallaght Hospital/St. James's Hospital Joint Research Ethics Committee and the Human Research Health Research Consent Declaration Committee.

Results

Fifty-one residents were included in the study period of whom eleven died. The average occupancy per month during the study period was 45 residents. The mean age was 84.1 years (SD 8.2, range 68-101), and 24/51 (48%)) were women. More than half (54%) of the residents were rated as maximum dependency. Twenty-four residents (48%) had a history of stroke and 26/51 (51%) had diagnosis of dementia: clinical and/or laboratory diagnosis of COVID-19 was made for 19/51 residents (37%) during the study period.

During the total five-month study period there were 706 medical interventions with 298 out-of-hours calls. The pre-pandemic interventions totalled 171 with 56 out-of-hours calls over two months: the pandemic period had a total of 529 calls with 242 out-of-hours interventions over three months. The mean monthly total interventions were significantly higher during the pandemic period, 89 vs 176 (Chi-squared test: $p = 0.02$). The breakdown of types of interventions is demonstrated in Fig 1, with general review the most frequent intervention. The residents with a diagnosis of COVID-19 had a higher frequency of medical intervention in the pandemic period compared to residents without COVID-19, averaging 117 interventions versus 59 (Chi-squared test: $p= 0.00000002$). The residents with COVID-19 had a 189% increase in frequency of medical interventions per month during the pandemic period compared to the residents without COVID-19 who had an unchanged frequency of interventions (Chi-squared test: $p=0.0001$).

Figure 1: Types of physician intervention before and during the pandemic.



Discussion

Our study demonstrated a very significant increase in medical interventions both during the standard working week and out of hours for nursing home residents during a pandemic period. This raises significant issues for the planning of appropriate physician care and cover for a highly dependent population between and during pandemics and raises concerns that existing frameworks for provision of physician care to nursing homes are likely to be inadequate in many countries. Among the very few studies of physician engagement with nursing home care, residents received just over one GP consultation per month in the last six months of life, a considerably lower tempo than required by the residents in our study during the pandemic[4]. Concerns have been raised across the world about the capacity for general practitioners to cope with the needs of nursing home residents as well as discussion how to incentivize and develop medical cover[5-7].

Much emphasis has been placed in protocols for advance-care planning in nursing homes on avoidance of transfers to general hospitals where the levels of care and cover are reasonably standardized [8], but almost no discussion has taken place on the corresponding ethical imperative of clarifying the level of physician care that will be provided in the nursing home to support ongoing often substantial medical needs by those residents deemed "not for transfer" [9]. Clarifying the medical support in the nursing home is not only important in its own right, but also serves to help determine the boundaries for escalating care to the general hospital. When considered in terms of COVID-19 positive and negative subgroups, we determined there was no significant increase in medical interventions of the negative group, although worth noting that the emphasis on COVID-19 residents in other settings may have diverted attention from the ongoing medical needs of the COVID-19 negative residents.

Studies to date have reviewed in isolation the indications or the frequency for medical intervention in nursing homes, yet our review of the literature could not identify research which outlined both frequency and content of medical review [10-12]. When considering the optimal frequency of physician visits to nursing home residents one needs to incorporate resident and family expectations, national standards, medical complexity and acuity of residents and availability and level of expertise of providers [13], but also need to factor in the historical relative neglect of critical focus on the delivery of medical care in residential settings [14]. A 2019 European cross-sectional study quantified the frequency of physician visits to nursing homes and the physician recognition of terminal phase of illness [15]: however, it has been also noted that quantity of visits does not necessarily equate to the quality of care delivered [13].

Through studying the content of resident/physician interactions we can better plan the provision of medical care in nursing homes in the future. A strength of our study was the delineation of interactions into subgroup through observation of healthcare records. A 2011 cross-sectional survey of physicians delivering care to nursing home residents with dementia and pneumonia in the US and the Netherlands, highlighted the need for observational studies into how physicians spend their time in nursing homes [16]: we have demonstrated how this time was spent in our setting and noted a significant increase in all subgroups of interventions with clinical reviews being the most frequent type of intervention.

As the majority of medical care in nursing homes in Europe is provided for by general practitioners rather than geriatricians or physicians specialising in nursing home medicine [17], the ready availability of medical cover in our nursing home may have influenced the level of physician interventions and may limit generalisability of the study's results.

In terms of resident profile, levels of high dependency were in keeping with a previous Irish study of nursing home residents transferred to emergency departments, and the rate of diagnosed dementia in our centre was consistent with other studies of dementia in nursing homes[18 19] .

Although concerns about over-medicalisation of the facility that is a resident's home has been described as barrier to medical presence in nursing homes[20], it is likely in reality that this has been over-stated, and that under-provision is the real concern. In the midst of a global pandemic that disproportionally affects older adults, the group of vulnerable, multimorbidity and complex nursing home residents require structured and organised medical care [21].

Our study highlights the significant increase in medical care needs required during a pandemic for older adults and should be used to inform future provision of medical care to nursing home residents during and between pandemics and other natural crises.

Declaration of Conflicts of Interest:
None.

Corresponding Author:
Prof Desmond O'Neill,
Centre for Ageing,
Neuroscience and the Humanities,
Trinity College Dublin,
Trinity Centre for Health Sciences,
Tallaght University Hospital,
Dublin D24 NR0A,
Ireland
E-mail: doneill@tcd.ie

References:

1. Fallon A, Dukelow T, Kennelly SP, O'Neill D. COVID-19 in nursing homes. QJM: An International Journal of Medicine. 2020.
2. Briggs R, Robinson S, Martin F, O'Neill D. Standards of medical care for nursing home residents in Europe. European Geriatric Medicine. 2012;3(6):365-7.
3. Mahoney FI, Barthel DW. FUNCTIONAL EVALUATION: THE BARTHEL INDEX. Md State Med J. 1965;14:61-5.
4. Kinley J, Hockley J, Stone L, Dewey M, Hansford P, Stewart R, et al. The provision of care for residents dying in UK nursing care homes. Age and Ageing. 2014;43(3):375-9.

5. Raetz J, Osborn J. Nursing home practice among recent family medicine residency graduates. Fam Med. 2013;45(8):576-9.
6. Magin P, Catzikiris N, Tapley A, Morgan S, Holliday EG, Ball J, et al. Home visits and nursing home visits by early-career GPs: a cross-sectional study. Family practice. 2017;34(1):77-82.
7. Bundled Payment for Care Improvement. Consult Pharm. 2016;31(11):621-2.
8. Ouslander JG, Lamb G, Perloe M, Givens JH, Kluge L, Rutland T, et al. Potentially Avoidable Hospitalizations of Nursing Home Residents: Frequency, Causes, and Costs. J Am Geriatr Soc. 2010;58(4):627-35.
9. Gordon AL, Goodman C, Achterberg W, Barker RO, Burns E, Hanratty B, et al. Commentary: COVID in care homes—challenges and dilemmas in healthcare delivery. Age and Ageing. 2020.
10. Cohen-Mansfield J, Lipson S, Horton D. Which signs and symptoms warrant involvement of medical staff? The definition and identification of status-change events in the nursing home. Behavioral Medicine. 2003;29(3):115-20.
11. Karsch-Völk M, Lüssenheide J, Linde K, Schmid E, Schneider A. What are the Prerequisites for a Successful Cooperation between Nursing Homes and Physicians?-Results of a Mixed-methods Cross-Sectional Study in Bavarian Nursing Homes. Gesundheitswesen (Bundesverband der Arzte des Offentlichen Gesundheitsdienstes (Germany)). 2016;78(11):742-8.
12. Burton LC, German PS, Gruber-Baldini AL, Hebel JR, Zimmerman S, Magaziner J, et al. Medical Care for Nursing Home Residents: Differences by Dementia Status. Journal of the American Geriatrics Society. 2001;49(2):142-7.
13. Wong RY, Katz PR. Physician visits at the nursing home: Does more mean better care? Journal of the American Medical Directors Association. 2019;20(6):653-4.
14. O'Neill D. Reflecting on our perceptions of the worth, status and rewards of working in nursing homes. Oxford University Press; 2018.
15. Oosterveld-Vlug M, Pasman H, Ten Koppel M, van Hout H, van der Steen J, Moore DC, et al. Physician visits and recognition of residents' terminal phase in long-term care facilities: findings from the PACE cross-sectional study in 6 EU countries. Journal of the American Medical Directors Association. 2019;20(6):696-702. e1.
16. Helton MR, Cohen LW, Zimmerman S, van der Steen JT. The importance of physician presence in nursing homes for residents with dementia and pneumonia. Journal of the American Medical Directors Association. 2011;12(1):68-73.
17. Fitzpatrick D, Samúelsson Ó, Holmerová I, Martin FC, O'Neill D, On behalf of the Special Interest Group for Long-Term Care of the E. Who are the main medical care providers of European nursing home residents? An EuGMS survey. European Geriatric Medicine. 2019;10(1):135-9.
18. Briggs R, Coughlan T, Collins R, O'Neill D, Kennelly SP. Nursing home residents attending the emergency department: clinical characteristics and outcomes. QJM: An International Journal of Medicine. 2013;106(9):803-8.
19. Cahill S, O'Nolan C, O'Caheny D, Bobersky A. An Irish national survey of dementia in long-term residential care. Dublin: Dementia Services Information and Development Centre. 2014.
20. Stone RI. Physician involvement in long-term care: bridging the medical and social models. Journal of the American Medical Directors Association. 2006;7(7):460-6.
21. O'Neill D, Briggs R, Holmerová I, Samuelsson O, Gordon AL, Martin FC, et al. COVID-19 highlights the need for universal adoption of standards of medical care for physicians in nursing homes in Europe. European Geriatric Medicine. 2020.

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Addressing Health Literacy for Improved Outcomes: A Focus on Pregnancy

S.L. Killeen[1]*, I. Browne[1, 2]*, A.A. Geraghty[1], S. Doyle[2], F.M. McAuliffe[1] *co-first author

1. UCD Perinatal Research Centre, School of Medicine, University College Dublin, National Maternity Hospital, Dublin, Ireland.
2. School of Biological and Health Sciences, College of Science & Health, Technological University Dublin – City Campus, Kevin Street, Dublin.

Abstract

Health literacy influences how messages are received and understood by patient or population groups. In Europe, incomprehension of health information is common, affecting the ability of many individuals to make informed decisions about their health. In addition, incomprehension of health information may impact the effectiveness of interventions and subsequently, health outcomes. In this article, we illustrate the importance of health literacy in the context of maternity services, a time during which, health interventions affect both maternal and child health. Through this, we suggest that health literacy should be recognised in healthcare settings as a tool to facilitate behaviour change. To support this, we provide practical recommendations for clinicians and researchers on how to address aspects of health literacy in their practice.

Introduction

Health literacy has been recognised as a tool to empower individuals and whole communities to achieve better health and wellbeing. Communication influences how messages are received and understood by the public, patients, and service users. Variance in the type and quality of communication in healthcare impacts patients' knowledge and awareness of health issues. Healthcare professional (HCP) communication may influence the effectiveness of interventions that require behaviour change. Addressing communication as an integral aspect of healthcare is therefore valuable [(1)]. Addressing health literacy is especially important in antenatal care during which health messages can impact both maternal and child health. Maternal behaviours influence their own health and the health of their child throughout pregnancy, infancy, and beyond. The effect of this can be seen across multiple generations, whereby fetal programming and epigenetic changes set children on a health trajectory and influence their lifetime burden of disease [(2)]. In maternity services, HCPs have a unique opportunity to influence population health and reduce global disease through the health messages they provide to women of reproductive age. The aim of this article is to briefly discuss some of the evidence for addressing literacy and health literacy with patients and provide practical tips for enhanced healthcare communication in written and verbal format, in the context of maternity services.

Health literacy

Health literacy includes the ability to understand health information, to use it in decision making, and to apply knowledge to everyday life. The literacy levels of patients must be considered by HCPs as the efficacy of communication may be limited without a mutual understanding between the HCP and their patient. To achieve this, HCPs must communicate in a clear and concise manner that is at a level which is appropriate to meet the needs of their target audience. European statistics (Table 1) show that incomprehension of healthcare information is common across a variety of health services, affecting almost half of individuals [(3)]. This may impact the ability of some patients to make informed decisions about their health and follow health advice. A 2018 study by Juul et al for example, showed that health literacy was positively associated with compliance rates in patients following dietary recommendations to treat type 2 diabetes [(4)]. One factor influencing an individuals' ability to engage with health information is literacy level. In many countries, literacy difficulties are common, affecting anywhere from one in ten to one in five individuals [(5)].

Table 1. Health Literacy in the European Union.

Health Literacy Statistics
47% of adults find reading about health information challenging
41% of adults cannot weigh up advantages and disadvantages when comparing medical treatments
37% would not know when to seek clarification from a second doctor
35% find it challenging to interpret information on a food label
32% would not know how to seek health information on how to manage their mental health

Data from Moreira, 2018 [(3)]

Health literacy in pregnancy

The antenatal period presents an ideal opportunity to support women to adopt a healthier lifestyle through diet, exercise and behavioural changes [(6)]. Pregnancy has been characterised as a 'teachable moment' in a woman's lifecycle, during which women have greater contact with health professionals and may also have increased motivation for behaviour changes that can optimise outcomes for them and their children [(6)]. Increased maternal weight for example, increases the risk of pregnancy complications such as gestational diabetes, pre-eclampsia and preterm birth [(7)]. Diet and physical activity are the cornerstone of weight management during pregnancy; however, these factors depend on the individual to understand and implement the changes required. There have been limited interventions to date that focus specifically on health literacy in pregnancy [(8)]. A recent systematic review of available studies however, found that interventions addressing health literacy in pregnancy improved women's knowledge surrounding their pregnancy, including food selection and were associated with reduced levels of anxiety during the antenatal period [(8).] A study by Solhi et al 2018 found that a HCP-facilitated, health literacy-based educational intervention, including group educational talks, practical exercises, and counselling, lead to positive behavioural change in relation to nutrition, physical activity, dietary supplements, and prenatal care practices [(9)].

Health literacy in in research

Health literacy and communication may also influence effectiveness in research. A study by Kim et al in 2015 compared the comprehension of participants after looking at a standard and a simplified version of the same consent form. The participants that received the simplified consent form illustrated greater comprehension of the study document compared to those who received the standard version across all levels of health literacy [(10)]. Accessible and effective communication helps to ensure the participant has a full understanding of the study protocol and instructions; a criterion essential to comply with basic ethical standards in research. Lower health literacy has been shown to be a predictor of incomplete research follow up. It can therefore be reasonably hypothesised that addressing the literacy needs of the population may positively influence the outcomes of research studies and completion rates [(11)].

Implications for practice

A straightforward way to improve health care communication includes considering the readability of a health document. Readability can be improved by reducing the number of lengthy sentences, keeping paragraphs short and swapping complex words or medical "jargon" for a simpler synonym. Where medical "jargon" is unavoidable, an accompanying explanation in lay terms can be offered [(3)]. Readability tools may support HCPs to assess the accessibility of their resources. The readability formulae are based on the average sentence length of a piece of text and the average number of syllables per word within the same piece of text. The Flesch-Kincaid Reading Ease ranges from 0 to 100 and a score of 70 or below indicates that the readability may not be appropriate for some levels of literacy. The Flesch-Kincaid Reading Grade Level is based on the school system in the United States. A typical target score for health information documents is Grade level of 8 which equivalates to the reading level of a 13-15 year old and this could be altered depending on the unique requirements of the patient group [(12)].

It is also important to use an appropriate level of communication when explaining medical terms, processes, and treatments verbally. In some studies, verbal communication has been reported as the primary means of obtaining nutrition knowledge during pregnancy [(13)]. Simple improvements such as using plain language; encouraging questions, and checking for comprehension of the intended message may help [(14)]. Public Patient Involvement (PPI) is a process in research which can be defined as "research being carried out 'with' or 'by' member of the public rather than 'to', 'about' or 'for' them" [(15)]. Through PPI, health communication approaches can be tested and adapted in partnership with the target audience. The co-creation of verbal or written content between the HCP and a lay person from the target population, in this case pregnant women or women who have previously been pregnant, can help develop strong health communications which project the intended message from the HCP aiding positive health outcomes.

Conclusion

Pregnancy is a critical timepoint for population health and behaviours in the antenatal period can impact later maternal outcomes in addition to the health of two or more future generations.

Approaching clinical research and practice with literacy in mind may improve success in interventions. Determining baseline literacy levels and taking basic steps such as reviewing reading level of written resources may improve the experience of women receiving antenatal care or taking part in pregnancy research studies. Health literacy should be recognised in the healthcare setting as a tool to help form a positive social interaction by empowering an individual to strive for a better health and wellbeing.

Corresponding Author:
Fionnuala M. McAuliffe
UCD Perinatal Research Centre,
School of Medicine,
University College Dublin,
National Maternity Hospital,
Dublin,
Ireland.
E-mail: Fionnuala.mcauliffe@ucd.ie

References:

1. National Institutes of Health. Making Health Communication Programs Work. Http://WwwCdcGov/Tobacco/Campaign/Tips/About/Campaign-OverviewHtml [Internet]. 2013;15–51. Available from: http://www.cancer.gov/cancertopics/cancerlibrary/pinkbook/page5
2. Rodriguez-Caro H, Williams SA. Strategies to reduce non-communicable diseases in the offspring: Negative and positive in utero programming. J Dev Orig Health Dis. 2018;9(6):642–52.
3. Moreira L. Health literacy for people-centred care: Where do OECD countries stand? OECD Heal Work Pap [Internet]. 2018;(107). Available from: https://dx.doi.org/10.1787/d8494d3a-en
4. Juul L, Rowlands G, Maindal HT. Relationships between health literacy, motivation and diet and physical activity in people with type 2 diabetes participating in peer-led support groups. Prim Care Diabetes [Internet]. 2018;12(4):331–7. Available from: http://dx.doi.org/10.1016/j.pcd.2018.02.005
5. OECD. Education GPS [Internet]. [cited 2020 Mar 30]. Available from: https://gpseducation.oecd.org
6. Phelan S. Pregnancy: a “teachable moment” for weight control and obesity prevention. Am J Obstet Gynecol. 2010;202(2):135.e1-135.e8.
7. Santos S, Voerman E, Amiano P, Barros H, Beilin LJ, Bergström A, et al. Impact of maternal body mass index and gestational weight gain on pregnancy complications: an individual participant data meta-analysis of European, North American and Australian cohorts. BJOG An Int J Obstet Gynaecol. 2019;
8. Zibellini J, Muscat DM, Kizirian N, Gordon A. Effect of health literacy interventions on pregnancy outcomes: A systematic review. Women and Birth [Internet]. 2020;(2019):1–7. Available from: https://doi.org/10.1016/j.wombi.2020.01.010

9. Solhi M, Abbasi K, Azar FEF, Hosseini A. Effect of health literacy education on self-care in pregnant women: A randomized controlled clinical trial. Int J Community Based Nurs Midwifery. 2019;7(1):2–12.
10. Kim EJ, Kim SH. Simplification improves understanding of informed consent information in clinical trials regardless of health literacy level. Clin Trials. 2015;12(3):232–6.
11. Leak C, Goggins K, Schildcrout JS, Theobald C, Donato KM, Bell SP, et al. Effect of Health Literacy on Research Follow-up. J Health Commun. 2015;20(1):83–91.
12. Jindal P, Macdermid JC. Assessing reading levels of health information: Uses and limitations of flesch formula. Educ Heal Chang Learn Pract. 2017;30(1):84–8.
13. Lobo S, Lucas CJ, Herbert JS, Townsend ML, Smith M, Kunkler E, et al. Nutrition information in pregnancy: Where do women seek advice and has this changed over time? Nutr Diet. 2019;(September):1–10.
14. Communications Division HSE. Guidelines for Communicating Clearly using Plain English with our Patients and Service Users Guidelines for Communicating Clearly in Plain English with our Patients and Service Users [Internet]. 2017. Available from: www.hse.ie/communicatingclearly
15. Health Research Board. Public and patient involvement in research [Internet]. [cited 2020 Jul 3]. Available from: https://www.hrb.ie/funding/funding-schemes/public-and-patient-involvement-in-research/

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Further Reflections on the Report of the Mother and Baby Homes Commission

A. Nicholson - RCSI Bahrain

I was very moved by your reflections (IMJ Volume 114 January 2021) on the Commission Report [1,2] which was published in early January 2021 and wish to add some reflections of my own in terms of its contents. This Report is not for the faint-hearted as it spans some 2,865 pages and covers a period of 76 years (1922 to 1998) where some 56,000 infants were born to unmarried mothers and were accommodated in Mother and Baby or County Homes [1]. This is exactly the number of infants currently born annually in the Republic of Ireland. The Report, apart from its longevity is far from an easy read and reflects a dark period in Irish history. In my reading of the Report I tried to understand the prevailing culture, why no one questioned the practice and why there was so little national discourse concerning pregnancy outside marriage. Many lives were utterly blighted by pregnancy outside marriage, many infant lives were lost, and very little support was evident for these unfortunate young mothers. By and large, fathers of the children took no responsibility and, in many cases, utterly denied any involvement. The girl in question was often shunned by both her family and community and essentially sent to a far distant Mother and Baby Home or County Home (generally former workhouses) to deliver her infant and often spent a considerable period in 'rehabilitation' thereafter.

Prevailing attitudes

Firstly, I was interested in prevailing attitudes at the time. From my reading, the prevailing public attitude was not one of compassion but rather one of both disappointment and contempt. These emotions applied equally to the 'fallen' mother and her illegitimate (what an awful word!) child. In some cases, the spectre of intrafamilial child sexual abuse and rape loomed large but was not addressed in the vast majority of cases. There were Homes for 'first offenders' and separate homes for those who were having a second or third child and efforts were made to ensure that the former were kept apart from the latter.

Some frightened girls emigrated to England to protect their privacy but found conditions there to be equally tough. Quotes such as 'you are here for your sins 'and 'you need to shift her out of here' do sadly reflect the prevailing attitude over many years. Unmarried mothers were not welcome in county hospital maternity units and thus had to deliver their infants in either a Mother and Baby Home or, if poor, a County Home. At least unmarried mothers in Dublin could deliver their infant in a properly resourced maternity hospital with trained midwives and obstetricians and thereby had much lower mortality rates. The main focus while in the Home, was to reform the girl first and thereby prevent subsequent pregnancies out of wedlock. Those who could afford to pay for their confinement, were able to leave earlier after the delivery of their infant but those who were 'public patients' often stayed for over a year before leaving the Home.

International comparisons

The Commission Report provides some interesting reflections of experiences in both Scotland and the Netherlands during the same period of time. There were many similarities in terms of living conditions and overcrowding but breastfeeding was very much encouraged in the Netherlands and thereby greatly improved infant survival. Scotland is very interesting in that the prevailing attitude in the Mother and Baby Homes was not punitive and, after delivery, mothers were free to leave at any time. Mothers tended to stay for usually 6 weeks pre-delivery and about 3 months post-delivery. The societal attitude in Scotland was more traditional along the East Coast but, in most parts of Scotland, illegitimate children were absorbed into the extended family without prejudice. This striking difference is highly noteworthy and is reflective of an infinitely more negative view of pregnancy outside marriage in Ireland over an extended period of time.

Infant mortality

Without question, the most striking and disturbing element of the whole report is the appallingly high infant mortality rates. The overall infant mortality rate approached 15%. Of course, the years in question were years where infant mortality in the community at large was very high especially in poorer families but the mortality rates of infants dying in Homes were off the scale. In Bessborough, for instance, in 1943, 75% of infants born that year died and the high infant mortality was way in excess of what it should have been at the time. As a paediatrician, I explored the likely reasons for these appalling figures and was not at all surprised that the high mortality related to a number of factors. Firstly, a number of the staff were unqualified and medical back up was patchy to say the least. Childbirth is a very risky journey for the infant and lack of skilled attendance at birth will significantly worsen outcomes.

Interestingly, infants of mothers delivered in maternity hospitals in Dublin had significantly lower infant mortality rates supporting the view that expert attendance at delivery was a factor. Poor hygiene and overcrowding, poor sanitation and the absence of wash basins were other factors leading to higher rates of infectious illness especially gastroenteritis. There were intermittent outbreaks of diphtheria and typhoid fever in the Homes. Another key factor was that breastfeeding was discouraged and thus infants were dependent on formula milk and this posed significant additional risks.

When we look back on this period, there are very few shining lights, but one is Dr Noel Browne who did appoint a sub-committee to look at conditions in the Homes. The remit of this group was to look at the quality of infant milk being offered, to stress the absolute importance of breastfeeding and to investigate why so many of the infants were significantly underweight and some even marasmic. Inspection reports over many years were very critical of conditions in the Homes. After the review, the Department of Health insisted on the appointment of qualified midwives and nursing staff.

In truth, however, the real change in infant mortality followed the Adoption Act (introduced in 1953) and there is no doubt that this Act did more to reduce mortality rates amongst infants born in Homes than any other factor. After the Act was passed, infant mortality dropped dramatically and mirrored the infant mortality in the community. From 1967, over 97% of illegitimate infants were adopted. As Minister for Health , Dr Noel Browne tried unsuccessfully to introduce the *Mother and Child Scheme* which was aimed at supporting mothers with young children but this was blocked by the combined forces of the Catholic Hierarchy and the medical establishment who feared a loss of remuneration . Both should hang their heads in shame that they successfully blocked this very progressive and far-sighted legislation.

Vaccine trials

We know that vaccination of young infants is one of the great advances of the last 50 years (if not the greatest) that has greatly improved survival. Infections such as diphtheria, polio, whooping cough, measles and many different forms of meningitis have all but disappeared [5]. This has led to marked improvements infant and under 5 survival and has ensured that we have never had healthier children. Vaccines (including newly launched vaccines against COVID 19) can only be introduced following properly conducted and appropriately consented clinical trials. Back in Ireland of the 60's and 70's, these principles were not adhered to in terms of vaccine trials involving infants resident in Homes where a group of senior investigators conducted vaccine trials over many years.

In total seven vaccine trial were conducted, mainly in the 1960's and 1970's and led by senior academics from University College Dublin. No import licenses for the vaccines were evident, no consent from mothers sought and some of the results were not even published. These practices were far removed from accepted ethical principles now or at any time and the trials did generate public disquiet but again no sanction. Again, not one of our proudest moments as a medical profession. Some unconsented milk formula trials also took place in one of the Homes and again this practice is to be remembered with shame.

One of the great risks of writing such a long Commission Report is that most will just look at the executive summary and draw a number of bottom line conclusions. Without question these are both the overall negative and intolerant attitude at the time in relation to pregnancy outside marriage and the striking infant mortality relating to the poor conditions in the Homes.

Although harrowing at times, I am glad I read through the document in total. It reflects a dark period in Irish recent history where the equivalent of the current annual birth rate were consigned to being born in very adverse conditions which greatly increased their chances of dying in infancy and consigned both the mothers and infants to a lifetime of additional challenges . As a nation we must all share in the responsibility for this period. It truly reflected the myopic Ireland of that time where the greatest shame was being pregnant out of wedlock and society shunned both the mothers and their innocent infants leading to a very different future for both.

Sadly, the prevailing attitude of our society was of both contempt and disappointment towards pregnancy outside of marriage regardless of how it happened. The women were regarded as 'fallen' and their children carried additional burdens throughout their lives. Early on some were coerced into having their infant adopted and some were boarded out or placed into foster care. Foster care placements were at times problematic. Having been born myself in the late 1950's, I cannot truly imagine my fate if my mother happened to be unmarried at the time.

Current relevance of this report

During the past 40 years there have been many great success stories in paediatrics and child health with a very significant drop in under 5 mortality rates in developed countries across the world [3]. Those countries who invest heavily in reducing social inequities and supporting families (in particular the Nordic countries and Japan) have the lowest under 5 mortality rates [4]. Conversely the United States for a variety of reasons (not least unequal access to healthcare) has a relatively high under 5 mortality rate despite being one of the wealthiest countries in the world.

Therefore, in Sweden and Norway, of a thousand infants born, 997 would be expected to reach their fifth birthday – a stunning achievement. Ireland is right up there with now 996 of 1,000 births reaching their fifth birthday. In Ireland, however, we still have poverty and deprivation, social inequity, homelessness and refugee children enduring lives in sub-standard accommodation in direct provision centres. We again have a choice to ignore the plight of the less fortunate or rather choose to end homelessness affecting children and integrate refugee families into our communities.

Ireland today is a modern open democracy not without failings. This Report points in forensic detail to a dark past and we need to look to an inclusive and supportive society for the less strong and vulnerable. I do believe we are on the road in that direction but still have some distance to travel. Let this be the lasting legacy of those less fortunate portrayed so vividly in this Report.

Corresponding Author:
Professor Alf Nicholson
Head of School and Vice President for Academic Affairs
RCSI Bahrain
Email: anicholson@rcsi.com

References:

1. The Mother and Baby Homes Commission of Investigation Final Report January 2021
2. Murphy JFA .The Mother and Baby Homes Commission of Investigation Final Report *IMJ* 2021 ; 114: 1: 231 .
3. The future of child health services: New models of care (2016) and International comparisons of health and wellbeing in early childhood (2018) www.nuffieldtrust.org.uk
4. Cheng TL, et al. Seven great achievements in Paediatric Research over the past 40 years. *Paediatric Research* 2016; 80:3:330-337.
5. Two centuries of immunisation in the UK (part II).Lang S, et al. *Arch Dis Child* 2020 ; 105:3:216-222

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The Role of Ambulatory EEG in the Investigation of Paroxysmal Events

F. Al Bayati, C. McGrane, A. Sweeney, Y. Langan

Department of Clinical Neurophysiology, St. James's Hospital, James's St., Dublin 8.

Abstract

Aim

To examine how frequently 24-hour ambulatory EEG (AEEG) and 24-hour home video-telemetry provided useful information in clarifying the diagnosis.

Methods

We retrospectively reviewed 47 studies performed by the St. James's neurophysiology department on patients referred by the neurology department.

Results

Events were captured in 34/55 patients (62%). Epileptic events were recorded in 10/34 (29%) and the non-epileptic events in 24/34 (71%). 42 (76%) of the patients had epilepsy, 32% of their events captured were epileptic. Events were captured in seven out of eight home video-telemetry studies of which 57% were epileptic events.

Conclusion

In conclusion, both 24-hours AEEG and home video-telemetry are valuable tools for investigating paroxysmal events of uncertain nature, particularly in patient with learning disability.

Introduction

Electroencephalography (EEG) is important in the investigation of seizures. It assists in diagnosing epilepsy and in classifying the underlying epileptic syndrome. EEG's yield can be increased if accompanied by sleep deprivation [1].

When uncertainty in diagnosis remains, prolonged video-EEG provide an effort to capture an event and clarify its nature, it is the gold standard [2]. Such monitoring performed as an inpatient, is however only available in some centers, is expensive and inconvenient for some patients [4].

The Kings College group has pioneered the use of home video-telemetry in the UK and found it to be both cost and diagnostically effective[5]. Since 2009, the department of clinical neurophysiology in St James's Hospital in Dublin has undertaken 24-hour AEEG and more laterally since 2017 it has the capacity to carry out 24-hour home video-telemetry monitoring.

The purpose of this work was to examine how frequently 24-hour AEEG and 24-hour home video-telemetry provided useful information in clarifying the diagnosis.

Methods

Twenty-four-hour AEEG has been performed in the St James's Hospital, department of clinical neurophysiology from 2009 to 2019. And since 2017 we have been able to perform 24-hour home video-telemetry. All the patients were referred from St. James's neurology department. XLTEK/Natus AEEG system was used for all patients, using the standard 10-20 electrode placement. The test duration ranged from 17 to 27 hours.

All patients had at least previous routine EEG in the department before proceeding to the test. Instructions were given to patients and their carers on how to push the event button and fill in the event diary. The AEEG settings' and disconnection were within the Department of Clinical Neurophysiology whereas in the case of 24-hour video-telemetry recordings, physiologists visited the patients' home both for set-up and disconnection. The camera of 24-hour video-telemetry was set up in a fixed location deemed to be most appropriate. Recordings were reviewed both by the physiologist who had undertaken the study and by a consultant in Clinical Neurophysiology. The number of studies where events were captured was determined.

Results

We reviewed the results of 55 individuals referred for 24-hour AEEG or 24-hour home video-telemetry. There were 36 (65%) female and 19 (35%) male with a mean age of 37 years, (range 17-93).

All the patients tolerated the test and no technical issues such as electrode loss were encountered. Forty-two patients had an existing diagnosis of epilepsy (76%) and were being treated with anti-epileptic medication.

The majority of patients were referred so the nature of their events could be clarified. 3/55 (5.45%) had a learning disability.

In total, 233 events were captured. Events were captured in 34 out of 55 patients (62%). The Fig.1(A) illustrates the nature of the events. 10/34 patients had events that were epileptic in nature (29%) and 24/34 (71%) had no EEG correlate Fig.1(B). Of the 42 patients with epilepsy 28 (66%) had events of which 32% were epileptic in nature and 68% were non-epileptic.

Of the 20 patients with no events captured, seven had less than two events per week preceding the study.

Home video-telemetry recording was employed in 8/55 patients; three of them had history of nocturnal events. Paroxysmal events were captured in 7/8 patients (88%), 4 of the 7 were epileptic (57%).

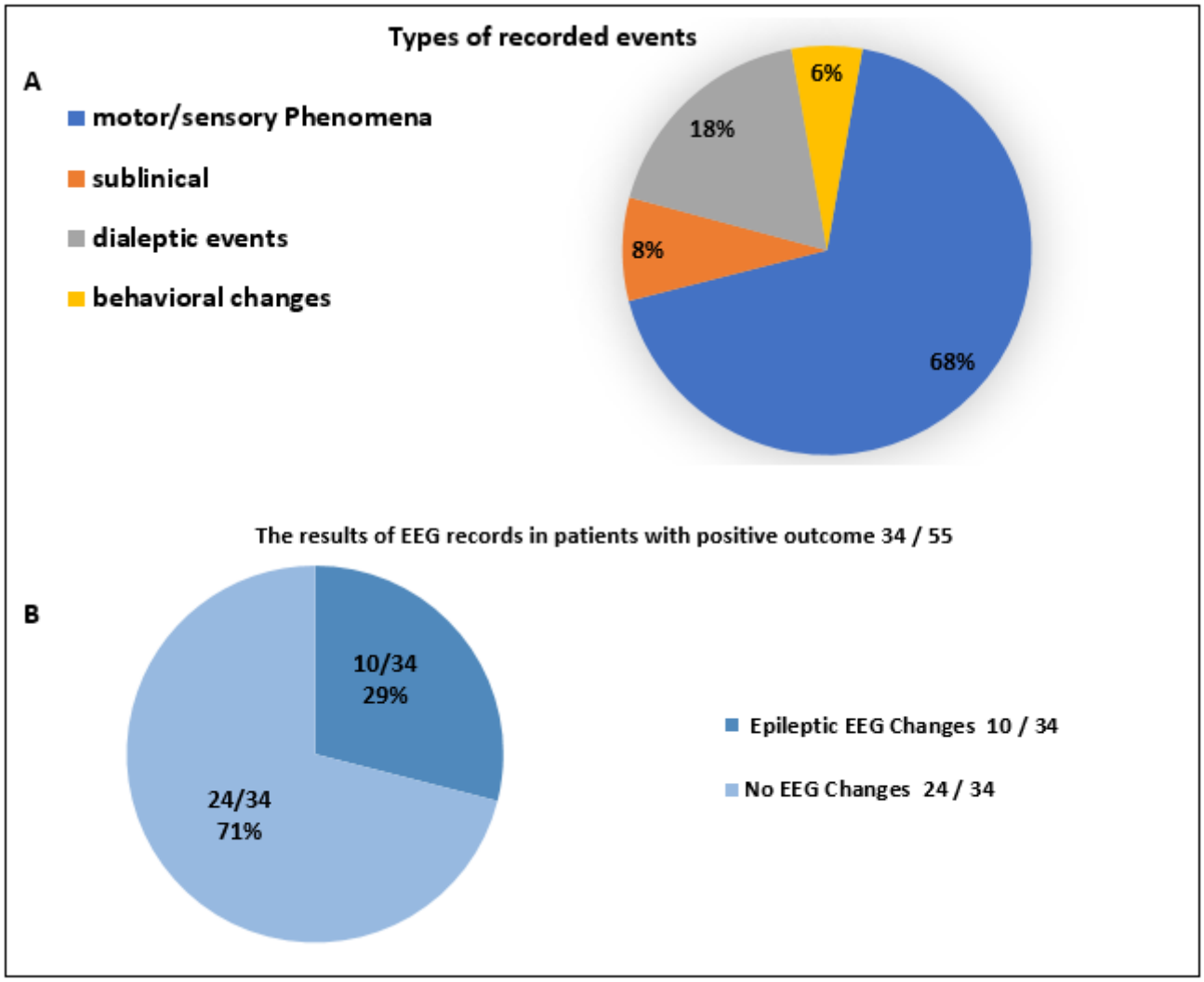

Fig 1: (A) Showa the types of events recorded. **(B)** Shows the percentage of patients who had epileptic changes in the EEG record during their events (dark section).

Discussion

At least one event was captured in 62% of cases, providing valuable information on the nature of the events captured. We considered whether having less than two events weekly before the study might influence the chances of capturing an event, but this factor was not statistically significant (Fisher's exact test P>0.5). It is notable that non-epileptic events were captured in those with an existing diagnosis of epilepsy and it is will well recognized that a proportion of those with epilepsy will also have non-epileptic events and that the diagnosis of epilepsy can be a challenge[5,6].

Our total outcome was comparable to other studies[9,10]. In Faulkner et al [9] study, 4-5 days of recording had been employed to prove the utility of prolonged outpatient EEG recording in seizures' investigations, however, the total yield was only 6% higher than our results.

The implementation of video recording with the AEEG increased the yield of the test and provided more information about the investigated events. Our home video-telemetry recordings captured events in 88% of subjects, which is comparable with the (90%) outcome of Alix JJ et al[10] when long term EEG was performed on children between 3 to 16 years. Additionally, the implementation of video records aided in the interpretation of AEEG[4].

In conclusion, both 24-hours AEEG and 24-hours home video-telemetry are valuable tools for investigating paroxysmal events of uncertain nature and may be particularly useful in certain groups of patients with learning disability who may not tolerate inpatient admission.

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

Corresponding Author:
Farook Al Bayati
St. James's Hospital,
James's St.,
Dublin 8,
D08 NHY1.
E-mail: farooqalbayati@gmail.com

References:

1. Leach JP, Stephen L J, Salveta C, Brodie MJ. Which electroencephalography (EEG) for epilepsy? The relative usefulness of different EEG protocols in patients with possible epilepsy . J Neurol Neurosurg Psychiatry. 2006 Sep; 77(9): 1040-1042.
2. Kandler RH, Ponnusamy A, Wragg C. Video ambulatory EEG: A good alternative to inpatient Video telemetry? Seizure 2017 Apr; 47: 66-70.
3. Goodwin E, Kandler RH, Alix JJP. The value of home video with ambulatory EEG: A prospective service review. Seizure 2014 Jun; 23(6): 480-482.
4. Brunnhuber F, Amin D, Nguyen Y, Goyal S, Richardson MP. Development, evaluation and implementation of video-EEG telemetry at home. Seizure 2014; 23(5):338-343.
5. Mari F, Di Bonaventura, Vanacore N, Fattouch J, Vandano AE, Egeo G, Bernadelli A, Manfredi M, Precipe M, Giallonardo AT. Video-EEG study of psychogenic nonepileptic Seizures: Differential Characteristics in Patients with and without Epilepsy. Epilepsia 2006; 47: 64-67
6. Oto M. The misdiagnosis of epilepsy: Appraising risks and managing uncertainty. Seizure 2017; 44: 143-146.
7. Kuo J, Lee-Messer C, Le S. Optimal recording duration of ambulatory EEG (aEEG). Epilepsy Res. 2019 Jan; 149: 9-12.

8. Dash D, Hernandez-Ronquillo L, Moien-Afshari F, Tellez-Zenteno JF. Ambulatory EEG: a cost-effevtive alternative to inpatient video-EEG in adult patients. Epileptic Disord. 2012 Sep; 14(3):290-297.
9. Faulkner HJ, Arima H, Mohamed A. The utility of prolonged outpatient ambulatory EEG. Seizure 2012 Sep; 21(7): 491-495.
10. Alix JJP, -Kandler RH, Mordekar SR. The value of long-term EEG monitoring in children: A comparison of ambulatory EEG and video telemetry. Seizure. 2014 Sep;23(8): 662-665.

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Increase in Community Acquired S. aureus Bloodstream Infection Associated with the Sars-Cov-2 Public Health Emergency

E. Houlihan[1], B. Hanahoe[1], A. Vellinga[2], M. Cormican[1]

1. *Galway University Hospital, Newcastle Rd, Galway, Ireland.*
2. *School of Medicine, National University Ireland, Galway, Ireland.*

Abstract

Aim

In March 2020, a public health emergency related to COVID-19 was declared in Ireland, resulting in certain healthcare restrictions. We hypothesised, in the microbiology laboratory in Galway University Hospital (GUH), that the national lockdown would impact results from our blood culture service.

Methods

A surveillance review of all blood cultures received in the microbiology laboratory in GUH for the six-month period March-August 2020 was performed and compared to the same time-period for the preceding four years. Patient demographics and blood culture isolates were collected and reviewed.

Results

From March to August 2020, 5,753 blood culture sets were tested, of which 6.1% (n=351) were positive; a lower positivity rate than in previous years. In 2020, 46 S. aureus isolates were detected in blood cultures (representing 13.1% of all 351 positive blood cultures), which was significantly higher than 2016-2019.

Conclusion

The higher number of reported S. aureus bloodstream infections in the SARS-CoV-2-era was unexpected.

Introduction

In March 2020, a public health emergency related to SARS-CoV-2 was declared in Ireland. This was associated, in the initial period, with significant limitations to accessing certain healthcare services including access to non-emergency hospital care. Other respiratory virus infections, such as influenza, are associated with secondary bacterial infections that carry a high rate of morbidity and mortality[1].

Therefore, it was of interest to assess changes in laboratory-confirmed bacterial bloodstream infections associated with the pandemic.

In this context, we performed a review of the blood culture service delivered by the microbiology laboratory in Galway University Hospital (GUH) for the six-month period March-August 2020 (corresponding to the first six months of the public health emergency), and compared this to the same time-period for the preceding four years. We hypothesised that significant positive cultures (for example *Staphylococcus aureus*, gram-negative organisms) would represent a higher proportion of all cultures because of reduced presentations with less severe febrile illnesses, and delayed presentations with serious infections related to patient reluctance to attend.

A retrospective study conducted in a network of New York City Hospitals reported an increase in blood culture utilisation of 34.8% between January and March 2020, and also reported a lower rate of bacteraemia in SARS-CoV-2 positive patients(3.8%) when compared to patients without a diagnosis of SARS-CoV-2 infection(8%)[2]. Additionally, an observational case series across two New York City Hospitals reported 42 cases of *S. aureus* bacteraemia in patients admitted with SARS-CoV-2 infection from March to May 2020[3]. This publication reported a 14-day mortality rate of 54.8% and a 30-day mortality rate of 66.7% in patients with *S. aureus* bloodstream infection with SARS-CoV-2.

Methods

Data was collected on the blood culture numbers and isolates (significant vs non-significant) and patient demographics.

For this survey, a blood culture set was considered as an individual blood sample. This is typically two bottles from an adult (aerobic and anaerobic) and one from a child. The blood culture system in use is the Bactec FX Blood Culture System. To avoid bias from duplicate isolates, only one culture per patient, pathogen and clinical episode was recorded. To test the significance of differences between groups, we performed a chi-square test.

Results

From March to August, 5,753 blood culture sets were tested, of which 6.1% (n=351) were positive. This was low compared to 2016 to 2019 respectively; 7.8% (n=520/6696), 7.2% (n=468/6495), 7.2% (n=482/6708), 6.7% (n=432/6488). The difference was statistically significant (chi square, $p<0.05$) for all years except 2019, and significant when compared to the mean of the previous years($p=0.02$). The results are demonstrated in table 1.

From March to August 2020, 46 *S. aureus* isolates were detected in blood cultures (representing 13.1% of all 351 positive blood cultures). This was significantly higher compared to 6.9% (n=36/520), 5.8% (n=27/468), 7.9% (n=38/482), 6.9% (n=30/432) from 2016 to 2019 respectively (chi square, $p<0.05$). This increase was accounted for by an increased number of community-acquired *S. aureus* bloodstream infections (BSI) (n=22 compared with 11, 10, 12, 5; 2016-2019). The number of hospital-acquired *S. aureus* BSI (n=24) remained unchanged.

A significant male preponderance for *S. aureus* BSI was observed in all years (77.8%, 59.3%, 81.6%, 70% and 65.2%; 2016-2020). There was no statistically significant increase in the percentage of hospital-acquired/healthcare-associated *S. aureus* bacteraemia secondary to line infections (peripheral/central venous cannulae) between years.

Gram-negative organisms were isolated in 40.2% of positive blood cultures (n=141), and coagulase-negative staphylococci in 26.2% of positive blood cultures (n=92). This was similar to previous years (when compared to the mean of the previous years; p not significant, p=0.3 and p=0.16 respectively).

	2016	**2017**	**2018**	**2019**	**2020**
Total number of blood cultures (BC) sent to lab	6696	6495	6708	6488	5753
Total number of positive blood cultures	520	468	482	432	351
%positive BCs of all BCs sent	7.8%	7.2%	7.2%	6.7%	6.1%
p-value compared to 2020	0.0003	0.0159	0.0143	0.2063	
Total *Staphylococcus aureus*	36	27	38	30	46
%*S. aureus* of all positive BCs	6.9%	5.8%	7.9%	6.9%	13.1%
p-value compared to 2020 (Chi-square)	0.0022	0.0002	0.0176	0.000037	
Gram-negative bacteria	165	175	176	163	141
%gram-negative of all positive BCs	31.73%	37.39%	36.51%	37.73%	40.17%
Yeasts	8	9	8	6	6
Coagulase-negative staph	181	163	147	132	92
%coagulase-negative staph of all positive BCs	34.81%	34.83%	30.50%	30.56%	26.21%
Streptococci species	83	67	86	69	52
Other organisms (e.g. other gram-positive organisms)	47	27	27	32	14
Total *Staphylococcus aureus* in blood cultures	36	27	38	30	46
MSSA (Methicillin-susceptible *S. aureus*)	29	18	35	24	38
MRSA (Methicillin-resistant *S. aureus*)	7	9	3	6	8
%of *S. aureus* in BCs from male patients	77.8%	59.3%	81.6%	70%	65.2%
Average age of *S. aureus* in BCs	59.94	64.07	58.63	68.93	63.47
Number of *S. aureus* BCs <18 years of age (males)	2 (2)	1 (0)	3 (2)	0 (0)	3 (3)
Contaminant or unknown	2	2	6	1	2
Community acquired *S. aureus*	10	10	12	5	22
Hospital-acquired(HAI)/Healthcare-associated infection(HCAI) *S. aureus*	24	15	20	24	22
%of HAI/HCAI SA secondary to line (PIVC + CVC)	(n=9) 37.5%	(n=6) 40%	(n=8) 40%	(n=12) 50%	(n=15) 68.18%
p-value compared to 2020 (Chi-square)	0.0396	0.0938	0.0702	0.2160	

Table 1: Total results of blood cultures tested in the laboratory, and details on *Staphylococcus aureus* bloodstream infections

Discussion

The higher reported number of *S. aureus* bloodstream infections in the SARS-CoV-2 era was unexpected. The reason for this is unclear, but it may be because of delayed presentations of *S. aureus* infections to healthcare facilities resulting in progression of infections leading to bacteraemia.

The 30-day all-cause mortality of *S. aureus* bacteraemia[4] has been reported at 20.6%, so the increase of *S. aureus* bacteraemia may represent a clinically important finding. A male preponderance for *S. aureus* infections has previously been described. A number of hypotheses have been advanced to account for this, including that oestrogen-production in females is protective, and that males are less compliant with healthcare advice[5, 6]. Despite *S. aureus* BSI being more common in males, the 30-day mortality is reportedly higher in females[7]. We suggest it would be of interest to look at the experience in other Irish and international centres to determine if this is a local phenomenon, and to seek a better understanding of the reasons if this is a generalised finding.

With the results of the New York City centres retrospective studies[2, 3] in mind, we found that thirty-three (72%) patients with *S. aureus* bacteraemia had been tested for SARS-CoV-2 via nasopharyngeal swab PCR (polymerase chain reaction). All were reported as *SARS-CoV-2 not detected*. This does not suggest that *S. aureus* bacteraemia secondary to COVID-19 accounts for the observed change.

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

Corresponding Author:
E. Houlihan,
Clinical Microbiology Specialist Registrar,
Galway University Hospital,
Ireland.
Email: elainehoulihan@rcsi.ie

References:

1. MacIntyre, C., Chughtai, A., Barnes, M., Ridda, I., Seale, H., Toms, R. et al., 2018. The role of pneumonia and secondary bacterial infection in fatal and serious outcomes of pandemic influenza a(H1N1)pdm09. BMC Infectious Diseases, 18(1).
2. Sepulveda, J., Westblade, L., Whittier, S., Satlin, M., Greendyke, W., Aaron, J., et al., 2020. Bacteremia and Blood Culture Utilization during COVID-19 Surge in New York City. Journal of Clinical Microbiology, 58(8).
3. Cusumano, J., Dupper, A., Malik, Y., Gavioli, E., Banga, J., Berbel Caban, A., et al., 2020. Staphylococcus aureus Bacteremia in Patients Infected With COVID-19: A Case Series. Open Forum Infectious Diseases, 7(11).

4. Turnidge, J., Kotsanas, D., Munckhof, W., Roberts, S., Bennett, C., Nimmo, G., et al., 2009. Staphylococcus aureus bacteraemia: a major cause of mortality in Australia and New Zealand. Medical Journal of Australia, 191(7), pp.368-373.
5. Castleman, M., Pokhrel, S., Triplett, K., Kusewitt, D., Elmore, B., Joyner, J., et al., 2017. Innate Sex Bias of Staphylococcus aureus Skin Infection Is Driven by α-Hemolysin. The Journal of Immunology, 200(2), pp.657-668.
6. Humphreys, H., Fitzpatrick, F. and Harvey, B., 2015. Gender Differences in Rates of Carriage and Bloodstream Infection Caused by Methicillin-Resistant Staphylococcus aureus: Are They Real, Do They Matter and Why? Clinical Infectious Diseases, p. civ576.
7. Smit, J., Thomsen, R., Schønheyder, H., Nielsen, H., Frøslev, T. and Søgaard, M., 2016. Outcome of Community-Acquired Staphylococcus aureus Bacteraemia in Patients with Diabetes: A Historical Population-Based Cohort Study. PLOS ONE, 11(4), p.e0153766.

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Cauda Equina in Pregnancy

S. O. Ting[1], L. Shailendranath[1], M. Skehan[1], P. Kiely[2]

1. University Maternity Hospital Limerick, Ireland.
2. Radiology Department, University Hospital Limerick, Ireland.

Abstract

Presentation

A 29-year-old primiparous woman presented to the emergency room at gestation 31+4 weeks with severe pelvic and back pain, along with urinary retention, numbness and tingling sensation in her lower limbs and buttocks.

Diagnosis

She was reviewed by the physiotherapist and an MRI of the spine confirmed severe central canal stenosis at L4 and L5 with compression of cauda equina.

Treatment

Emergency discectomy was performed, and the patient recovered well. She underwent elective caesarean section at 38 weeks' gestation delivering a healthy baby boy weighing 3460g.

Discussion

Due to mechanical and positional overload, 56% pregnant women complain of lower back pain with the incidence of cauda equina reported as 1:10000. Conservative management is the primary treatment, but surgical intervention should be considered if symptoms worsen and surgery is not contraindicated at any stage of pregnancy.

Introduction

It is reported that 56% of pregnant women complain of lower back pain secondary to mechanical and positional overload[1]. The incidence of cauda equina in pregnancy is 1:10000 which is considered very rare[2]. Delay in diagnosis and treatment may lead to permanent neurological deficit which might result in future disability[3].

Pregnant woman with cauda equina normally present with weakness of the lower limbs, saddle hypoesthesia and urological problems such as urinary incontinence or inability to empty the bladder completely[4].

Case Report

A case report of a 29-year-old woman gravida 2 para 0+1 booked at gestation 13 weeks and 6 days in University Maternity Hospital Limerick with a booking BMI of 41.5 and has no significant personal medical history or family history. She presented to the emergency room at gestation 15 weeks with back pain which was treated as pelvic girdle pain with simple analgesia and she was also referred to physiotherapist. Over the course of 16 weeks, her pain became progressively worse with no relief from physiotherapy. She presented at 31 weeks and 4 days' gestation with severe pelvic and back pain, along with urinary retention, numbness and tingling sensation in the lower limbs and buttocks. She was reviewed by the physiotherapist and cauda equina syndrome was suspected. The patient had an urgent MRI of the spine and lumbar region which confirmed severe central canal stenosis at L4 and L5 with compression of cauda equina. Both discs were removed at 32 weeks' gestation after which she recovered well from and subsequently went on to have an elective caesarean section at 38 weeks gestation delivering a healthy baby boy weighing 3460g. She was discharged home on day 4 postnatally with recommendations of weight reduction and was commenced on prophylactic low molecular weight heparin for 6 weeks.

Figure 1A.

Figure 1B.

Fig 1 (A)&(B): MRI images showing severe central canal stenosis at L4 and L5 with compression of cauda equine.

Discussion

Cauda equina is a rare disorder in the general population with an assumption of one case annually in larger hospitals and 1 in every 4-40 years in peripheral unit in Ireland. Cauda equina is a clinical diagnosis by detailed physical examination and imaging[5]. The most common presenting complaints are severe sciatica, bilateral leg weakness with saddle hypoesthesia and sometimes involving urinary and bowel dysfunction such as urinary incontinence, inability to empty the bladder completely, bladder tenderness with fullness, sexual dysfunction and faecal incontinence[4]. In pregnancy, Magnetic Resonance Imaging (MRI) is considered as the safest modality for detailed spinal imaging without transmitting radiation to the intrauterine fetus[2,6,7]. Conservative management is the primary treatment but surgical intervention should be considered if symptoms worsen[6] in which lumbar disc decompression is not contraindicated and can be performed at any gestational stage in pregnancy[6, 7]. This is the first confirmed cauda equina case in pregnant woman in our maternity unit in University Hospital Limerick in 10 years'. In our case report, the patient presented with what seemed to look like worsening of her pelvic girdle pain but high suspicion of cauda equina was immediately identified with her sudden inability to micturate. Our hospital has the facility to perform urgent MRI investigation, but she had to be transferred to a tertiary unit for her L4 and L5 discectomy and decompression surgery as there was no specific expertise available in our local hospital. It is challenging to diagnose cauda equina as it is a rare disorder. The prognosis of this disorder is generally good with prompt diagnosis and intervention as failure to do so could lead to permanent damage to the patient such as lower limb paralysis, loss of nerve sensation of the lower body as well as dysfunction of the bowel and the bladder.

Declaration of Conflicts of Interest:
The authors declare no conflicts of interest in preparing this article.

Corresponding Author:
Sie Ong Ting
University Maternity Hospital Limerick,
Ireland.
E-mail: sieong@yahoo.com

References:

1. Mohapatra RN, Patra RK. Cauda equina syndrome in pregnancy due to disc prolapse. J Indian Acad Clin Med 2008;9:140-2.
2. LaBan MM, Rapp NS, von Oeyen P, Meerschaert JR. The lumbar herniated disk of pregnancy: A report of six cases identified by magnetic resonance imaging. Arch Phys Med Rehabil 1995;76:476-9.
3. Antón Capitán B, Malillos Torán M. The cauda equina syndrome in pregnant woman with a massive disc herniation. Rev Esp Cir Ortop Traumatol 2017;61:63-5

4. Shapiro S. Cauda Equina syndrome secondary to lumbar disc herniation. Neurosurgery. 1993;32:743-7
5. Curtin P, Rice J. Cauda equina syndrome in early pregnancy: A case report. Acta Obstet Gynecol Scand. 2007;86:758–9.
6. Brown MD, Levi AD. Surgery for lumbar disc herniation during pregnancy. Spine (Phila Pa 1976) 2001;26:440–3.
7. Kim HS, Kim SW, Lee SM, Shin H. Endoscopic discectomy for the cauda equina syndrome during third trimester of pregnancy. J Korean Neurosurg Soc. 2007;42:419–20.

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Retroperitoneal Fibrosis Presenting with Recurrent Episodes of Abdominal Pain and Post-prandial Vomiting

P. Rohan[1], J. Furey[1], F. Slattery[1], C. Hayes[1], R. Deignan[2], K. Schmidt[1]

1. Department of Surgery, Wexford General Hospital, Ireland.
2. Department of Radiology, Wexford General Hospital, Ireland.

Abstract

Presentation

A 74 years-old lady presented with a one-week history of abdominal pain, post-prandial vomiting and pyrexia.

Diagnosis

Computed tomography (CT) of the abdomen and pelvis demonstrated symmetrical proliferation of retroperitoneal fat resulting in anteromedial displacement of both kidneys and the mesenteric vessels.

Treatment

The patient has treated conservatively with analgesia and nasogastric tube insertion. She was referred to a specialist centre for further management of her retroperitoneal fibrosis.

Discussion

When investigating recurrent abdominal pain, one must consider a broad differential diagnosis to avoid missing rare but potentially treatable aetiologies.

Introduction

Retroperitoneal fibrosis (RF) also known as chronic periaortitis (CP) is a condition of variable aetiology. Approximately 75% of cases are of the idiopathic form (IRF), known as Ormond's disease. The remainder of cases are secondary to pelvic malignancy or infectious/inflammatory aetiologies. Secondary RPF is associated with ergot alkaloid use, biologic use, malignancy, prior radiation and infectious aetiologies such as tuberculosis, actinomycosis and histoplasmosis [1].

This rare fibroinflammatory disorder is characterised by an extensive retroperitoneal fibrotic mass extending inferiorly from the infrarenal para-aortic region. IRF is a benign condition but it may be locally aggressive, often resulting in bilateral ureteric compression and resultant hydroureter, hydronephrosis and impaired renal function, as well as compression of surrounding vascular structures [2–4]. IRF specifically occurs in the presence of a non-dilated aorta [2,3].

The pathogenesis of IRF is not fully understood but there are environmental factors as well as genetic determinants. IRF may be part of immunoglobulin G4 – related diseases (IgG4-RD), a spectrum of fibroinflammatory disorders characterised by inflammation, fibrosis and IgG4 plasma cell infiltration or may present in isolation [5]. IRF is also associated with systemic and localised autoimmune conditions [5].

The incidence of IRF is 0.1 – 1.3 per 100,000 people per year, with a mean onset age of 57 years. Men are affected 3 times more commonly than women [5,6].

Diagnosis may be made by computed tomography (CT) or magnetic resonance imaging (MRI) [1,5]. Biopsy is indicated if the location of suspected fibrosis is atypical [5,6]. Erythrocyte sedimentation rate (ESR) and C-reactive protein (CRP) are usually raised at presentation. While the level of elevation may reflect symptomatic disease they are not useful prognostic indicators [1].

Case Report

We present a 74-year-old lady who presented with a one-week history of abdominal pain, post-prandial vomiting and pyrexia, on a background of recurrent similar episodes with indeterminate back-pain and a similar presentation in 2013. Her past medical history was also significant for a left lower limb deep vein thrombosis (DVT) and liver cirrhosis secondary to alcoholic liver disease.

At admission, routine laboratory investigations demonstrated a white cell count (WCC) of 4.6 10^9/L and a CRP of <0.3 mg/L. Creatinine was chronically elevated at 86 μmol/L. CT of the abdomen and pelvis noted symmetrical proliferation of retroperitoneal fat resulting in anteromedial displacement of the kidneys and ureters bilaterally but without obstruction (Fig 1). There was no aneurysmal dilatation of the aorta.

The patient's symptoms settled with conservative management and she was referred to a specialist urology service where she is awaiting further input.

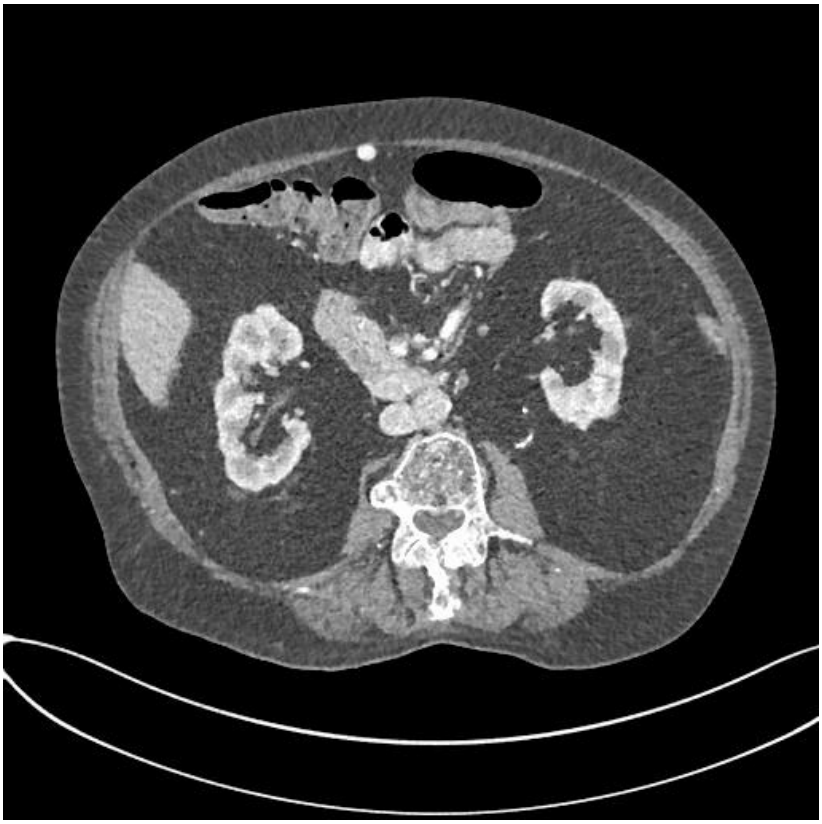

Figure 1. *Axial CT slice demonstrating a diffuse retroperitoneal fatty mass with medial displacement of the kidneys bilaterally.*

Discussion

The classic clinical picture of IRF is characterised by abdominal or back pain, with systemic features including fever and weight loss [5,7]. The extending inflammatory mass may cause unilateral or bilateral ureteral obstruction and if the later can present with acute kidney injury or failure. Seventy-five percent (75%) of patients with RF present with renal impairment. While IRF is not associated with aortic aneurysm, venous complications may occur. Compression of the inferior vena cava may result in lower limb swelling or deep vein thrombosis [1].

The low incidence of IRF has resulted in a paucity of randomised controlled trials [7]. Treatments with corticosteroid and immunosuppression regimes are based on case series data [8] but do appear to be effective [7] . Combination therapy appears to be more effective and allows for more timely tapering of steroids. The most commonly used immunosuppressants used in IRF are azathioprine and mycophenolate mofetil. In cases with obstructive uropathy unilateral or bilateral stenting or percutaneous nephrostomy are usually effective but ureterolysis may be required [7]. Fry et al. [8] have provided a useful algorithm for the management of RF which has been reproduced here with permission (Fig 2).

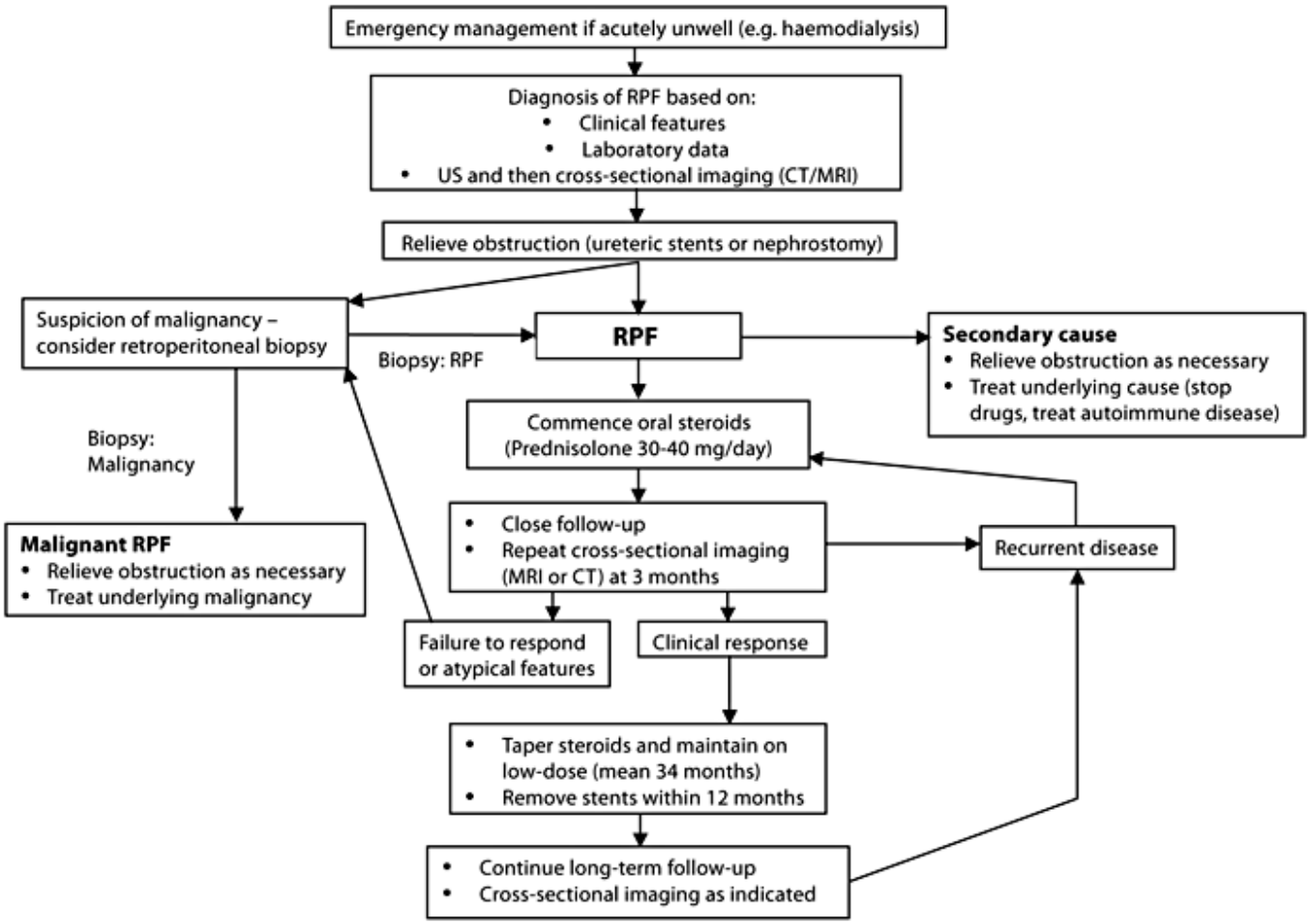

Figure 2. *RF management algorithm*

This case highlights the need to consider CP and IRF in patients presenting with a similar constellation of symptoms and a retroperitoneal fibroinflammatory mass. Considering the diagnosis of IRF in this cohort we may increase the knowledge base and tailor effective treatment regimens for what can be a debilitating disease.

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

Corresponding Author:
Dr. Pat Rohan
37 Deerpark Road,
Castleknock,
Dublin 15
E-mail: Pat.rohan@ucdconnect.ie

References:

1. Vaglio A, Palmisano A. Clinical manifestations and diagnosis of retroperitoneal fibrosis - UpToDate [Internet]. [cited 2020 Jun 12]. Available from: https://www.uptodate.com/contents/clinical-manifestations-and-diagnosis-of-retroperitoneal-fibrosis?topicRef=7213&source=see_link
2. Idiopathic Retroperitoneal Fibrosis (Ormond's Disease) - American Urological Association [Internet]. [cited 2020 Jun 12]. Available from: https://www.auanet.org/education/auauniversity/education-products-and-resources/pathology-for-urologists/retroperitoneum/idiopathic-retroperitoneal-fibrosis-(ormonds-disease)
3. Nelius T, Reiher F, Lindenmeir T, Kalinski T, Rau O, Filleur S, et al. Die idiopathische retroperitoneale fibrose (Morbus Ormond). Aktuelle Urol. 2006 Jul;37(4):284–8.
4. Netzer P, Binek J, Hammer B. Diffuse abdominal pain, nausea and vomiting due to retroperitoneal fibrosis: A rare but often missed diagnosis. Eur J Gastroenterol Hepatol. 1997;9(10):1005–8.
5. Vaglio A, Maritati F. Idiopathic retroperitoneal fibrosis. J Am Soc Nephrol. 2016;27(7):1880–9.
6. Yachoui R, Sehgal R, Carmichael B. Idiopathic retroperitoneal fibrosis: clinicopathologic features and outcome analysis. Clin Rheumatol. 2016;35(2):401–7.
7. Kisial B, Kruszewski R, Juerk-Urbanowska A, Kidzinski R, Frankowska E, Sulek M, et al. Idiopathic retroperitoneal fibrosis: A case report. Polish Arch Intern Med. 2009;119(10).
8. Fry AC, Singh S, Gunda SS, Boustead GB, Hanbury DC, McNicholas TA, et al. Successful Use of Steroids and Ureteric Stents in 24 Patients with Idiopathic Retroperitoneal Fibrosis: A Retrospective Study. Nephron Clin Pract [Internet]. 2008 Apr [cited 2020 Jun 14];108(3):c213–20. Available from: https://www.karger.com/Article/FullText/119715

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Anaplastic Large Cell Lymphoma of the Tongue

F.G. Kavanagh[1], S. Mamdouh[1, 2], H.L. Barrett[3], J.P. O'Neill[1,2]

1. Department of Otolaryngology, Head and Neck Surgery, Beaumont University Hospital, Beaumont Road, Dublin 9.
2. Department of Otolaryngology, Head and Neck Surgery, Royal College of Surgeons in Ireland, St. Stephen's Green, Dublin 2.
3. Department of Pathology, Beaumont University Hospital, Beaumont Road, Dublin 9.

Abstract

Presentation

A 66-year-old lady presented with a 7-month history of oral phase dysphagia and a 1-month history of a mass increasing in size on her left tongue with enlarged lymph nodes in the right neck.

Diagnosis

Biopsy showed this to be an anaplastic lymphoma (ALK) kinase negative anaplastic large cell lymphoma (ALCL). Radiological investigations showed no disseminated spread of disease.

Treatment

Her case was referred to the haematology service and she was treated successfully.

Conclusion

Primary oral cavity ALCL is a rare pathology with only 16 cases reported in the English language literature. However, it has a favourable prognosis with a 77% 5-year survival. This case reminds us to be cognisant of different pathologies when assessing patients in head and neck clinics and represents another rare systemic ALK-negative ALCL case involving the oral cavity.

Introduction

More than 95% of Head and neck cancer (HNC) are squamous cell carcinomas which are associated with cigarette smoking, oncogenic viruses with excessive alcohol consumption a strongly related co-factor [1]. Lymphomas are uncommon causing 2-5% of oral malignancies [2]. An exceedingly rare lymphoma of the oral cavity is presented.

Case Report

A 66-year-old lady presented with a 7 month history of oral phase dysphagia and a 1 month history of a mass increasing in size on her tongue. Her past medical history was significant for a treated oligodendroma, hyperlipidaemia and osteoporosis. Clinically she had a large exophytic mass occupying 80% of the anterior left tongue with preserved movement and had nodes palpable in the right level 2 area. CT neck identified a large 5 cm tumour in the left oral cavity with nodal disease in the right submental and submandibular area. PET CT showed no distant disease. Full blood count, renal, liver function and LDH were normal.

Biopsy showed squamous mucosa with underlying stroma infiltrated by a poorly differentiated malignant tumour. Immunohistochemical studies were positive for lymphoid marker CD45. Tumour cells were CD3 positive, CD30 positive, ALK 1 negative, CD4 positive, CD8 negative, CD56 negative and EBV negative. The immunohistochemistry confirmed a diagnosis of ALK negative ALCL (see figure 1).

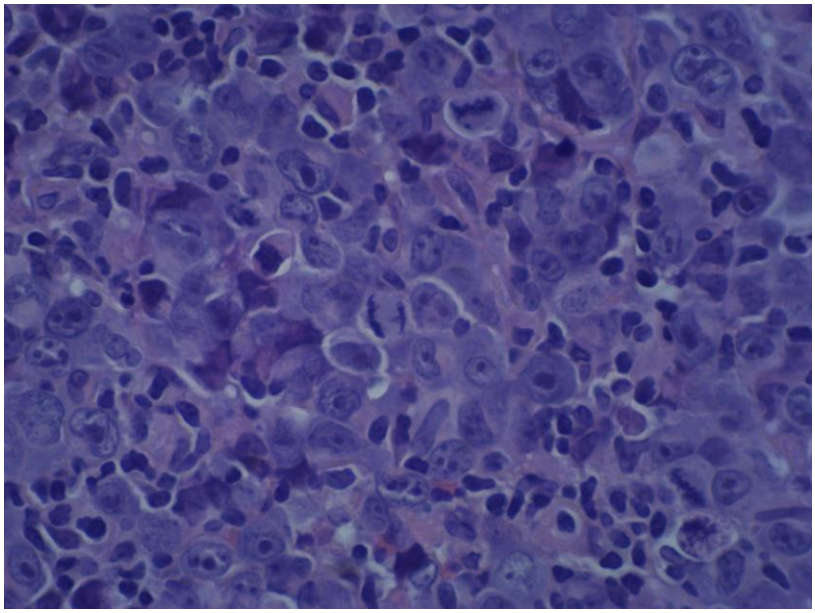

Figure 1: Left anterior tongue incisional biopsy. H&E 20X Magnification. Sheets of large pleomorphic cells, with the characteristic 'horseshoe shaped' nuclei with prominent and often numerous nucleoli. The cells have abundant eosinophilic cytoplasm. Numerous mitoses are also present.

Her care was referred to the haematology service and she was treated successfully with cyclophosphamide, vincristine sulphate and prednisolone. At the time of writing she remains disease free.

Discussion

Lymphomas are a heterogenous neoplasm of lymphoid tissue subdivided into Hodgkin and non-Hodgkin. Hodgkin disease is characterised by Reed-Sternberg cells [3]. Non Hodgkins Lymphoma (NHL) consists of malignant neoplasms of lymphoid tissues derived from B and T lymphocytes.

While primarily originating in lymph nodes, extra nodal NHL accounts for 20-40% of cases [4]. 50% of lymphomas occur in the head and neck, particularly in cervical lymph nodes with Waldeyer's Ring the most common site.

First described in 1985, anaplastic large cell lymphoma (ALCL) originates from T or NK cells and accounts for 2% of NHL [5]. Like other NHL subtypes ALCL primarily involves nodal areas but extra nodal sites can occur. They are characterised by large blastic tumour cells with anaplastic morphology, sinusoidal infiltration of lymph nodes, pseudocohesive appearance with expression of cytokine receptor CD30 [6]. Tumours cells are atypical and larger than usual lymphoma cells with more abundant tumour cells. ALCL are further classified based on their expression of the anaplastic lymphoma kinase (ALK) gene. The ALK expression is caused by a t(2;5) translocation abnormality[7]. ALK +ve disease represent 50-80% of cases and occur in younger patients carrying a better prognosis. Although an aggressive tumour, it responds well to chemotherapy with 77% of patients having a 5 year survival rate [4].

Primary ALCL in the oral cavity is rare; only 16 cases have been reported. Previous publications have occurred in patients at a mean age of 45 years. Most cases have been reported in the gingiva, 2 cases in the hard palate, soft palate and lip. Spontaneous remission has been described [8 9]. While lymphoma is relatively rare in the oral region for the head and neck surgeon, it is the most frequent non epithelial malignant tumour in the region [10]. Although lymphomas are regarded as aggressive disease processes ALCL has a 77% 5 year survival rate[4]. With this in mind it should be considered when assessing patients presenting with oral masses or ulceration, particularly with repeated recurrence and spontaneous regression. While difficult to distinguish from oral inflammatory disorders and other neoplastic diseases it highlights the needs for a high index of suspicion. It is essential to diagnose this neoplasm to facilitate appropriate therapies and a favorable prognosis.

This case reminds us to be cognisant of different pathologies when assessing patients in head and neck clinics and represents another rare systemic ALK-negative ALCL case involving the oral cavity.

Declaration of Conflicts of Interest:
The authors declare that there are no conflicts of interest regarding the publication of this paper.

Corresponding Author:
Dr. F.G. Kavanagh,
Department of Otolaryngology,
Head and Neck Surgery,
Beaumont University Hospital,
Beaumont Road,
Dublin 9.
Phone: +353 85 161 7714
ORCID: 0000-0001-8234-4744
E-mail: fergalkavanagh@rcsi.ie.

References:

1. Marur S, Forastiere AA. Head and Neck Squamous Cell Carcinoma: Update on Epidemiology, Diagnosis, and Treatment. *Mayo Clin Proc*. 2016;91(3):386-396. doi:10.1016/j.mayocp.2015.12.017
2. Epstein JB, Epstein JD, Le ND, Gorsky M. Characteristics of oral and paraoral malignant lymphoma: A population-based review of 361 cases. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod*. 2001;92(5):519-525. doi:10.1067/moe.2001.116062
3. WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues – IARC. https://www.iarc.fr/news-events/who-classification-of-tumours-of-haematopoietic-and-lymphoid-tissues-2/.
4. Oral and Maxillofacial Pathology - 3rd Edition. https://www.elsevier.com/books/oral-and-maxillofacial-pathology/neville/978-1-4160-3435-3.
5. Stein H, Mason DY, Gerdes J, et al. The expression of the Hodgkin's disease associated antigen Ki-1 in reactive and neoplastic lymphoid tissue: Evidence that Reed-Sternberg cells and histiocytic malignancies are derived from activated lymphoid cells. *Blood*. 1985;66(4):848-858. doi:10.1182/blood.v66.4.848.bloodjournal664848
6. Filippa DA, Ladanyi M, Wollner N, et al. CD30 (Ki-1)-positive malignant lymphomas: clinical, immunophenotypic, histologic, and genetic characteristics and differences with Hodgkin's disease. *Blood*. 1996;87(7):2905-2917. http://www.ncbi.nlm.nih.gov/pubmed/8639911.
7. Pulford K, Pileri S. *CD30(+) Anaplastic Large Cell Lymphoma: A Review of Its Histopathologic, Genetic, and Clinical Features*.; 2014. http://bloodjournal.hematologylibrary.org/content/96/12/3681.full.html. .
8. Savarrio L, Gibson J, Dunlop DJ, O'Rourke N, Fitzsimons EJ. Spontaneous regression of an anaplastic large cell lymphoma in the oral cavity: First reported case and review of the literature. *Oral Oncol*. 1999;35(6):609-613. doi:10.1016/S1368-8375(99)00034-2
9. Miyagawa F, Ogawa K, Asada H. A case of CD4+/CD8+ double-positive primary cutaneous anaplastic large cell lymphoma of the lip involving spontaneous regression after biopsy. *Eur J Dermatology*. 2017;27(1):68-69. doi:10.1684/ejd.2016.2899
10. Shindoh M, Takami T, Arisue M, et al. Comparison between submucosal (extra-nodal) and nodal non-Hodgkin's lymphoma (ahl) In The oral and maxillofacial region. *J Oral Pathol Med*. 1997;26(6):283-289.

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Cytomegalovirus Infection: Not So (H)armless

Z. Togher[1], E. Higgins[2], A. Gunko[1], M. Doyle[1], S. Fullam,
N. Tubridy[1], S. Connolly[3], E. Feeney, C. McGuigan[1]

1. Department of Neurology, St. Vincent's University Hospital, Dublin, Ireland.
2. Department of Infectious Diseases, St. Vincent's University Hospital, Dublin, Ireland.
3. Department of Clinical Neurophysiology, St. Vincent's University Hospital, Dublin, Ireland.

Abstract

Presentation
A 23-year-old man presented with a 10-day history of bilateral upper limb weakness and pain.

Diagnosis
Nerve conduction studies demonstrated a mononeuropathy multiplex affecting both upper limbs, confirmed by magnetic resonance imaging (MRI) to affect these structures at brachial plexus level. Cytomegalovirus (CMV) serology demonstrated positive IgM and IgG with low avidity, suggestive of recent infection. The patient had a detectable CMV viraemia.

Treatment
This was treated as CMV-related mononeuropathy multiplex with intravenous ganciclovir followed by oral valganciclovir. The patient's CMV PCR is now undetectable.

Conclusion
CMV-related mononeuropathy multiplex in immunocompetent patients is rare.

Introduction

Cytomegalovirus (CMV) is a double-stranded DNA virus.[3] It traditionally causes transient and subclinical infection in the immunocompetent, rarely leading to more severe manifestations.[1] Central nervous system disease usually occurs in profoundly immunocompromised hosts.[6]

CMV-related mononeuropathy multiplex in an immunocompetent patient is rare.[2,4,5,6] We describe a case of CMV mononeuropathy multiplex in an immunocompetent adult, affecting the brachial plexus bilaterally.

Case Report

A 23-year-old man presented following pain, numbness and weakness affecting predominantly his left arm.

Three weeks prior he experienced a mild flu-like illness with myalgia, tonsillar enlargement and lymphadenopathy, which resolved after four days. Subsequently he began to develop pain in his arms, predominantly left-sided, starting in the elbows. This progressed to numbness, then weakness. Clinical exam showed absent reflexes and asymmetrical weakness in his arms, worse on the left, mainly affecting shoulder abductors, elbow flexors and intrinsic hand muscles. Sensory exam revealed a non-dermatomal band of numbness over his left humerus.

Haematological investigations demonstrated lymphocytosis, mildly raised c-reactive protein (CRP) and a transaminits. Magnetic resonance imaging (MRI) of the brain and cervical spine was unremarkable. A lumbar puncture was performed which showed a white cell count of 8/cmm (0-5) - 60% lymphocytes, protein of 0.69 mg/dl (15-45) and matched oligoclonal bands (both in the serum and CSF).

Nerve conduction studies (NCS) confirmed bilateral mononeuropathy multiplex in the upper limbs, involving left radial & axillary nerves and right ulnar, median & radial nerves. This was particularly severe in the bilateral posterior, lateral and medial cutaneous nerves which showed no sensory response (table 1). Needle electromyography (EMG) showed neurogenic changes in the left deltoid, triceps brachii and right biceps brachii muscles.

Table 1: Nerve Conduction studies, abnormalities highlighted in bold.

	Right			**Left**		
Motor nerve (muscles)						
	Latency (msec)	**Amplitude uV**	**Velocity m/sec**	**Latency (msec)**	**Amplitude uV**	**Velocity m/sec**
Median (APB): Wrist	2.7	***7600***		3.3	12100	
Elbow	7.5	***7200***	52			
Ulnar (ADM): Wrist	2.6	***5000***		2.5	13700	
Below Elbow	6.1	***4800***	59			
Above Elbow	8.4	***4500***	58			
Radial (EIP): Forearm	2.6	3700		2.0	***1000***	
Upper arm				4.6	***1000***	58
Sensory nerves						
Median (Dig III – wrist)	2.0	10	67	2.4	***8***	61
Ulnar (Dig V – Wrist)	2.9	11	61	2.1	6	60
Radial (Forearm – Wrist)	1.2	***13***	68	1.4	***6***	60
Medial Cutaneous Nerve	***No response***			***No response***		
Lateral Cutaneous Nerve	***No response***			***No response***		
Posterior Cutaneous Nerve	***No response***			***No response***		

Computed tomography (CT) of the thorax abdomen and pelvis demonstrated splenomegaly. Positron Emission Tomography (PET) CT (done to out rule evidence of malignancy or lymphoma) showed cervical, axillary and inguinal FDG-avid lymphadenopathy. Lymph node biopsy showed no evidence of malignancy. The patient was started on steroids empirically at this point, with minimal clinical benefit.

Viral serology confirmed CMV IgM and IgG positive (with low avidity of 0.34). He had a detectable CMV viraemia on PCR testing with >600 copies**.** CMV DNA in the cerebrospinal fluid (CSF) was negative. Human immunodeficiency virus (HIV) and hepatitis testing was negative. Lymphocyte subset testing confirmed immunocompetency.

Given the presence of splenomegaly, lymphadenopathy, transaminitis, mononeuropathy multiplex and the positive CMV serology the patient was treated as a primary CMV infection complicated by a mononeuropathy multiplex. It was decided to proceed with treatment, as the patient's neurological deficit was not recovering. Intravenous (IV) ganciclovir was commenced for two weeks, followed by oral valganciclovir. Oral treatment continued for four weeks, ending two weeks following undetectable serum CMV PCR. The patient declined a nerve biopsy.

At six-month follow-up repeat NCS & EMG showed significant partial improvement. At nine months the patient had almost complete clinical recovery except for mild residual weakness in distal finger abduction.

Discussion

The clinical, neurophysiological, serological and imaging findings were all consistent with a primary CMV infection complicated by mononeuropathy multiplex. No evidence of immunodeficiency was found. This confirmed a case of a severe, debilitating CMV infection in an immunocompetent adult.

The neurophysiological findings in this case confirmed a mononeuropathy multiplex affecting the bilateral brachial plexus, more marked on the left. Nerves affected were bilateral and from the medial, lateral and posterior cords of the brachial plexus. Unique features include the unusual neurophysiological finding of complete sensory axonal loss in the forearm cutaneous nerves.

As stated, CMV-associated mononeuropathy multiplex of the brachial plexus in immunocompetent patients is rare.[2,4-6] In the first of cases the patient recovered in six months.[2] In more recent cases the neurological deficit and pain had recovered within 7 months; in another pain resolved in 7 weeks with neurological deficit remaining.[5,6] None were treated with anti-virals or had immunocompetency confirmed via lymphocyte subset testing.

The diagnosis of this condition relies on recognition of the mononeuropathy multiplex pattern, which is determined by pain, neurological findings (motor and sensory loss in multiple territories), clinical course and EMG findings. Infection must always be considered and CMV should not be dismissed in an immunocompetent patient.

In conclusion, we emphasise a significant presentation due to a classically benign infection. This is the first reported case of CMV mononeuritis multiplex in an adult with confirmed immunocompetency via lymphocyte subset testing.

Patient Consent:
A signed consent form from the patient has been obtained and is available for review on request.

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

Corresponding Author:
Dr Zara Togher,
Neurology Registrar,
St. James's Hospital,
Dublin.
E-mail address zara.togher@ucdconnect.ie

References:

1. Nangle S, Mitra S, Roskos S, Havilichek S. Cytomegalovirus infection in immunocompetent adults: Is observation still the best strategy? *ID Cases* 2018 Aug 28;14:e00442. doi:10.1016/j.idcr.2018.e00442
2. Duchowny M, Caplan L, Siber G. Cytomegalovirus infection of the adult nervous system. *Ann Neurol* 5:458-461,1979
3. Hassan J, O'Neill D, Honari B et al. Cytomegalovirus Infection in Ireland: Seroprevelance, HLA Class I Alleles, and Implications. *Medicine* vol 95,6 (2016): e2735
4. Seror P, Harbach S. Parsonage Turner syndrome after cytomegalovirus. *Presse Med* 1990 Mar 24;19(11):527-8
5. Vanpee D, Laloux P, Gillet JB, Esselinckx W. Viral Brachial Neuritis in Emergency Medicine. *The Journal of Emergency Medicine* Vol 18, no 2 pp 177-179, 2000.
6. Sundkvist T. Cytomegalovirus infection complicated by neuralgic amyotrophy. N Engl J Med. 1983 Feb 24;308(8):461.

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Hang Tight

Today I got my vaccine.
A ground-breaking, marvellous feat. But, as I walked through the hospital,
A stark reminder I did meet.

Tired eyes above those masks
Did greet me everywhere.
Beneath each one, a frontline worker,
Just gasping for some air.

While I've had my baby bubble,
They've had no break at all.
And I felt an overwhelming sense
Of fatigue and withdrawal.

No doubt these heroes would have loved
The safety of a bubble.
So let's not insult all their hard work,
Together we must huddle.

Look up, look down, look all around.
Each number depicts a person.
It's time to take this seriously.
Or the state will continue to worsen.

So please stay home and do your bit,
And brighter days WILL come.
But in the meantime let's not lose,
YOUR granddad or YOUR mum.

Poem by Dr Maria Tempany (@therhymingone) - Tallaght University Hospital, Tallaght, Dublin.

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Dermatology Review and Skin Cancer Prevalence in a Kidney Transplant Patient Cohort

J. Byrne, E. Bergin
Department of Nephrology, Midlands Regional Hospital Tullamore.

Dear Editor,

An increased incidence of malignancy, particularly skin cancers, is a well-established complication of kidney transplantation and immunosuppressive medication use. An Irish study found that skin cancers accounted for 88% of cancers in the renal transplant recipients with the risk for invasive SCC increased 82-fold compared with the non-transplanted population.[1] The UK based NICE guidelines recommend that all transplant patients should have an annual review by a dermatologist and that transplant patients who have precancerous skin lesions or who have developed a skin cancer should be seen in a dedicated 'transplant patient skin clinic'.[2]

We set out to examine the prevalence of skin cancer and dermatology attendance in our kidney transplant patient cohort at the Midlands Regional Hospital Tullamore (MRHT). A retrospective chart review included demographic data, the duration of the transplant(s), attendance at dermatology services and prevalence of skin cancer including the histological subtype. Only patients with functioning renal transplants were considered. A total of 58 transplant patients attending nephrology services were assessed. One patient was lost to follow-up and was excluded. The remaining 57 patients (39 male, 18 female) were aged between 27 and 81 (mean age 53.7). The duration of kidney transplant varied between one to 35 years (mean duration of 7 years). 9/57 patients had a histological diagnosis of skin cancer (15.8%). Of these patients, all had at least one squamous cell carcinoma (SCC) and 3 had at least one diagnosed basal cell carcinoma (BCC). There was a total of 25 skin cancers in this group (20 SCC, 5 BCC). There was no recorded diagnosis of melanoma. Only two of the 57 patients attend a dermatology outpatient service (3.5%).

As expected, skin cancer was found to be a significant issue in our patient cohort. Attendance at dermatology clinics was poor reflecting the lack of local provision of services. Post-transplant skin malignancies are likely to become more prevalent with longer duration of patient and graft survival and the duration of immunosuppressive medication exposure as well as the increasing age of recipients at the time of transplantation. Dermatology follow-up is an integral part of care following renal transplantation.

Corresponding Author:
Dr Joanne Byrne M.B., B.Ch., B.A.O. MRCPI
Medical SHO
St. James Hospital,
Dublin 8.
E-mail: byrnej34@tcd.ie

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Urinary Tract Imaging in Children Post UTI

J. Trayer[1], M. Nadeem[1,2]

1. Children's Health Ireland at Tallaght University Hospital.
2. Trinity College Dublin.

Urinary Tract Infections (UTI) are common in children and radiologic imaging of the urinary tract is important to exclude structural abnormalities[1]. Numerous international guidelines exist although follow-up imaging recommendations vary. These include repeat renal ultrasound (RUSS), Micturating cystourethogram (MCUG) and/or Dimercaptosuccinic acid scintigraphy (DMSA)[2-4]. The aim of this study was to review the radiologic imaging of children presenting with UTI and examine whether our data supports follow-up imaging as recommended in the guidelines.

A retrospective chart review of all children admitted with UTI over a two-year period was conducted. UTI was defined as a child with typical symptoms and a pure growth of an organism with a colony count $>10^5$ on mid-stream urine culture.[4] Atypical and recurrent UTI were defined as per NICE guidelines.[2]

A total of 241 cases were reviewed, mean (SD) age 25.19 (34.78) months. In these 241 patients, 217 (90 %) had UTI due to *Escherichia coli* and 47 (19.5%) had recurrent UTI. Acute RUSS was reported normal in 173/241 (71.8%), pyelonephritis was identified in 21 (8.7%) and other abnormalities in 39 (16.2%). Of 241 patients, 170 underwent follow-up RUSS, which was reported normal in 136 (80%) and abnormal in 34 (20%). DMSA was performed in 63 patients, of whom 46 (73%) and 17 (27%) experienced normal and abnormal DMSA, respectively. Moreover, 27 had MCUG, which was normal in 9 (33%) and abnormal in 18 patients (67%).

A significant association was observed between recurrent UTI and abnormal DMSA or MCUG in all age groups (p-value 0.01 and 0.03, respectively). Moreover, atypical UTI has an impact on the abnormal DMSA or MCUG in patients aged < two years (p-value 0.02 or 0.04, respectively), however the number of patients aged more than two years with atypical UTI was too small to draw a conclusion. A link was observed between the results of acute RUSS and DMSA or MCUG results. A total of 55 patients had both an acute RUSS and follow-up DMSA, these were reported as abnormal in 27/55 (49.1%) and 12/55 (21.8%), respectively. Of 12 patients with abnormal DMSA findings, 8 (66.7%) also had an abnormal acute RUSS, with a statistically significant association between abnormal acute RUSS and abnormal DMSA (p-value 0.006).

A total of 27 patients had both an acute RUSS and follow-up MCUG, these were reported abnormal in 21/27 (77.8%) and 18/27 (66.7%), respectively. Of these 18 patients with abnormal MCUG findings, 17 had an abnormal acute RUSS, with a statistically significant association between abnormal acute RUSS and abnormal MCUG (p-value 0.011). Notably, the patients' age, gender or length of stay has no impact on radiological imaging abnormalities (p value >0.05).

In children with UTI, follow-up imaging is important to identify those with renal scarring and/or VUR, particularly in children with recurrent or atypical UTIs and in those with abnormal RUSS. These results highlight the importance of following current guidelines regarding renal tract imaging following UTI in children.

Corresponding Author:
Dr Montasser Nadeem,
Department of Paediatrics,
Children's Health Ireland at
Tallaght University Hospital,
Tallaght,
Dublin 24.
E-mail: drnadeem.gad@gmail.com

References:

1. Kaufman J, Temple-Smith M, Sanci L. Urinary tract infections in children: an overview of diagnosis and management. *BMJ Paediatr Open*. 2019;3(1):e000487.
2. National Institute for Health and Care Excellence (2007) Urinary tract infection in under 16s: diagnosis and management (NICE Guideline 54). Available from: https://www.nice.org.uk/guidance/ng54 [Accessed 25/10/2020]
3. Stein R, Dogan HS, Hoebeke P, et al. Urinary Tract Infections in Children: EAU/ESPU Guidelines. *Eur Urol.* 2015;67(3):546-558.
4. Okarska-Napierla M, Wasilewska A, Kuchar E. Urinary tract infection in children: Diagnosis, treatment, imaging- Comparison of current guidelines. *J Pediatr Urol*. 2017;13,567-573.

Irish Medical Journal
Established 1867

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Recommending & Offering Vaccination in Antenatal Clinics: An Initiative to Improve Uptake

M. Eogan[1], M. Lawless[1], J. Gleeson[1], C. Ritter[2], B. Cleary[1], R. Drew[1]

1. The Rotunda Hospital, Dublin. 2. Inclusion Health Hub, Safetynet Primary Care.

Dear Editor

Immunisation is an effective intervention in modern medicine with both influenza and pertussis vaccination being recommended in pregnancy and generally offered and provided in primary care. Uptake, however, remains suboptimal in Ireland (43-55% for influenza vaccination[1,2]) and internationally, and initiatives to improve uptake will have maternal, neonatal & societal benefits. In time, it is likely that other vaccinations may also be offered more frequently in pregnancy (e.g. Covid-19 and Group B Streptococcus) so an understanding of factors which influence uptake is timely.

Influencers on uptake during pregnancy include vaccination in previous pregnancies, safety & efficacy concerns, beliefs that vaccination was not needed, recommendation from health care workers, access issues, cost and conflicting advice[2,3,3] Irish studies have identified health care provider recommendation as a powerful tool to improve vaccination uptake[4].

Recently, a pilot to recommend and deliver vaccination in conjunction with colleagues from primary care onsite in a single interdisciplinary antenatal clinic for pregnant women who have, or are at risk of, blood borne viruses or addiction was undertaken. Many attending this clinic do not regularly attend primary care. We collaborated with colleagues from inclusion health who provided and delivered the vaccination within the clinic on five separate dates.

76 women were eligible to receive one or both vaccinations. 44 received flu and pertussis vaccinations in the clinic, 26 had previously received one but received the other vaccination onsite. Only 9 women (12%) declined one or both vaccinations – 6 (8%) refused both, two (3%) refused flu only and one (1%) refused pertussis only. Women from a Roma background were more likely to refuse vaccination.

This pilot initiative resulted in the majority of eligible women agreeing to vaccination when recommended and offered contemporaneously with an antenatal visit. Similar initiatives should be considered in other sites, particularly for pregnant women who are less likely to attend primary care. Factors that influence vaccine hesitancy and refusal should be studied & addressed on an ongoing basis in order to maximise uptake, given the importance of vaccination in pregnancy and that additional vaccines will be developed and offered in time.

Corresponding Author:
Dr Maeve Eogan MD FRCPI FRCOG
Consultant Obstetrician and Gynaecologist,
Rotunda Hospital,
Dublin 1.
E-mail: meogan@rotunda.ie

References:

1. Barrett, T., McEntee, E., Drew, R., O'Reilly, F., O'Carroll, A., O'Shea, A., & Cleary, B. Influenza vaccination in pregnancy: vaccine uptake, maternal and healthcare providers' knowledge and attitudes. A quantitative study. BJGP open 2018;2(3):1-11
2. Cleary B, Rice U, Eogan M, Metwally N, McAuliffe F. 2009 H1N1 influenza vaccination in pregnancy: uptake and pregnancy outcomes - a historical cohort study. European Journal of Obstetrics, Gynaecology and Reproductive Biology 2014:178:163–168.
3. Wilson R, Paterson P, Jarrett C, Larson H. Understanding factors influencing vaccination acceptance during pregnancy globally: A literature review. Vaccine. (2015, Nov 25), 33(47): 6420-6429.
4. Hallissey R, O'Connell A, Warren M. Factors that Influence Uptake of Vaccination in Pregnancy. Ir Med J. 2018 Mar 14;111(3):713. PMID: 30376231.

Irish Medical Journal
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Covid-19: The Disappearance of Children from the Paediatric Emergency Department

R. Sabnani, E. Curran (joint 1st co-authors), J. Hayden, J. Twomey

Paediatric Emergency Department, University Hospital Limerick (UHL).

Dear Editor,

Ireland had its first case of COVID-19, the disease caused by SARS-CoV-2, a novel coronavirus first reported in Wuhan, China, on the 29th of February 2020[1]. On the 11th of March 2020, the World Health Organisation (WHO) declared a global pandemic[1] and by March 12th schools and childcare centres in Ireland were closed. March 27th, 2020 marked the day when Ireland went into full lock down. With increasing restrictions came a decrease in paediatric emergency presentations, leading many to wonder: Where have all the children gone?[2]

The aim of this study was to determine if the pandemic influenced paediatric presentations to the University Hospital Limerick (UHL) Paediatric Emergency Department (ED). Our data included presenting complaint, triage category, referral source and address. A single centre, retrospective review of the Paediatric ED from April 6th to 13th 2020 (during the first lock down) compared to April 7th to 14th 2019.

A total of 371 patients from 2019 and 120 patients from 2020 were identified. There was a 67.7% reduction in presentations during the pandemic. The age ranged in both cohorts from 6 days to 16 years, with a median of four years. There was an increase in triage category “Overdose and Poisoning” from 0.5% to 3.3%, which was statistically significant ($p<0.05$). The number of patients with “Facial/Eye Problems” including injuries, infection, etc. also increased with a significant p value ($p<0.05$). Patients triaged as “Unwell Child/Baby” decreased significantly from 24.5% to 15.8% ($p<0.05$). There was no statistical difference in “Short of Breath” or “Abdominal Pain” presentations. Changes in triage categories one to four were not statistically significant, however, there was a reduction in category four presentations from 4% to 1.7%. There were no referrals from out of hours GPs, injury units or other services during lockdown ($p<0.05$). Self-referrals increased from 42.3% to 64.2%. Patient address from Limerick remained unchanged, with ~59% in 2019 and ~58% in 2020, with others mostly from North Cork, Tipperary or Clare.

The decrease during the pandemic in comparison to a week in the previous year is almost 70%. This suggests that patients presenting to ED may not always need emergency care or were hesitant to attend due to the pandemic. Similar studies in Paediatric EDs worldwide have noticed similar decreases[3]. Self-referrals to the ED increased due to the lack of availability of minor injury units or out of hours GPs. The increase in "Overdose and Poisoning" presentations may suggest a deterioration of mental health or accidental exposure as more time was spent at home due to closure of school and crèche facilities. Our ED has noticed a significant increase in children presenting with mental health issues which is of extreme concern.[4] The decrease in triage category "Unwell Child/Baby" may be due to a reduction in the normal mixing of children, with resultant cross-infection, within the school and crèche setting. Reassuringly, there was no increase in cases triaged as "Short of Breath". The acuity of presentations remained similar in proportion to the attendances, with no statistical difference in triage categories. Further studies of paediatric EDs during the pandemic will be needed to provide additional insight into this observed phenomenon.

Corresponding Author:
Jennifer Hayden,
Paediatric Emergency Department,
University Hospital Limerick (UHL)**.**
E-mail: jennyhayden40@gmail.com

References:

1. "WHO Director-General's Opening Remarks at the Media Briefing on COVID-19 - 11 March 2020." *World Health Organization*, World Health Organization, www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020. Accessed in November 2020.
2. Isba R, Edge R, Jenner R, Broughton E, Francis N, Butler J. Where have all the children gone? Decreases in paediatric emergency department attendances at the start of the COVID-19 pandemic of 2020. Arch Dis Child. 2020 Jul;105(7):704.
3. Scaramuzza A, Tagliaferri F, Bonetti L, Soliani M, Morotti F, Bellone S, et al. Changing admission patterns in paediatric emergency departments during the COVID-19 pandemic. Arch Dis Child. 2020 Jul;105(7):704-706.
4. Golberstein E, Wen H, Miller BF. Coronavirus disease 2019 (COVID-19) and mental health for children and adolescents. JAMA Pediatr 2020;174(9):819–820.

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Virtual Clinics during COVID-19: Implementation and Impact in an Irish Context

C. Everard, E. Faller, S. Lapthorne, C. Sadlier
Department of Infectious Diseases, Cork University Hospital, Wilton, Cork, Ireland.

Dear Editor,

The COVID-19 pandemic significantly impacted outpatient services and face-to-face consultations[1]. Consultations by phone or video subsequently surged and comprised over 79,000 Irish outpatient appointments in June 2020[2]. The adoption of virtual clinics during COVID-19 has been described in an Irish paediatric setting[3] and their viability assessed in adult diabetic services[4]. However, shared challenges and approaches to their implementation among diverse medical specialties remain less explored, and their impact on trainee learning, team dynamics and future services less understood.

We undertook a survey to explore the views of consultants in different medical specialties on the implementation and impact of virtual consultations following the first wave of the pandemic. Medical consultants (n=55) from a tertiary referral university hospital were invited by e-mail (8/7/20) and subsequent reminder e-mail (23/7/20) to complete a self-administered online questionnaire. Fifteen consultants (27%) from ten medical specialities completed this.

Prior to COVID-19, three (20%) respondents reported conducting some virtual consultations by phone or video. Nine (60%) reported no plans to start a virtual clinic in the coming year. Thirteen (87%) agreed there were a cohort of patients who could benefit from virtual consultations while two (13%) felt virtual consultations were not appropriate for their practice.

Regarding patient perceptions, nine (60%) thought patients felt much the same about virtual as in person consultations and three (20%) reported patients were happier with virtual consultations. All respondents declared the inability to perform physical examination as a limitation. The need for phlebotomy and imaging were additional limitations reported by ten (67%) and eight (53%) respondents respectively.

In terms of triage, fourteen (93%) participants used clinical judgement alone to determine who should be seen in person, by video or on the phone. One (7%) participant additionally used a protocol.

With respect to video consultations, insufficient internet access and insufficient microphones/cameras were limitations for eight (53%) and seven (47%) participants respectively. Five (33%) participants had concerns about poor quality image and lags.

Regarding team dynamics, four (27%) felt each team member had a defined role within virtual clinics and no (0%) respondents thought it beneficial for trainee learning. Twelve (80%) felt there were outstanding issues regarding roles and responsibilities, and nine (60%) expressed an interest in learning how others carried out their virtual clinics.

Going forward, twelve (80%) respondents reported being likely to require catch up clinics due to a lack of thorough examination and investigations virtually. Seven (47%) respondents were more likely to use virtual clinics beyond the pandemic.

Moreover, results suggest most respondents changed their usual practice to incorporate virtual consultations in response to the pandemic despite the challenges it posed. While the majority felt catch up clinics would be required and trainee learning was compromised, results suggest virtual consultations may become an enduring legacy of COVID-19 on outpatient clinics.

Addressing infrastructural barriers and engaging dialogue around best practice, triage and trainee learning may help improve the virtual clinic interface for providers. Further research of patient perspectives may help identify patients most likely to benefit from this mode of consultation.

Ethical Approval:
Ethical approval was received from the Clinical Research Ethics Committee of the Cork Teaching Hospitals (Reference ECM 4 (k) 16/06/2020).

Corresponding Author:
Cormac Everard
Cork University Hospital,
Wilton,
Cork,
Ireland.
E-mail: cormac.everard@hse.ie

References:

1. Mehrotra A., Chernew M, Linetsky D., Hatch H., Cutler D. The Impact of the COVID-19 Pandemic on Outpatient Visits: Practices Are Adapting to the New Normal. Commonwealth Fund. June 2020. Available at: https://doi.org/10.26099/2v5t-9y63
2. Health Service Executive. Health Services Performance Profile April - June 2020. June 2020. Available at: https://www.hse.ie/eng/services/publications/performancereports/2020-performance-reports.html

3. Elhassan R., Sharif F. , Yousif T.I. Virtual Clinics in the Covid-19 Pandemic. Ir Med J. 2020. Vol 113; No. 7; P127. Available at: http://imj.ie/virtual-clinics-in-the-covid-19-pandemic/
4. Thompson B. , O'Keeffe D. The Viability of Telemedicine for Type 1 Diabetes Ir Med J. 2020 Vol 113; No. 10; P203. Available at: http://imj.ie/wp-content/uploads/2020/12/The-Viability-of-Telemedicine-for-Type-1-Diabetes.pdf

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Doctors and The Mother and Baby Homes Final Report

D. McGlacken-Byrne
Royal College of Physicians in Ireland, Dublin 2.

Dear Sir,

Faulkner famously remarked that the past is never dead – it's not even past.

As we reflect on the suffering of generations of women and children in State-run institutions[1], Irish citizens have been prompted to ask ourselves: 'What would I have done? Would I have spoken out against what now seems so wrong, and yet at the time went largely unchallenged?'

For many years, those who sought to separate Church from State in Ireland, particularly in healthcare, were regarded as inconvenient, subversive or worse. So, very few did. Within medicine, Dr. Noël Browne was a rare exception, earning few friends in the process. In politics, two of our subsequent presidents, Michael D. Higgins and Mary Robinson, were among a number of legislators starting conversations most were not ready to have – for example by their failed Illegitimate Children Bill in 1974[2], seeking to strike the insulting label of 'illegitimacy' from Irish law.

In particular, members of the medical profession – especially those charged with the care of children – have cause for reflection. Systems of oppression cannot endure without at least tacit assent from those with power and influence. The Mother and Child scheme in 1951 could have brought about some improvement in conditions for the women and children in Mother and Baby Homes. The repudiation of that scheme was due in part to opposition from doctors.

While it is impossible to know how one would act in another time or place, we are wholly responsible for decisions made now. If we are truly sorry for the injustices of the past, we must acknowledge those which reflect them today.

Today, the Traveller and Roma communities in Ireland are marginalised in a manner not greatly different to fifty or a hundred years ago. The alarming life expectancy and infant mortality statistics seen in these groups continue to resemble the standards of the 1940s. Yet any politician who speaks up to address such matters will gain few votes for doing so.

Today, children growing up in Direct Provision centres around Ireland are deprived of the security and autonomy they need to overcome their trauma and to develop as individuals. Instead, we consign them to the repeated trauma of this undignified and stigmatising system. While the Royal College of Physicians in Ireland has called for its abolition[3], Direct Provision received scarce attention in 2020 other than for its capacity to accelerate the spread of Covid-19. Notably, the recent publication of a governmental White Paper, committing to replace this system with a rights-based alternative, premised on integration[4], is to be welcomed. As advocates for the rights of children, doctors have a role to play in ensuring these words are followed by actions.

Apologising for the past is straightforward. What is more difficult and more valuable is to learn from it, by facing up to shortcomings which continue to echo it today.

Corresponding Author:
D. McGlacken-Byrne
Royal College of Physicians in Ireland,
Dublin 2.
Email: mcglackd@tcd.ie

References:

1. Murphy JFA. The Mother and Baby Homes Commission of Investigation Final Report. Irish Medical Journal 2021;114(1):231. Available at: www.imj.ie/wp-content/uploads/2021/01/The-Mother-and-Baby-Homes-Commission-of-Investigation-Final-Report.pdf
2. Illegitimate Children (Maintenance and Succession) Bill, 1974. Available at: www.oireachtas.ie/en/bills/bill/1974/12/
3. Royal College of Physicians in Ireland. Children in direct provision, 2019. Available at: rcpi-live-cdn.s3.amazonaws.com/wp-content/uploads/2019/12/Direct-provision-position-paper-full-final-PDF.pdf
4. Department of Children, Equality, Disability, Integration and Youth. A White Paper to End Direct Provision and to Establish a New International Protection Support Service. Rialtas na hÉireann/Government of Ireland, 2021. Available at: https://www.gov.ie/pdf/?file=https://assets.gov.ie/124757/ef0c3059-b117-4bfa-a2df-8213bb6a63db.pdf