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BIPAP – Too Little, Too Late?

Sir,

Life-saving treatment for acute respiratory failure (ARF) traditionally mandated endotracheal intubation and positive pressure ventilation. However, this method of mechanical ventilatory assistance has its complications; hence the use of non-invasive ventilation (NIV) has emerged in recent times to become the preferred treatment modality[1]. The success of NIV depends on careful selection of patients who meet the well-established criteria for NIV and demonstrate no contraindications. Previous studies have shown that application of NIV on patients with an acute exacerbation of COPD may reduce the risk of intubation by almost 70%[2].

We conducted a local investigation on the administration of NIV in the form of Bi-level Positive Airway Pressure (BIPAP) in an acute general hospital. We sought to determine if BIPAP was initiated on patients according to standard guidelines and to examine their outcomes. Patients commenced on BIPAP were identified from the Coronary Care Unit (CCU) logbook. Their medical charts were then sourced from the Hospital Inpatient Enquiry and a predesigned questionnaire based on the British Thoracic Society guidelines[3] was completed for each of them. There were 21 patients who received BIPAP treatment from 1st October to 30th November 2011 with the mean age of these patients being 71.6years. A combination of COPD and CCF exacerbation (47.6%) was the predominant indication for BIPAP and this was followed by COPD exacerbations (28.6%). The mean arterial blood gas (ABG) results of these patients pre-BIPAP were pH 7.30, PO2 9.2kPa, PCO2 7.54kPa, and O2 saturations of 89.5%. There was a failure rate of 42.9% where 9 out of the 21 patients were unsuccessful on BIPAP, 3 of whom died while receiving BIPAP. Five patients were intubated following failure of BIPAP out of which 3 died. One patient was switched to CPAP.

Our investigation revealed a delay in the commencement of BIPAP with less than 40% of patients receiving BIPAP after more than 60 minutes had lapsed from the time a diagnosis of ARF was made. Delayed treatment with NIV can lead to severe respiratory acidosis and increased mortality[4]. Our study also revealed that there was no documented clinical evaluation with repeat ABGs in 76% of patients and 6 patients had the first repeat ABG only after 4 hours on BIPAP. The success of treatment also depends greatly on the aspect of monitoring patients while they are on BIPAP. The need for clinical assessment and ABG measurement would guide optimization of the ventilator settings and to indicate the patients' response to treatment. It is recommended that ABGs be performed after 1-2 hours of BIPAP, and repeated up to 4 hours later if the earlier sample showed little improvement[3]. The possibility of nursing staff titrating NIV settings based on an agreed algorithm may improve the effectiveness of this intervention in small hospitals where out of hours medical cover is focused on acute medical admissions. In conclusion, there is a need for a robust protocol to be put in place as well as formal training of medical and nursing staff in order to improve on the current practice.

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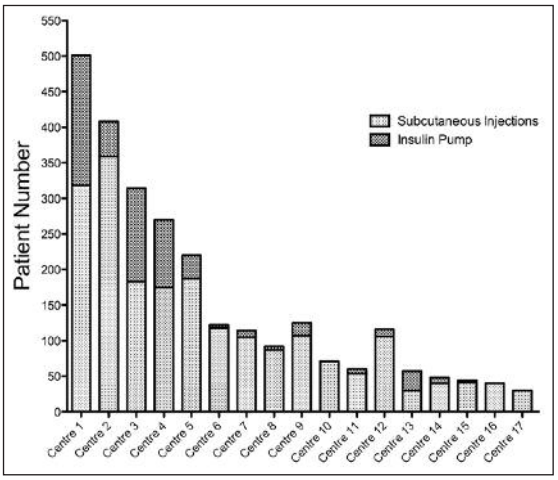
In this Month's IMJ

Paediatric Type 1 Diabetes in Ireland- results of the first national audit: Hawkes and Murphy have gathered data on paediatric diabetes at 17 of the country's 19 hospitals. There were 2518 children with diabetes. Eight hospitals initiate insulin pump



therapy. Mean Hb1C levels ranged from 66.1 to 79.2 mmol/mol. The authors emphasise the importance of a national approach to paediatric diabetes.

Arrest in hospital: a study of in hospital cardiac arrest: Fennelly et al point out that the key factors are the prompt detection of the event and the immediate response of the resuscitation team. Return to spontaneous circulation was 30% when the event wasn't witnessed and 52% when it was witnessed. Another important factor was the presence of a shockable rhythm. Return to spontaneous circulation was 31% in the absence of a shockable rhythm and 85% in the presence of a shockable rhythm. When the first dose of adrenaline is administered <2 mins there response is 54% compared with 28% when given >2 mins.

Table 4 Significant Associations of Characteristics with Outcome

Characteristic	Return of Spontaneous Circulation	Deceased	P value
Witnessed arrest (n=187)			
– Yes (n=157)	82 (52%)	75 (48%)	0.029
– No (n=30)	9 (30%)	21 (70%)	
Initial rhythm (n=155)			
– VF/VT (n=33)	28 (85%)	5 (15%)	<0.001
– Asystole/PEA (n=122)	38 (31%)	84 (69%)	
First Dose Adrenaline (n=67)			
– ≤ 2 minutes (n=24)	13 (54%)	11 (46%)	0.040
– > 2 minutes (n=43)	12 (28%)	31 (72%)	
Location of arrest (n=154)			
– Ward (n=95)	36 (38%)	59 (62%)	0.032
– ICU (n=59)	33 (56%)	26 (44%)	
Characteristic	**Survival to discharge**	**Deceased**	**P value**
Age of Patient (n= 170)			
– ≤ 65 years (n=68)	19 (28%)	49 (72%)	0.029
– > 65 years (n=102)	14 (13.7%)	88 (86.3%)	
Initial Rhythm (n=155)			
– VF/VT (n=33)	15 (45%)	9 (27%)	<0.001
– Asystole/PEA (n=122)	9 (7.3%)	101 (83%)	

Outpatient parenteral antimicrobial therapy: a report of three years experience: Glackin et al describe a programme of home intravenous antibiotic therapy for children. There were 32 children in the series, the majority suffering from cystic fibrosis. The course of treatment lasts 10 days, the most commonly used antibiotics being tobramycin and ceftazidime. The programme has delivered 3,688 days of antibiotics, in previous all this therapy would have been delivered in hospital.

Table 1 Antimicrobials used in OPAT

	No. Courses (%)		No. days
Antibiotic therapy			
Tobramycin	106	(29.3)	1,103
Ceftazidime	70	(19.4)	752
Meropenem	41	(11.3)	380
Flucloxacillin	31	(8.6)	349
Teicoplanin	29	(8)	296
Cefuroxime	22	(6.1)	236
Pip/tazo	12	(3.3)	102
Cefotaxime	10	(2.8)	105
Aztreonam	9	(2.5)	101
Ceftriaxone	8	(2.2)	88
Amikacin	7	(1,9)	49
Colistin	4	(1.1)	29
Vancomycin	4	(1.1)	25
Gentamicin	3	(0.8)	26
Antifungal therapy			
Ambisome	6	1.7	47
Total	**362**		**3,688**

Distance as a risk factor for amputation in patients with diabetes: a case-control study: Gallagher et al in a study of diabetic patients that those living furthest from the diabetic centre were at greater risk of requiring an amputation. The probable explanation is a higher rate of neuropathy. There were 66 cases of amputation in the series. The authors emphasise the importance of diabetic foot care particularly in those with peripheral neuropathy.

Table 2 Odds Ratios of Exposure for Cases of Amputation (with 95% CI)

Predictor Variable	Univariate Analysis	Multivariate Analysis
Distance from Diabetes Centre, km	1.01 (1.00, 1.02)	
Location of Residence		
• Galway City	Reference	
• Galway County	2.09 (0.99, 4.39)	
• Other Counties	2.58 (1.12, 5.98)	
Diabetes Duration, years	1.08 (1.05, 1.11)	1.07 (1.03, 1.11)
Type 1 Diabetes	2.51 (1.12, 5.60)	
Insulin Use	5.27 (2.85, 9.75)	
HbA1c (%)	1.32 (1.08, 1.61)	
Absent Foot Pulse	5.38 (2.70, 10.73)	
Vibration or Monofilament Sensation Impaired	9.46 (4.44, 20.15)	10.73 (4.55, 25.74)

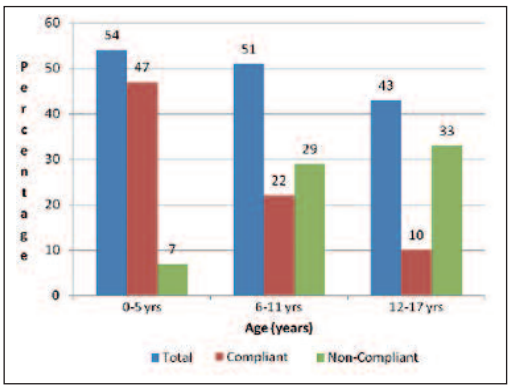
An audit of smoking prevalence and awareness of HSE smoking cessation services among HSE staff: ÓhAiseadha et al found that the overall smoking rate among a sample of HSE staff was 15%. The rate was 4.4% among medical/dental staff. The findings are encouraging and indicate that a tobacco-free society is possible ie a smoking prevalence <5%.

Table 1 Smoking status, quitting intentions and awareness of support services

	General Support	Health & Social Care	Management & Administration	Medical / Dental	Nursing	Other Patient & Client Care	Total
Smoking status no(%)							
Daily	15(19.5)	6(5.0)	22(14.7)	2(4.4)	17(6.9)	20(17.1)	82(10.9)
Occasional	4(5.2)	5(4.2)	8(5.3)	0(0.0)	10(4.1)	4(3.4)	31(4.1)
Ex-smoker	9(11.7)	37(30.8)	35(23.3)	11(24.4)	80(32.5)	34(29.1)	206(27.3)
Never	46(59.7)	72(60.0)	81(54.0)	32(71.1)	134(54.5)	54(46.2)	419(55.5)
Not stated	3(3.9)	0(0.0)	4(2.7)	0(0.0)	5(2.0)	5(4.3)	17(2.3)
Quitting intentions no(%)							
Tried to quit in last year	8(42.1)	7(63.6)	13(43.3)	0(0.0)	16(59.3)	10(41.7)	54(47.8)
Would like to quit	17(89.5)	9(81.8)	21(70.0)	1(50.0)	22(81.5)	21(87.5)	91(80.5)
Awareness of quit services no(%)							
Cessation clinics	18(23.4)	54(45.0)	84(56.0)	10(22.2)	162(65.9)	35(29.9)	363(48.1)
Quitline	17(22.1)	59(49.2)	78(52.0)	9(20.0)	129(52.4)	44(37.6)	336(44.5)
Quit.ie website	15(19.5)	32(26.7)	47(31.3)	8(17.8)	75(30.5)	24(20.5)	201(26.6)
Any service	37(48.1)	70(58.3)	108(72.0)	13(28.9)	194(78.9)	58(49.6)	480(63.6)

Sialoendoscopy in the management of salivary gland disorders- 4 years experience: Hassan and Curran describe their experience of sialoendoscopy in 41 patients. Almost 50% had obstructing stones, 26.8% had mucinous debris, and 10% had benign strictures. Seventy per cent involved the submandibular gland and 30% the parotid.

An audit of the management of thyroid disease in children with Down syndrome: King et al found that the overall compliance with thyroid function screening among Down patients was 53%. Compliance decreased with the child's age, 0-5 years 87%, 6-11 years 43%, 12-17 years 23%.



Eradicating Low Value Medical Care

Low value medical care is a service or treatment that provides little or no value to a patient's health and on occasions may be harmful. It is encountered across the full spectrum of medical activity including blood tests, radiology, diagnostic procedures such as endoscopies, medications and sometimes surgery. In confronting low value care the two main challenges are firstly to identify it and secondly to eliminate it. Don Berwick has previously stated that one third of health care is a waste, the challenge is determining which third. It is a concern for the health services of all developed countries. It is particularly pressing for US where current health expenditure levels have become unsustainable.

Atul Gwande[1] and his panel have recently addressed these issues from an American perspective but much of the deliberations are equally applicable to Ireland or the UK. Health care professionals, administrators, politicians and public mostly agree that we spent too much of the country's wealth on health care that doesn't work and insufficient on measures health care that are truly beneficial. There was unanimous agreement among the panel members that it was now time to tackle the issues involved. Concentrating on high value medical care is very beneficial for patients and saves money. There should be an emphasis on the history and physicial examination, balanced assessment and good communication with the patient. Tests cannot be used as a substitute for this comprehensive clinical evaluation.

The challenge is finding the true value to cost benefit ratio. It is difficult to select out the treatments that provide little or benefit to a patient. There is frequently a minority of either doctors or patients who feel that a treatment is helpful despite the contrary opinion of the majority. Even among the most well-meaning doctors decision fatigue can set in. The doctor can feel compelled to accommodate patient's requests for treatment even though he is aware that it is not necessary. All front-line physicians will recognise this scenario.

One of the aims of the new 'choosing wisely campaign' is to change the culture that 'more is better'. Its purpose is to inform both doctors and patients about ineffective medical therapies[2]. In 2010 Howard Brody proposed that medical groups should identify activities within their specialty that do not contribute to patients' health. The process is not about rationing medical care but rather thoughtful examination, investigation and best treatment of the patient. In Canada nine medical societies have published the top five tests, investigations, treatments that have little value. Areas being targeted include routine MRIs for low back pain, antibiotics for URTIs and sinusitis, overuse of benzodiazepines and antipsychotics in the elderly, routine imaging for minor head injuries in the absence of red flags, automatic chest x-rays and ECGs prior to routine surgery in low risk patients. Other tests that come under criticism are IgG and IgE batteries, stress cardiac imaging in asymptomatic paients, long-term gastric acid suppression without an attempt to reduce or stop medication. The campaign is targeted at the public and it is driven by the professional organisations. It is pointed out that effective communication is the key to patient satisfaction and the avoidance of litigation rather than a battering ram of unhelpful tests and dubious therapies[3]. Radiologists are perceived as important gatekeepers in advising against low value radiological investigations. Overuse of imaging is emphasised by all commentators and was listed by 29% of the professional groups. Critics of the programme point that while subspecialist groups have pinpointed blood tests and radiology they have been more reluctant to criticise their own procedural investigations. The American Society of Otolaryngology failed to list excessive use of tonsillectomy and grommet placement.

Gawande emphasises that one should concentrate on whether the medical service provides any benefit to the patient rather than the issue of waste or excessive costs. All doctors must frequently ask themselves about what is the benefit and what the size of the benefit is? Having weighed up the options the doctor must have the honesty and clinical freedom to say to a patient 'I don't think that this medication/ procedure is going to help you very much'. Sometimes patients have strong preferences contrary to their doctor's opinion. This however is unusual and most patients are primarily looking for information and professional guidance.

Elimination of low value services will require effective tools for change. There needs to be a process of well thought out choices. Benchmarking by physicians against standard rates for tests, investigations and lines of treatment in common conditions is a good start. It is also important to reach consensus about debatable treatments of dubious clinical value. It needs to be constantly emphasised that unnecessary tests can lead to false positive misleading findings and anxiety among patients.

A change in the culture of medical practice will be needed. The medical profession will need a substantial amount of support if it is to effect any significant change. Concerns about litigation and the practice of defensive medicine is one of the explanations for performing irrelevant tests. With better consensus it should be possible for doctors to practice a more targeted approach to investigation and treatment. Doctors want to be perceived as practicing in a manner that is agreed and accepted by their medical peers.

Doctors in addition to caring about the well-being of individual patients will also need to consider the well-being of all patients. A new balance will need to be struck between overuse and underuse of clinical care. Patients will need informed guidance because it is difficult for them to distinguish between high value and low value clinical care. A new patient education drive will be needed to re-educate patients on what constitutes standard good quality care and what types of care are of little value or are sub-standard. The public's perceptions of healthcare and what really matters to them will have to be re-shaped. Patients should be encouraged to ask whether a particular investigation or treatment will really be beneficial for their health.

JFA Murphy
Editor

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Kellogg's All-Bran the Fibre Provider

8 out of 10 Irish adults do not get enough fibre in their diet[1] which can lead to digestive discomfort and constipation. In fact, Irish adults consume just 17-21g of fibre per day, that's a third less than they need!

However, in most cases it can be quickly & easily helped by dietary changes, especially a diet high in fibre. According to NICE, the first step in the management of constipation should be appropriate dietary and lifestyle changes.

But how much fibre?

We're recommended to eat 25g of fibre per day[2] and yet Irish adults don't. In Ireland, most adults could benefit from a daily increase of at least 4-8g fibre. Fibre is one of the only true deficiencies, and is widespread through the lifespan and across the European population[3]. An easy way to help you on your way is to choose **Kellogg's All-Bran** for breakfast – one bowl (40g) of **All-Bran** contains 11g of fibre.

This is the same amount as you would get in the following foods:

- *19 dried prunes*
- *3 jacket potatoes*
- *4 medium slices of wholemeal bread*
- *3 bowls of brown rice*

Kellogg's All-Bran, effective in the management of constipation

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Paediatric Type 1 Diabetes in Ireland – Results of the First National Audit

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To receive CPD credits, you must complete the questions online at www.imj.ie.

Abstract
The aim of this study was to describe the services provided for children with type 1 diabetes in the Republic of Ireland, and to identify a baseline from which services and outcomes might be improved. Lead clinicians in 17 of the 19 centres providing paediatric type 1 diabetes care responded to requests for information from 2012 regarding demographics, patient numbers, diagnostics, outpatient management, multidisciplinary team resources, comorbidity screening, transition policy, clinical guidelines, and use of insulin pumps. The total number of patients attending these centres was 2518. Eight centres initiate insulin pump therapy. Insulin pump usage ranged from 0 to 42% of patients attending each centre. Self reported clinic mean haemoglobin A1c ranged from 8.2 to 9.4% (66.1 to 79.2 mmol/mol). Variation existed in guideline availability, frequency of clinic appointments, age of transition and insulin types used. We recommend a national approach to standardising and improving care for these patients.

Introduction

Type 1 diabetes is a chronic condition affecting 5-40 per 100,000 of the paediatric population. The incidence is higher in the United Kingdom, Ireland and Scandinavia than in most of Central and Southern Europe[1] and is rising, particularly in children aged under 5 years[2,3]. The provision of care for this population requires multidisciplinary input, with the ultimate aims of improving quality of life and reducing long-term diabetes related complications. Improved glycaemic control, measured by haemoglobin A1c (HbA1c), reduces the risk of microvascular complications[4]. Poor diabetes control is an important modifiable driver of costs associated with type 1 diabetes care[5,6]. Increased multidisciplinary team resources correlate with improved glycaemic control[7]. However, this is not a linear relationship[8] and is likely influenced by quality of staff training and clinical experience. Little is known of outcomes for children with type 1 diabetes in the Republic of Ireland, but it is likely that they are similar to the United Kingdom. HbA1c in the UK paediatric population is sub optimal, with only 14.5% of children achieving the target of under 7.5% (58 mmol/mol) in 2009-2010 and 15.8% achieving this in 2011[9,10].

International Recommendations suggest a caseload per diabetes nurse specialist of between 70 and 100 patients and suggest that smaller services (with less than 70 patients) should have care delivered by a single consultant[11]. The attendance of a dietitian at diabetes clinic is also recommended[12]. The National Health Service in the United Kingdom has recently developed thirteen key standards of paediatric diabetes care and funding provision is dependent on delivering these standards. Recent investment in children's diabetes services in the United Kingdom has reduced caseloads per diabetes nurse from 147 in 2002 to 92 in 2009[13] and has improved dietetic access[12]. It is anticipated that the identification and implementation of incentivised standards of care will improve outcomes. The most recent review of children's diabetes services in Ireland (2006) identified that 2040 patients attended 29 consultants in 19 centres, with consultant caseload ranging from 25 to 270 patients. Insulin pump therapy was available in 4 centres, and only 4% of patients were using this treatment. The average caseload per diabetes nurse specialist was 162 patients[14]. National data on HbA1c outcomes in Ireland have never been described.

The aim of this study was to describe the provision and quality of diabetes services for children with type 1 diabetes in the Republic of Ireland, and to establish a baseline from which services and outcomes might be improved.

Methods

An online questionnaire was developed using Survey Monkey (California, USA). This survey requested information regarding demographics, patient numbers, diagnostics, outpatient management, multidisciplinary team resources, comorbidity screening, transition policy, clinical guidelines, and use of insulin pumps. Information was collected for all patients who attended the service during 2012, and mean HbA1c excluded all patients diagnosed after 1st January 2012. Nineteen centres were identified as managing children with type 1 diabetes. The criterion for inclusion as a centre was the attendance of children with type 1 diabetes to the outpatient department for routine diabetes care. A lead consultant was identified in each centre and the survey was sent via email on 18th January 2013, with an initial deadline of 1st March. This deadline was subsequently extended to 9th June 2013. All lead consultants had confirmed contact via email or phone during this time period.

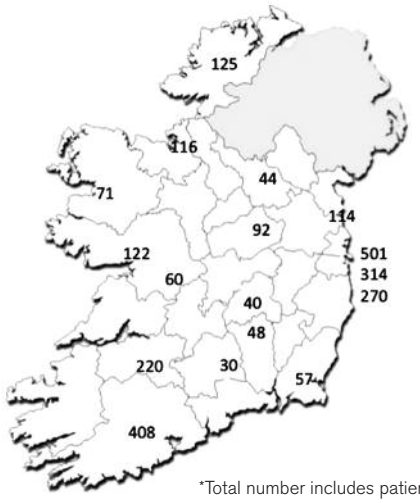

Figure 1
Total patient number* attending each centre in Ireland

*Total number includes patients shared with other centres

Results

Lead clinicians in 17 out of the 19 identified centres submitted questionnaire responses. In 14 of these centres, mean HbA1c was reported.

Patient Numbers

The total number of patients attending each centre is presented geographically in Figure 1. The numbers reflect the total number of patients who attended each centre at least once in 2012. Where an individual had care shared between two centres, they are counted in both. In the 17 centres that reported data, the total number of newly diagnosed patients in 2010, 2011 and 2012 were 262, 283 and 287, respectively. The number of newly diagnosed patients in each centre ranged from 0 to 37 in 2010, 5 to 41 in 2011 and 5 to 49 in 2012.

Resources

Diabetes nurses and dieticians who were not specifically trained

CPD available online at www.imj.ie and questions on page 127.

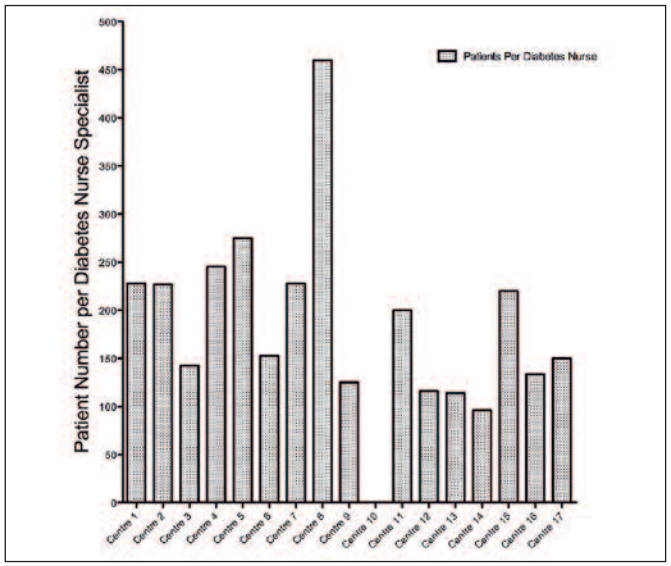

Figure 2 Number of patients per diabetes nurse specialist. (Recommended number is 70-100 patients). Data not submitted for Centre 10

in paediatrics often provided care in smaller centres. Only one centre had appropriate diabetes nurse specialist to patient ratio to meet the recommended 70-100 patients per diabetes nurse (Figure 2), but this centre did not have a dedicated paediatric diabetes nurse specialist. Insulin pump initiation was available in 8 (47%) of the 17 centres. Those centres that did not initiate pump therapy arranged shared care or transfer of care to another centre for this. The number of patients using insulin pumps varied between centres, ranging from 0 to 42% (Figure 3).

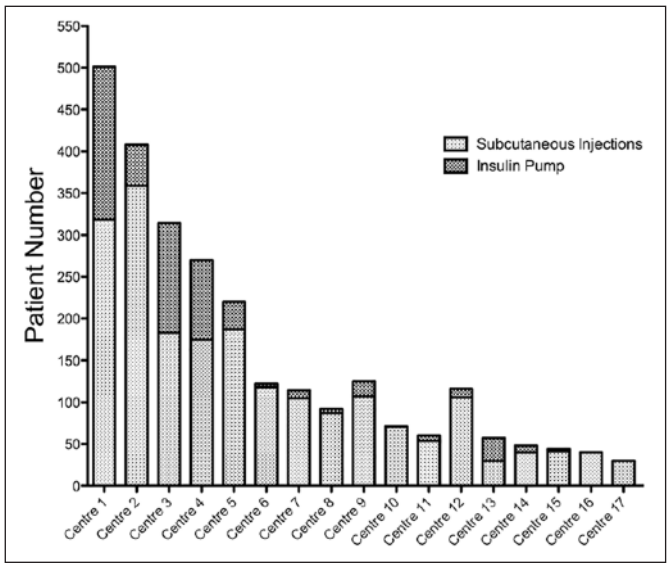

Figure 3 Number of patients in each centre using insulin pumps

Outcomes

15 centres provided self-reported mean HbA1c, and 14 provided these stratified in age categories 0-5.99 years (7.4 to 8.7%, 57.4 to 71.6 mmol/mol), 6-11.99 years (7.9 to 9%, 62.8 to 74.9 mmol/mol), 12-15.99 years (8.1 to 9.6%, 65 to 81.4mmol/mol),16-17.99 years (8.2 to 10.2%, 66.1 to 88 mmol/mol) and >18 years (7.2 to10.4%, 55.2 to 90.2 mmol/mol). The mean clinic average HbA1c ranged from 8.2 to 9.4% (66.1 to 79.2mmol/mol) and varied geographically. In the North West clinics, the mean self-reported HbA1c were 8.7%, 9%, 9.1% and 9.4% (71.6, 74.9, 76 and 79.2 mmol/mol). In the East and Midlands clinics, these were 8.2%, 8.3%, 8.4%, 8.4%, 8.5%, 8.6% (66.1, 67.2, 68.3, 68.3, 69.4 and 70.5 mmol/mol). In the Southern clinics, these were 8.3%, 8.4%, 8.7% and 8.7% (67.2, 68.3, 71.6 and 71.6 mmol/mol).

Guidelines and Practice

Frequency of outpatient clinic appointments was 3 monthly in 12 (70%), 4 monthly in 3 (18%) and 5 monthly in 2 (12%) centres. Larger centres were less likely to provide the recommended 3 monthly appointments and insufficient resources to provide these for the large patient number was cited as the reason. Written protocols for the management of diabetes ketoacidosis (n=17, 100%), education plan for newly diagnosed (n=16, 94%), sick day rules (n=16, 94%), hypoglycaemia management (n=14, 82%), perioperative management (n=13, 77%), poor outpatient attenders (n=4, 23.5%), children with high HbA1c (n=3, 17.6%) and transition to adult care (n=3, 17.6%) were available. All responders would welcome the development of national guidelines for these listed protocols. The age limit of acceptance of newly diagnosed children with type 1 diabetes under paediatric care was very variable. The age cut off was 14 years in 5 (29%), 15 years in 2 (12%), 16 years in 8 (47%) and 17 years in 2 (12%) centres. Timing of transition of established patients to adult services also varied considerably occurring at16 years (n= 4, 24%), 17 years (n= 4, 24%), 18 years (n= 5, 28%) or at school completion (n= 4, 24%). The starting insulin type used in newly diagnosed children stratified according to age is shown in Table 1.

Table 1 Insulin therapy commenced in newly diagnosed children with type 1 diabetes

Age	Twice Daily	Three times daily***	Basal Bolus	Insulin Pump	Other
0 - 1.9yrs	2 (11.8%)* 6 (35.3%)**	0	6 (35.3%)	1 (5.8%)	2 (11.8%)
2 - 5.9yrs	1 (5.9%)* 7 (41.15%)**	1 (5.9%)	7 (41.15%)	0	1 (5.9%)
6 - 11.9yrs	2 (11.8%)* 5 (29.4%)**	1 (5.8%)	7 (41.2%)	0	2 (11.8%)
12 - 16yrs	0*, 0**	3 (17.6%)	14 (82.4%)	0	0

* Premixed, ** Self mixing
***Three times daily (Free mixing in morning, fast acting at dinner and long acting insulin at bed)

Discussion

This is the first study to describe in detail the diabetes services for children with type 1 diabetes in the Republic of Ireland, and it has demonstrated wide variation in the structure and process of care between centres. Specifically, these variations are noted in patient numbers, team resources, initiation of insulin pump therapy, clinical guidelines availability, age of transition and HbA1coutcomes. Despite the limitations of self-reported data, this provides a starting point to establish current care provision and distribution of resources, and to inform future service planning. Children with type 1 diabetes require specialised care, provided by a team with appropriate expertise. Diabetic ketoacidosis is present in approximately one quarter of children at diagnosis[15], which can rarely be associated with life threatening cerebral oedema[16] and appropriate guidelines for management should be followed. All centres that responded to this survey have guidelines for this. Following initial management, structured education should be provided to empower patients and their families in diabetes care[17] and most centres also have guidelines for this. However, only one fifth of Irish centres have guidelines in place for the management of children who fail to attend clinic regularly or have persistently poor glycaemic control, and for adolescents being transitioned to adult care.

The data presented here highlight significant deficiencies across multidisciplinary teams in Ireland. It has previously been identified that many consultants delivering paediatric diabetes care in the Republic of Ireland as part of their general paediatric workload have no specific training or ongoing Continuing Medical Education in paediatric diabetes[14]. Many services have insufficient diabetes nurses and dietitians and poor access to psychosocial services. High quality care delivery requires trained, adequately staffed multidisciplinary teams. It may be infeasible to provide this multidisciplinary care in smaller centres without sufficient patient numbers to justify the resource. Variation in HbA1c between centres has been reported in other countries[18], and is not unexpected. This outcome measure does correlate with long term risk of diabetes related complications[19], but is not the only factor

to be considered when comparing patient groups. Readmission rates with diabetes related illnesses, average length of stay, incidence of severe hypoglycaemia are also measures of service quality. Frequency of diabetic ketoacidosis presentation is associated with higher HbA1c, but severe hypoglycaemia is not[20]. Severe hypoglycaemia can occur in up to 40% of patients, and can be associated with seizures or coma[21]. Fear of hypoglycaemia can have a significant effect on parental quality of life and may have a negative impact on glycaemic control[22,23]. Data on these factors were not collected in this audit. Other cardio-metabolic factors such as blood pressure and lipid profile are also likely to affect outcome[24].

While this study will inform future paediatric diabetes care in Ireland, the data has a number of limitations. All data is self-reported, and required providers to manually find and input data. Accuracy is challenging in this context and more in-depth data on HbA1c such as medians, and percentages of patients achieving targets was not possible. Shared care of patients between centres is likely to have resulted in a number of patients being counted twice. This represents a small proportion of total patients, but will influence results. A national computerised data management system integrating clinic notes with prospective audit, and allowing for bench marking of outcomes would improve care nationally and this is currently in the early stages of development.

In the context of limited resources, regionalising diabetes care for children with type 1 diabetes should be considered. Large patient numbers are necessary to justify full time employment of a large multidisciplinary team. This would allow for the maintenance of skills, attendance at best practice meetings and improvement in patient care. It would also facilitate skilled out-of-hours coverage as well as emergency cover of sick leave or unexpected absences. While this may improve patient outcomes, it will be associated with an increased requirement for patients to travel to appointments and careful geographic consideration of location of centres is required to mitigate the burden for families. Current wide variation in service provision and glycaemic outcomes must be addressed to improve care of children with type 1 diabetes in the Republic of Ireland.

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Arrest in Hospital: A Study of in Hospital Cardiac Arrest Outcomes

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To receive CPD credits, you must complete the questions online at www.imj.ie.

Abstract
The effect of advances in cardiac arrest management over the last five decades on in-hospital cardiac arrest survival rates is not clear. Data on 212 arrests between January 2010 and May 2013 were retrospectively analyzed by means of an audit form based upon the Utstein template for in-hospital cardiac arrest, with a view to identifying significant associations between arrest characteristics and return of spontaneous circulation or survival to discharge. Significant associations were identified between return of spontaneous circulation and location (ward, 36patients (38%) vs. ICU, 33 Patients (56%); P=0.032), whether an arrest was witnessed or not (82 patients (52%) vs. 9 patients (30%); P = 0.029), whether the initial rhythm was shockable or non-shockable (28 patients (85%) vs. 38patients (31 %); P<0.001), whether the first dose of adrenaline was administered within 2 minutes of arrest onset or later (13 patients (54 %) vs.12 patients (28%); P = 0.04).

Introduction

Despite significant advances in cardiopulmonary Resuscitation (CPR) over the last 5 decades, survival rates from in-hospital cardiac arrest still remain unsatisfactory. At the inception of CPR in the 1950s[1,2], survival to discharge from in-hospital cardiac arrest averaged just 10%.[3] In four decades, that figure rose to 17% by the mid- 1990s.[3] While several recent small scale studies have reported survival to discharge rates of between 12 to 29%,[4-7] larger scale studies[8,9] and an analysis of 70 recent studies, published in 2011,[10] have reported an overall average survival to discharge rate of just 18%.

Notwithstanding significant improvements in life-saving CPR equipment and technology, the greatest determinant in the outcome of in-hospital cardiac arrest is still the prompt detection of the event, and the subsequent immediate action of a team of healthcare professionals who are appropriately trained and able to act.[11] Thus there is a continued need for improvement in in-house cardiac arrest resuscitation procedures. The antecedents and associated characteristics of positive outcome from cardiac arrest are diverse and complex. Complicated by a multitude of reporting styles, definitions and nomenclature, which otherwise make data from different studies almost impossible to compare and contrast meaningfully, a uniform template for recording and reporting such data was proposed in the early 1990s.[12] Known as the "Utstein style", it advocates the use of uniform definitions and standard methodologies to permit useful comparison of data from resuscitation studies.[12]

The aim of this study was to report the use of an audit form for auditing the demographics, frequency and outcomes of in-hospital cardiac arrest events over a 40 month period. We aimed to evaluate the factors affecting outcomes of cardiac arrest by exploring associations between survival rates and event characteristics such as arresting rhythm, performance of the cardiac arrest team and time to delivery of life-saving care.

Methods

Beaumont Hospital is an 810 bed academic teaching hospital, providing emergency and acute care services across 54 medical and surgical specialties to a community of 290,000 people. The hospital employs a cardiac arrest team comprising an Anaesthetist, Medical Registrar, Medical Senior House Officer and a Medical Intern. When a patient collapses a member of staff pushes a cardiac arrest button which immediately activates an alarm system via a DECT telephone system carried by the cardiac arrest team members. Each activation of the alarm is logged electronically, and the legitimacy of the call is then verified retrospectively by the resuscitation officer.

Data on 212 distinct cardiac arrest events recorded over a 40 month period were retrospectively analysed by means of an audit form based upon the Utstein template for in-hospital cardiac arrest. The form captures specific information such as patient demographics (age, sex,) and event variables (date, time of day, location, cause, initial rhythm, timing and types of airway provision and other resuscitation interventions such as provision of life-saving drugs and timing to delivery thereof), and was designed to be completed by cardiac arrest team leaders in real time. Overall the detail of the form comprises some 81 distinct possible data points and contains space for documenting each step of the Advanced Cardiac Life Support Algorithm. The form was designed by the Resuscitation Training Officer with multi-disciplinary input and in consultation with an Emergency Medicine Consultant, an advanced nurse practitioner in chest pain assessment, a consultant Anaesthetist and the Resuscitation Advisory Group of the Hospital.

All statistical analyses were performed with the use of descriptive statistics in Microsoft Excel. Means, Standard Deviations and 95% Confidence intervals (CI)were used for continuous variables (age, time to delivery of medications etc),while frequency tables and cross tabulations were applied for categorical variables (location, gender, initial rhythm, whether an event was witnessed or not, etc.) Fischer's exact test was used to investigate possible associations between categorical variables and the two outcome groups (Return of spontaneous circulation vs. death). In cases where the number of categorical variables numbered 3 or more a chi-squared analysis was used in place of Fischer's exact test.

Results

Demographics and Arrest Characteristics

Between Jan 2010 and May 2013 the hospital admitted 71,508 patients, of which 2,548 died in hospital. The number of verified cardiac arrests logged during this period was 741, making the frequency of in hospital cardiac arrest during the study period 10.4 per 1000 patients per year. The demographics and arrest characteristics of 212 of these events were captured by the audit form and are shown in Table 1.

Outcomes

Return of spontaneous circulation was achieved in 98 cardiac arrests in total (46%; Table 2), in 28 patients (85%) with VF/VT and in 36 patients (29.5%) with asystole/PEA. Of the 98 patients who achieved return of spontaneous circulation, follow up data was available for 73 only. Of these 73, 39 survived to discharge while the remainder died in hospital (Table 2). Thus, the survival to discharge rate in this study was 39 out of 212 patients (18.4%).

Cardiac arrest team performance

The mean time to arrival of the cardiac arrest team (CAT) in all patients was 3.05 minutes (95% CI 2.66-3.44; Table 3). The mean time to arrival of the CAT in those who achieved return of spontaneous circulation was 3.1 minutes (95% CI 2.55-3.64),very similar to the mean time in those who did not (2.96 minutes; 95% CI 2.40-3.53). Regarding those patients who had a presenting rhythm of asystole/PEA, the first dose of adrenaline was given within five minutes (meantime to delivery 4.44 minutes; 95% CI 3.03-5.85; Table 3).

CPD available online at www.imj.ie and questions on page 127.

Table 1 Characteristics of Patients suffering Cardiac Arrest

Characteristic	Number (%) of Patients	Characteristic	Number (%) of Patients
1) Gender		5) Location	
– Men	120 (56%)	– Ward	100 (47.2%)
– Women	68 (32%)	– ICU	59 (27.8%)
– Not recorded	24 (12%)	– CCU	30 (14.2%)
		– A & E	5 (2.3%)
2) Mean Age	65.56 years (95% CI: 63.24-67.88)	– Cath Lab	5 (2.3%)
		– Other	5 (2.3%)
3) Witnessed		– Not recorded	8 (4.1%)
– Yes	159 (75%)		
– No	31 (15%)	6) Timing	
– Not recorded	22 (10%)	– 00:00 – 08:00	71 (33.5%)
		– 08:00 – 16:00	60 (28.3%)
4) Initial Rhythm		– 16:00 – 24:00	71 (33.5%)
– VF/VT	33 (15.6%)	– Not recorded	10 (4.7%)
– Asystole/PEA	122 (57.5%)		
– Other	32 (15.1%)	7) Staff Present	
– Rhythm not recorded	25(11.8%)	– Anaesthetist	179 (84.4%)
		– RGN	177 (83.4%)
		– Registrar	166 (78.3%)
		– Ward Sister	113 (53.3%)
		– SHO	111 (52.4%)
		– Intern	123 (58%)
		– Consultant	36 (23.5%)

VF/VT = Ventricular Fibrillation/Ventricular Tachycardia
PEA = Pulseless Electrical Activity
Other = Bradycardia\perfusing rhythm
ICU = Intensive care unit
CCU = Coronary care unit

Table 2 Outcomes of In-Hospital Cardiac Arrest

Cause of arrest (rhythm)	Return of Spontaneous Circulation	Deceased	Discharged*	Discharge status not available
VF/VT	28/33 (85%)	5/33 (15%)	15/33 (45%)	9/33
Asystole/PEA	38/122 (31%)	84/122 (69%)	9/122(7.3%)	12/122
Other/ Rhythm not recorded	32/57 (56%)	25/57 (44%)	15/57 (30%)	4/57
Overall	98/212 (46%)	114/212 (54%)	39/212 (18.4%)	25/212

*Of the 98 patients who achieved Return of Spontaneous Circulation, data concerning discharge was not available in 25.

Table 3 Cardiac arrest team performance in minutes in Beaumont Hospital, Dublin

Arrest event	Mean time (minutes)	95% Confidence Interval
Arrival of Cardiac Arrest Team	3.05	2.66-3.44
First dose of Adrenaline (all patients)	5.21	3.59-6.83
First dose of Ardenaline (Asystole/PEA patients only)	4.44	3.03-5.85
First dose of Atropine (all patients)	9.16	6.13-12.19
Intubation	15.85	13.33-18.37

Significant associations with outcomes

Regarding the two primary outcomes (Return of spontaneous circulation vs. death from cardiac arrest) Fisher's exact test revealed a significant association between whether a cardiac arrest was witnessed, whether the presenting rhythm was shockable, whether the arrest occurred on the ward or the ICU, and whether the first dose of adrenaline was delivered within 2 minutes of arrest onset (Table 4). With regard to survival to discharge, significant associations were observed between whether the patient's age was less than 65 years or not, and whether the presenting rhythm was shockable or not (Table 4).

Table 4 Significant Associations of Characteristics with Outcome

Characteristic	Return of Spontaneous Circulation	Deceased	P value
Witnessed arrest (n=187)			
– Yes (n=157)	82 (52%)	75 (48%)	0.029
– No (n=30)	9 (30%)	21 (70%)	
Initial rhythm (n=155)			
– VF/VT (n=33)	28 (85%)	5 (15%)	<0.001
– Asystole/PEA (n=122)	38 (31%)	84 (69%)	
First Dose Adrenaline (n=67)			
– ≤ 2 minutes (n=24)	13 (54%)	11 (46%)	0.040
– > 2 minutes (n=43)	12 (28%)	31 (72%)	
Location of arrest (n=154)			
– Ward (n=95)	36 (38%)	59 (62%)	0.032
– ICU (n=59)	33 (56%)	26 (44%)	
Characteristic	**Survival to discharge**	**Deceased**	**P value**
Age of Patient (n= 170)			
– ≤ 65 years (n=68)	19 (28%)	49 (72%)	0.029
– > 65 years (n=102)	14 (13.7%)	88 (86.3%)	
Initial Rhythm (n=155)			
– VF/VT (n=33)	15 (45%)	9 (27%)	<0.001
– Asystole/PEA (n=122)	9 (7.3%)	101 (83%)	

Discussion

This study has reported the use of an audit form based upon the Utstein reporting style for documenting the patient characteristics and event variables of 212 in-hospital cardiac arrests over a 26 month period. Whilst 741 verified cardiac arrests were logged during the study period, only 212 forms were completed, giving an uptake rate of just 28.6% for form usage. This low uptake probably reflects the inherently fast-paced and high pressure situation of a cardiac arrest, which makes it difficult for a cardiac arrest team leader to prioritise the completion of an audit form in real time. The low rate of uptake is a key limitation in this type of study, and reflects the need to refine the audit form for easier completion in the future.

The overall rate of return of spontaneous circulation (46%) observed in this study is similar to that seen in other recent studies.[13-15] In contrast to some similar studies however, no significant associations between the rates of return of spontaneous circulation and gender or age were identified.[13,14] This may represent a population difference, or may simply be due to the lower number of patients documented in this study. Age was shown to be an important determinant in whether a patient will survive to discharge following cardiac arrest, with significantly more patients aged 65 years or less achieving discharge when compared to those older than 65 years (28% vs 14%; P = 0.029; Table 4). Patients were less likely to achieve return of spontaneous circulation if their arrest occurred on the ward when compared to the ICU (38% vs. 56%; P =0.032; Table 4). This may reflect more intensive monitoring, such as telemetry, in the ICU environment, or may be due to more readily available IV access facilitating speedier delivery of adrenaline. Of note the mean time to administration of adrenaline in those patients suffering cardiac arrest on the ward was 8.2 mins, in contrast to 2.5 mins for those patients in the ICU (data not shown).

Also observed was a significant association between return of spontaneous circulation and witnessed cardiac arrests when compared to non-witnessed arrests (52% vs 30%; P = 0.029). This observation has been seen in other studies to date,[16,17] and highlights the inherent danger in isolating patients at high risk of cardiac arrest in single rooms or small wards. The subset of patients with the highest number achieving return of spontaneous circulation post cardiac arrest are those that presented with a rhythm of VF/VT (85%). This finding is in agreement with what has been reported previously,[13,14] and reflects the well documented life-saving ability of early defibrillation for shockable arrest rhythms. However, while the proportion of patients achieving return of spontaneous circulation is far higher in those presenting with VF/VT, this subset represents only a small number of the total patients presenting with cardiac arrest (33; 16%). As demonstrated by this study, the majority of patients suffering in-hospital cardiac arrest are presenting with an initial arrest rhythm of asystole/PEA (122; 58%). The proportion of these patients achieving return of spontaneous circulation was much lower than in the VF/VT subset (31%vs. 85%; P<0.001; Table 4).

There are many possible reasons for this difference. Firstly, it may simply reflect a high level of co-morbidities in this group of patients, with asystolic heart failure representing the end stage of multiple disease processes in hospitalized patients. Secondly, it may reflect the limitations of current treatments for non-shockable cardiac arrest rhythms. In the absence of defibrillation, the responder is limited to the use of chest compressions, airway provision and administration of cardioactive drugs such as adrenaline. Thirdly, it may reflect a need to shorten the time interval to administration of the first dose of adrenaline in asystole/PEA. The present study identified a significant association between the percentage of patients who achieved return of spontaneous circulation and the percentage that received the first dose of adrenaline within two minutes versus those that did not (54% vs. 28%; P= 0.04; Table 4). With regard

to survival to discharge, data were available for only 73 of the 98 patients who achieved return of spontaneous circulation. Of the total 212 patients, 39 survived to discharge, giving a survival to discharge rate of 18.4%. Multiple studies have also shown that survival to discharge rates currently range from 12% to 29%, with the average in larger studies being 18%[4-10].

Patients suffering in-hospital cardiac arrest are more likely to achieve return of spontaneous circulation if their arrest is witnessed and the initial arrest rhythm is shockable. However, the majority of patients suffering in-hospital cardiac arrest in this study presented with a non-shockable rhythm and these patients are more likely to achieve return of spontaneous circulation if the first dose of Adrenaline is administered within two minutes of arrest onset.

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Distance as a Risk Factor for Amputation in Patients with Diabetes: A Case-Control Study

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Abstract
We studied the association between amputation and distance of patients' residences to a diabetes care centre. We performed a case-control study matching each case (amputation) with 5 controls (no amputation) by age and sex. We compared the distance of residence to the diabetes centre, duration and type of diabetes, haemoglobin-A1c levels and foot examination findings for cases and controls. We analysed the association between distance and the strongest predictors of amputation. Sixty-six cases of amputation and 313 controls were identified. Distance of residence was 12.1km greater for cases (p=0.028). In multivariate analysis, only diabetes duration (OR/year 1.07, 1.03 to 1.11) and neuropathy (OR 10.73, 4.55 to 25.74) were significantly associated with amputation. Patients with neuropathy resided 9.7km further than those without neuropathy (p=0.01). Patients requiring amputation reside at greater distances from the diabetes centre, possibly due to higher rates of neuropathy.

Introduction

Diabetes is the leading cause of lower extremity amputation. Lower extremity amputation rates are often used as a marker of the quality of foot care in patients with diabetes[1]. The causative pathway leading from diabetic foot disease to amputation is well established[2]. A delay in diagnosis and appropriate management of diabetic foot disease increases morbidity and mortality, resulting in a higher amputation rate[3]. Access to expert diabetic foot care in a timely manner is vital for successful outcomes in active diabetic foot disease. University Hospital Galway (UHG) serves as a tertiary referral centre for the predominately-rural west of Ireland. In clinical practice, we observed that many patients requiring amputation reside at great distances from the tertiary referral centre. The West of Ireland Diabetic Foot Study estimated that the incidence of neuropathy, a known risk factor for amputation, is relatively high at 30% in this community[4]. Regular screening of patients with neuropathy prevents amputations[5]. Distance effects may impact on this screening, since uptake of screening for gestational diabetes was found to be significantly lower in patients living at greater distances from screening centres in the west of Ireland[6]. Historically, there was an absence of a formal multi-disciplinary screening programme and referral pathway for patients with active diabetic foot disease in this large catchment area in the west of Ireland.

Whilst patient-centred risk factors for amputation in patients with diabetes have been established[7], studies of the influence of access to foot services on amputation rates are much fewer. We examined the association between amputation and the distance of patients' residence to the diabetes care centre at UHG. We hypothesised that patients with diabetes who live at greater distances from the diabetes centre are at increased risk of a delay in appropriate management of diabetic foot disease, known to cause an increase in amputations. We also analysed the relationship between distance and the strongest predictors of amputation.

Methods

We performed a case-control study of patients attending the diabetes centre at UHG, which provides comprehensive specialist diabetes care to over 5,000 people with diabetes from the west of Ireland. Each clinical encounter of patients at the diabetes centre, including the findings of foot examinations, is recorded on an electronic database (Diamond from Hicom Technology). Patients who attended between 1st January 2006 and 1st June 2011 were eligible for inclusion. Cases were defined as patients with diabetes and non-traumatic lower extremity amputation. Medical notes were reviewed to validate cases. Patients with trauma or malignancy as the reason for amputation were excluded. Controls were defined as patients with diabetes without lower extremity amputation recorded as part of their foot examination. Controls were matched by age (+/- 0.5 years) and gender. Five controls were selected per case using computer-generated random number sequences.

Driving distance from the patients' actual place of residence to the Diabetes Centre was calculated using online mapping with Google Maps™. Location of residence was also recorded in a separate variable as Galway City, Galway County or other counties. Diabetes control was measured as mean glycosylated haemoglobin (HbA1c, %) value across all clinic visits. Type and duration of diabetes (years) and the use of insulin therapy were recorded. Smoking status was defined as current, non-smoker or ex-smoker. Vascular assessment included palpation of dorsalis pedis and posterior tibial pulses. The absence of protective sensation was determined by assessing vibration sensation with a 128Hz tuning fork and pressure sensation with a Semmes-Weinstein 5.07/10 gram monofilament. Elements of the foot examination were grouped together for analysis. The variable 'absent foot pulse' was positive if any of the four pulses were not palpable on examination. Impaired vibration sensation or abnormal monofilament examination were combined into a single variable, 'impaired sensation'.

Continuous variables were expressed as means or medians with standard deviations (SD) or inter-quartile ranges (IQR) and compared using the Student t-test test and Mann-Whitney U test. Dichotomous and nominal variables were compared using Pearson's chi-squared test. Conditional Logistic regression analysis was performed using amputation as the binary outcome variable. Predictor variables were analysed using univariate and multivariate methods, with tests for interaction. Predictor variables were added to the multivariate regression model at significance levels <0.05 and removed at levels >0.1. We calculated odds ratios (OR) with 95% confidence intervals (CI). Alpha level of 0.05 was chosen. Statistical analysis was performed using PASW 18 from SPSS.

Results

The search of our database for patients with lower-extremity amputations revealed 76 cases. Ten cases were excluded leaving 66 cases in our final analysis, comprising 26 major and 40 minor amputations. Reasons for exclusion included incorrect coding of pregnant patients (4), conflicting records of amputation (3), trauma (2) and malignancy (1). Each case was matched by age and sex with 5 controls, resulting in 313 controls in total after duplicates were removed. Mean age of cases was 57.8 years, with a range from 42 to 91 years. Male patients comprised 58 of the 66 cases (87.9%). Controls had an identical age and sex profile due to matching (Table 1).

Table 1 Characteristics of Study Participants

	Cases, n=66	Controls, n=313	Test for Difference
Age, years (mean, range)	57.8 (42,91)	57.8 (42,91)	
Male (%)	58 (87.9)	275 (87.9)	
Distance of Residence from Diabetes Centre, km (median, IQR)	42.4 (18.6, 66.8)	30.3 (5.8, 54.7)	p=0.028
Location of Residence (%)			
• Galway City	10 (15.1)	89 (28.4)	
• Galway County	38 (57.6)	162 (51.7)	p=0.065
• Other Counties	18 (27.3)	62 (19.8)	
Smoking Status (%)			
• Current Smoker	4 (7.7)	43 (16.7)	
• Past Smoker	32 (61.5)	127 (49.2)	p=0.156
• Never Smoked	16 (30.8)	88 (34.1)	
Diabetes Type (%)			
• Type 1	10 (16.1)	22 (7.1)	p=0.021
• Type 2	52 (83.9)	287 (92.9)	
Insulin Use (%)			
• Yes	46 (74.2)	108 (35.3)	p<0.001
• No	16 (25.8)	198 (64.7)	
Duration of Diabetes, years (mean+/-SD)	16.8 (14.3)	8.1 (7.5)	p<0.001
Haemaglobin-A1c % (mean+/-SD)	7.9 (1.4)	7.4 (1.3)	p=0.013
Absent Foot Pulse (%)	23 (51.1)	34 (16.3)	p<0.001
Vibration or Monofilament Sensation Abnormal (%)	39 (79.6)	61 (29.2)	p<0.001

Table 2 Odds Ratios of Exposure for Cases of Amputation (with 95% CI)

Predictor Variable	Univariate Analysis	Multivariate Analysis
Distance from Diabetes Centre, km	1.01 (1.00, 1.02)	
Location of Residence		
• Galway City	Reference	
• Galway County	2.09 (0.99, 4.39)	
• Other Counties	2.58 (1.12, 5.98)	
Diabetes Duration, years	1.08 (1.05, 1.11)	1.07 (1.03, 1.11)
Type 1 Diabetes	2.51 (1.12, 5.60)	
Insulin Use	5.27 (2.85, 9.75)	
HbA1c (%)	1.32 (1.08, 1.61)	
Absent Foot Pulse	5.38 (2.70, 10.73)	
Vibration or Monofilament Sensation Impaired	9.46 (4.44, 20.15)	10.73 (4.55, 25.74)

Median distance of residence from the diabetes centre was 42.4km for cases and 30.3km for controls. Cases resided on average 12.1km further from the diabetes centre (p=0.028). Type-1 diabetes was present in 16.1% of cases as opposed to 7.1% of controls (p=0.021). Insulin therapy was utilised by 74.2% of cases, compared with only 35.5% of controls (p<0.001). Mean duration of diabetes of cases was 16.8 years compared to 8.1 years for controls. Duration of diabetes was on average 8.7 years longer for

cases (95% CI 5.0 to 12.4 years, p<0.001). Mean haemoglobin-A1c across all clinic visits was 7.9% for cases and 7.4% for controls, 0.5% higher on average in cases (95% CI 0.1% to 0.9%, p0.013). Any foot pulse was not palpable in 51.1% of cases compared with 16.3% of controls (p<0.001). Either vibration or monofilament sensation was abnormal in either foot in 79.6% of cases and 29.2% of controls (p=0.001).

In univariate analysis, patients with amputation lived at greater distances from the diabetes centre (OR per km 1.01, 95%CI 1.00, 1.02) and were more likely to live in counties other then Galway (OR 2.58, 95% CI 1.12, 5.98) (Table 2). Patients with amputation were also more likely to have type-1 diabetes (OR 2.51, 95% CI 1.12, 5.60), a longer duration of diabetes (OR per year 1.08, 95% CI 1.05, 1.11), higher HbA1c levels (OR per % 1.32, 95% CI 1.08, 1.61) and use insulin (OR 5.27, 95% CI 2.85, 5.95). In multivariate analysis, only duration of diabetes (OR per year 1.07, 95% CI 1.03, 1.11) and impaired sensation (OR 10.73, 95% CI 4.55, 25.74) were significantly associated with amputation. Patients with neuropathy resided 9.7km further than those without neuropathy (p=0.01). There was no significant correlation between distance and diabetes duration (r=0.13, p=0.81) or mean haemoglobin-A1c levels (r=0.04, p=0.461).

Discussion

The results of our case-control study provides evidence that patients attending the Diabetes Centre at UHG who have required foot amputation reside at greater distances from the Diabetes Centre than patients who have not required amputation, 12.1km further on average. After correction for all other factors, amputation was significantly associated with loss of protective sensation and longer duration of diabetes. In an effort to explain this association between distance and amputation, we noted that neuropathy was more likely in those living at greater distances. A delay in diagnosis and appropriate management of diabetic foot disease results in a higher amputation rate[3]. The distance from patients' residence to the specialist centre should not be interpreted as a simple surrogate marker of access to care, but our results suggest that patients requiring amputation live at greater distances from the specialist centre. Furthermore, patients requiring amputation are more than twice as likely to come from a county other than Galway, where the specialist centre is located.

The Health Service Executive's National Diabetes Programme has published 'Model of Care for the Diabetic Foot', which outlines a national multidisciplinary foot care service for people with diabetes[8]. Recommendations include regular podiatry review of patients with neuropathy or vascular disease, and rapid access to multidisciplinary care in a hospital setting for all patients with active diabetic foot disease. Our results highlight the need for regular monitoring and care pathways that will allow patients with diabetic foot disease, especially neuropathy, to access the appropriate level of specialist care in a timely manner, regardless of their location.

Studies of the prevalence of diabetic foot disease in rural areas have demonstrated high rates of diabetic foot complications. A study of diabetic foot care in a rural northern Canadian Aboriginal community showed low rates of foot screening examinations and corresponding high rates of hospitalisation with diabetic foot complications[9]. Among diabetic foot patients attended by a multidisciplinary team in Ottawa, Canada, residence in a rural setting correlated with a shorter time from initial clinic visit to major lower extremity amputation[10]. Our findings add to this body of work in that patients requiring amputation live at greater distances from the specialty centre in the setting of the predominately rural west of Ireland. We did not intend to determine the incidence amputation rate for patients with diabetes in the west of Ireland and do not claim to have captured all patients with diabetes-related amputations in our catchment area. Instead, we performed this study to explore possible risks for amputation among the geographically diverse population of patients with diabetes who attend our diabetes centre.

In conclusion, our case-control study suggests that patients who required foot amputation reside at greater distances from the Diabetes Centre than patients who have not required amputation. This effect of distance is most likely manifest through the association between distance and neuropathy. National diabetic foot care policy should ensure that all patients with diabetes, especially those with neuropathy, have equal access to foot-care, irrespective of place of residence.

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Outpatient Parenteral Antimicrobial Therapy: A Report of Three Years Experience

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Abstract
Although outpatient parenteral antimicrobial therapy (OPAT) is practiced internationally, there is a paucity of data regarding outcomes of paediatric OPAT. A retrospective analysis, of 3 years experience (January 2010 to 2013) was performed at a tertiary paediatric Respiratory unit. There were 362 OPAT courses administered to 32 children, of which 30 had cystic fibrosis and the remaining two had recurrent pneumonia. A total of 3,688 days of antibiotics were administered. The median age was 8.8 years (range 2.75- 17.8 years). Sixteen (50%) were male. Each child received an average of 11 courses and median duration of OPAT was 10 days (range 2-21 days). Tobramycin was the commonest antimicrobial prescribed, with ceftazidime second. During this period, there was one readmission (0.3%) post discharge and 3 (2%) portocath infections. All patients attended for weekly review and laboratory monitoring. OPAT appears safe, effective and reduces the need for inpatient beds.

Introduction

Out-patient parenteral antimicrobial therapy must be goverened by the same standards of antimicrobial stewardship, intravascular catheter care and clinical governance as traditional in-patient, hospital–based care. First described in the USA in the 1970s, in a cohort of paediatric patients with cystic fibrosis[1], OPAT has since expanded to many disciplines. By the late 1990s and early 2000s, fever and neutropaenia in low risk paediatric patients with cancer were being managed with outpatient therapy in certain centres[2-4]. Simultaneously, early discharge with home antibiotic therapy for the treatment of neonatal infection was pioneered by a few centres[5] with complications recognised[6,7].

There is a paucity of randomized controlled trials comparing OPAT with inpatient hospital care, though one from primary care in New Zealand identified that OPAT therapy for cellulitis was safe, effective and preferred by patients[8]. However, there are a significant number of studies in the literature demonstrating OPAT in adults and children to be both safe and efficacious[9-14,2,3]. Regarding OPAT in Irish Health Policy, a recent report commissioned by the Health Service Executive, identified OPAT as a tool to reduce acute medial admissions by 15% by the year 2020[15]. The infectious Diseases Society of Ireland established an OPAT working group which published a national practice standards document for OPAT (adult and paediatric) in 2010[16] while "good practice recommendations for OPAT in adults in the UK, a consensus statement" was published in 2012[17]. After a detailed literature search, the authors could not identify any previous study pertaining to OPAT in paediatrics in Ireland.

Methods

This retrospective study reviews data pertaining to OPAT over a 3 year period at a tertiary respiratory unit at an academic Children's hospital, where two full time respiratory paediatricians are employed. Data was collected from hospital records and both pharmaceutical companies who supplied the antimicrobials. Children attending the respiratory department with a pulmonary exacerbation of CF or recurrent pneumonia were individually assessed by the consultant respiratory paediatrician and CF nurse specialist for suitability for home IV antibiotics. Factors taken into consideration included the clinical condition of the patient, social situation, parental issues and duration of antibiotic course. All patients and parents were well known to the CF team and had a lower respiratory tract infection secondary to a chronic cause. Patients not suitable for OPAT included children who were clinically too unwell for home treatment or whose parents had a history of intravenous drug abuse or failed OPAT education by the CF nurse.

Antibiotic choice depended on known bacterial colonisations, previous drug resistance patterns, pharmacokinetics and known patient allergies. The CF nurse specialists trained parents in administration and storage of medications in addition to hygiene, IV access care, monitoring for all potential side effects and a plan of action in the event of same including names and contact numbers at the hospital. Parent training time to reach competency in OPAT administration etc. was ~3-5 days, while re-training was usually < 1 day. All antibiotics used were in pre-compounded, sterile devices and administered by the children's parents after completing one on one education regarding same. All patients had 24 hour access to medical assistance either directly or over the phone with the respiratory team (between 8am-5.30pm) or via the in-house medical registrar (between 5.30pm-8am). All first doses of antibiotics were administered in hospital under supervision by the respiratory team. Some patients were initially admitted for a few days until clinically stable and if deemed suitable for OPAT, (by the respiratory and CF consultant and team), completed the IV antibiotic treatment at home. Others, who were less unwell, received only their first dose of antibiotic in the CF day ward under supervision before returning home to complete the antibiotic course. All patients were clinically reviewed at least weekly, by the respiratory physician and CF nurse specialist in the respiratory day ward.

In addition, antimicrobial drug levels, urea and electrolytes, renal function, liver function and pulmonary function tests were monitored weekly. Each patient's results, clinical status and progress were discussed weekly at the multidisciplinary team meeting, and a consultant decision made regarding continuation or discontinuation of therapy.

Results

Between January 2010 and 2013, a total of 361 OPAT courses were administered to 32 children with lower respiratory tract infections. This resulted in 3,688 days of intravenous antimicrobials administered at home using the OPAT programme. Regarding diagnosis, 30 (94%) out of a total of 32 children treated with OPAT had cystic fibrosis and 2 had recurrent pneumonia: 1 associated with bronchiectasis and the other with an immune deficiency. All children treated with OPAT had pneumonia. Common organisms included *Pseudomonas aeruginosa (mucoid and non-mucoid), Staph aureus (methicillin sensitive or methicillin resistant), Haemophilus influenza, Streptococcus pneumonia* or a combination of same.

The median age of the children treated was 8.8 years (range 2.75-17.8 years) and 16 (50%) were male. Fourteen different antibiotics and 1 antifungal were administered (Table 1). Tobramycin was the commonest antimicrobial prescribed with 106 courses (29% of total courses) and 1,103 days (30 % of days). Ceftazidime was the second commonest antimicrobial agent prescribed: 70 courses, (19.4%) and 752 days, (20%). On average, children had 11courses (range 2-112) over the 3 year period, with a mean duration of 10 days therapy (range 2-42

Table 1 Antimicrobials used in OPAT			
	No. Courses (%)		No. days
Antibiotic therapy			
Tobramycin	106	(29.3)	1,103
Ceftazidime	70	(19.4)	752
Meropenem	41	(11.3)	380
Flucloxacillin	31	(8.6)	349
Teicoplanin	29	(8)	296
Cefuroxime	22	(6.1)	236
Pip/tazo	12	(3.3)	102
Cefotaxime	10	(2.8)	105
Aztreonam	9	(2.5)	101
Ceftriaxone	8	(2.2)	88
Amikacin	7	(1,9)	49
Colistin	4	(1.1)	29
Vancomycin	4	(1.1)	25
Gentamicin	3	(0.8)	26
Antifungal therapy			
Ambisome	6	1.7	47
Total	**362**		**3,688**

days). At least two antimicrobials were administered simultaneously in all cases. Regarding children on the active lung transplant list, some courses were extended to 4-6 weeks with a change in antibiotic choice after 2-3 weeks. Twenty three (72%) of children treated with OPAT have portocaths, the remainder used long lines sited by the hospital intravenous team.

Regarding adverse events there were 3 (2%) portocath infections: one cultured *Candida albicans*, one *Enterococcus* and one *Stenotrophomonas maltophilia*. All three were surgically removed after failure to respond to antimicrobial therapy while awaiting surgery. There was one (0.6%) re-admission: a child who had a deterioration in pulmonary status and chest radiograph findings. She was noncompliant with chest physiotherapy at home and subsequently was the patient who cultured *Candida albicans* from her portocath. All children attended for weekly review, laboratory monitoring and lung function testing where age appropriate. All children had follow up review in the day ward with lung function testing.

Discussion

The benefits of OPAT include institutional, organisational and patient. Our results concur with those internationally, that OPAT reduces the demand for hospital bed use (361 OPAT courses with a mean duration of 11 days). Savings are achieved through avoidance of non-essential admissions, early discharge with minimal re-admissions resulting in a substantial capacity gain for each institution. The cost savings of OPAT have been consistently demonstrated: in the UK, OPAT has been delivered at 41% of equivalent in patient cost,[18] in Canada[19] at 57% and in Singapore at 61%[20]. Patient benefits include reduced risk of health care associated infections[21] and higher levels of satisfaction with OPAT (in appropriate conditions) than with inpatient hospital care[8]. Success of OPAT is dependant on appropriate patient selection, weekly follow up of patient clinical status, blood tests, 24 hour access to medical advice and overall adherence to national practice guidelines. Multiple reasons exist as to why CF is suited to OPAT Due to the chronicity of this condition, children often require multiple courses of antimicrobials per annum resulting in repeated training and experience of parents in OPAT, children and families are well known to the respiratory team because of 3 monthly clinic reviews and children are accustomed to regular phlebotomy and investigations. Additionally, many of these children have permanent indwelling IV access (portocaths) in place (72% in this study).

Our findings are similar to those internationally in that we identified OPAT to be safe and effective. Our findings differ in type of infection treated, commonest antibiotic prescribed and duration of therapy. The latter two are dictated by the former. In our centre the OPAT programme is run by the respiratory team for respiratory patients only, so all our patients had pneumonia whereas in other studies bone and joint or soft tissue infections predominant[22]. Tobramycin and ceftazidime were the most common antibiotics prescribed in our study, (treatment for *Pseudomonasaerugonisa* pneumonia in CF) whereas ceftriaxone and cefazolin[22] were the most commonly prescribed antibiotics in a recent paediatric OPAT paper where bone and joint (21%) and bloodstream (15%) infections predominated. Duration of treatment varies between 12 days for paediatric OPAT in the USA[22] to 24 days for infective endocarditis in adults in Australia recently 23. Our study had a mean duration of 11 days of OPAT because children with CF are traditionally given ~14 days IV antibiotic treatment if >5years of age which may extend up to 4-6 weeks if severe infection and lung disease. Children with CF generally culture multiple organisms in their sputum. Antibiotic choice is based on recent sputum sensitivities. While the combination of Tobramycin plus ceftazidime was the commonest prescribed for *Pseudomonas aeruginosa* alone, Flucloxacillin plus cefuroxime was the commonest combination for children culturing *Staph aureus* plus *Haemophilus influenza*. Prophylactic nebulised colomycin and/or nebulized tobramycin is used in children chronically colonised with *Pseudomonas aeruginosa*. Prophylactic azithromycin may be added if symptoms persist despite nebulised antibiotic therapy. At our institution, no antibiotic prophylaxis is given to children who culture *Staph aureus* alone, consistent with the North American model of care. Teicoplanin was favoured over Vancomycin due to the side effect profile and need for drug levels in the latter.

Attendance for weekly review compares favourably to other studies: 100% in our study, versus 88% when OPAT was managed by the infectious disease service and 20 % by other services in a recent pediatric USA OPAT[22] study at an academic children's hospital. Complications included 1 (0.3%) re-admission and 3 (2%) portocath infections which compares with 11% treatment failure and 29% catheter or antibiotic associated complications in a recent pediatric OPAT study [22]. The portocaths were each in place for > 5 years. Interestingly, no other patients had a port infection in the previous 9 years at the institution since OPAT was commenced. Three of our children with CF were on the active lung transplant list during this period while 3 others were under regular review by the transplant team regarding same. The one child with CF who received most OPAT courses (n=112), had a portocath infection (*Stenotrophomonas maltophilia*) and has since received a double upper lobe lung transplant.

In our current climate of health care budget cuts, pressure on inpatient bed availability and risk of nosocomial infections, OPAT is an important and effective tool. Future plans for OPAT nationally include, implementation of national OPAT practice standards, establishing a national registry, regular audit of all OPAT programmes to ensure standards are maintained and expansion to more hospitals and disease states. Continued monitoring of failures, adverse effects and effectiveness is important in this expanding area. This study is the first, identified by the authors to review OPAT in Paediatrics in Ireland.

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Consultant and Trainee Attitudes Towards Supervision of Operative Procedures in the UK and Ireland

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Abstract
The e-logbook is used to monitor progression through training and to assess training within teaching units. We document consultant and trainee opinions with regards to supervision status, and to inform guidelines for trainees and trainers using the e-logbook. A questionnaire was sent to consultants and trainees in the UK and Ireland. Eight theatre scenarios were described and respondents were asked to state what they felt was the appropriate supervision status for the trainee. Significantly more consultants in the UK use the e-logbook than those based in Ireland (58.5%:14.5%). There were differences in consensus response to the scenarios between consultants and trainees, and between Irish and UK based surgeons. We have documented the opinions of consultants and trainees from across the UK and Ireland with regards to supervision status for trainees under certain theatre situations. This information should support formal guidelines for all users of the logbook.

Introduction

Surgical trainees in the United Kingdom (UK) and in the Republic of Ireland (Ire) keep a logbook of surgical procedures that they are involved in during their training. This has been compulsory in Trauma & Orthopaedics (T&O) since 2003. Many trainees choose to use the online electronic Pan-Surgical Logbook (www.e-logbook.org)[1]. The e-logbook is endorsed by The Royal College of Surgeons of Edinburgh (RCSEd), The Royal College of Surgeons of England (RCSEng), The Royal College of Physicians and Surgeons of Glasgow (RCPSG), and The Royal College of Surgeons in Ireland (RCSI), and is recommended as the first choice logbook by The British Orthopaedic Association (BOA). There are 11,000 registered users, ranging from medical students to consultants, including surgical assistants and overseas surgeons. This vast on-line database of surgical procedures has a number of advantages over individual paper logbooks.

The e-logbook offers instant access to a trainee's operative records. These records can be reviewed in a number of formats, and condensed into "consolidation sheets" to allow peer comparison of operative experience at a glance[2]. Although the e-logbook is password protected for individual users, approved trainers can access the logbook data for their own trainee with permission. Programme Directors can access the records of all trainees within their training programme, and this data can be used to audit that programme[1,2]. The Specialty Advisory Committee in Trauma & Orthopaedics (SAC in T&O) can also access trainee logbooks, thus providing an independent audit of theatre practices, to ensure adequate and appropriate operative exposure for trainees.

Surgical logbooks have been used as an aid in selecting candidates to progress from basic surgical training (BST) to higher surgical training (HST)[3]. In some training regions the level

of trainee supervision documented in the e-logbook is used as an aid to assess that trainee's development of surgical skills[1,3,4]. This data can be used to examine the surgical exposure that trainees receive in different training institutions[1,4-6]. Ideally, trainees can be preferentially attached to trainers who provide adequate surgical exposure for ongoing skills development, thereby encouraging all trainers to maintain a high level of training activity within their operative practice. Trainers who do not provide adequate training opportunities could have their trainees re-assigned to other trainers.

Electronic logbooks provide guidelines on how a trainee should record the level of supervision they receive for each procedure[7]. The e-logbook also provides guidelines, but the supervision status documented for surgical procedures is at the discretion of the trainee[1]. The aim of this study is to determine how e-logbook users are documenting the procedures that they are involved in. We aim to analyse differences in interpretation between consultants and trainees with regards to supervision status, and to compare the UK with Ireland. Finally, we aim to display a consensus opinion with regards to supervision status for a variety of hypothetical situations that a trainee may find themselves in.

Methods

A questionnaire was developed to represent a variety of scenarios that trainees may find themselves in during surgical training. Respondents were asked if they used the e-logbook and to identify their level of operative experience. Questionnaires were anonymous. In Ireland the questionnaire was posted to all orthopaedic consultants working in public practice, and all orthopaedic trainees at registrar and specialist registrar (SpR) level. A stamped self addressed envelope was included to encourage responses. In the UK the questionnaire was converted to an on-line survey and consultants and trainees in certain deaneries were contacted by e-mail and asked to complete the questionnaire online. Respondents could omit any questions that they did not wish to answer. Responses to the questionnaire were collated and assigned a numeric value: Assisted (A) = 1; Supervised, Trainer Scrubbed (S-TS) = 2; Supervised, Trainer Unscrubbed (S-TU) = 3; Performed (P) = 4. These numeric values were analysed using a Student's t-test and p values were calculated for each question comparing consultants with trainees, and Irish based surgeons with UK based surgeons.

Results

We received 266 responses to the questionnaire. There were 108 responses from consultants, and 157 responses from trainees. One respondent did not answer this question. In Ireland we received 55 responses from consultants and 50 from trainees. This is an Irish response rate of 70.5% for consultants and 50.5% for trainees. Due to the method in which the survey was conducted in the UK we were unable to calculate a response rate. In total, one hundred and ninety-six respondents (73.7%) use the e-logbook, and 66 (24.8%) do not. Four respondents did not answer the question. All trainees (100%) who responded to this question stated that they use the e-logbook. Consultant responses to this question can be seen in Table 1. The responses to the questionnaire can be seen in Table 2. Differences in responses between consultants and trainees in Ireland and in the UK are shown in Table 3.

Table 1 Percentage of consultants who do and do not use the e-Logbook. (The number of responses for each group is shown in brackets)

	Use the e-Logbook	Do not use the e-Logbook	No response
UK (n=53)	58.5% (31)	41.5% (22)	-
Ireland (n=55)	14.5% (8)	80% (44)	5.5% (3)
Total (n=108)	36.1% (39)	61.1% (66)	2.8% (3)

Discussion

The e-logbook contains details of more than twenty million operative procedures performed in the UK and Ireland. This information can be accessed by training bodies and has been used to assess trainees and training institutions[1,4,5], and to determine which trainees progress through training[3,4]. It is essential that all trainees document their training experience in the same manner. As Table 1 demonstrates, five of the eight scenarios (1,3,4,7,8) returned a consensus opinion of greater than 90% overall. The remaining four scenarios returned a majority opinion, but did not reach 90% consensus (2,5,6). Despite this, marked differences of opinion occurred only in scenarios 2,3,6 and 7 (Table 3).

Table 2 All responses to the questionnaire

	Responses %	A	S-TS	S-TU	P
1. Consultant and trainee are both scrubbed for a procedure. The consultant completes the procedure from start to finish.	257 (96.6%)	257 (100%)	0 (0%)	0 (0%)	0 (0%)
2. Consultant and trainee are both scrubbed for a procedure. The trainee performs the approach and prepares the bone/joint for implants. The consultant inserts the implants. The trainee then closes the wound.	251* (94.4%)	92 (36.7%)	157 (62.5%)	0 (0%)	1 (0.4%)
3. Consultant and trainee are both scrubbed for a procedure. The trainee completes the procedure from start to finish.	257 (96.6%)	0 (0%)	247 (96.1%)	1 (0.4%)	9 (3.5%)
4. Trainee is scrubbed for a procedure. The consultant is not scrubbed, but is in the operating theatre. The trainee completes the procedure from start to finish.	255** (95.9%)	0 (0%)	1 (0.4%)	245 (96.1%)	8 (3.1%)
5. Trainee is scrubbed for a procedure. The consultant is not in the operating theatre, but is in the theatre suite. The consultant regularly enters the operating theatre during the procedure. The trainee completes the procedure from start to finish.	254 (95.5%)	0 (0%)	1 (0.4%)	225 (88.6%)	28 (11.0%)
6. Trainee is scrubbed for a procedure. The consultant is not in the operating theatre, but is scrubbed in an adjacent operating theatre. The consultant does not enter the operating theatre during the procedure. The trainee completes the procedure from start to finish.	263*** (95.1%)	0 (0%)	0 (0%)	36 (14.2%)	216 (85.4%)
7. Trainee is scrubbed for a procedure. The consultant is not in the operating suite, but is in the hospital. The consultant does not enter the operating theatre during the procedure. The trainee completes the procedure from start to finish.	254 (95.5%)	0 (0%)	0 (0%)	20 (7.9%)	234 (92.1%)
8. Trainee is scrubbed for a procedure. The consultant is not in the hospital. The trainee completes the procedure from start to finish.	254 (95.5%)	0 (0%)	0 (0%)	2 (0.8%)	252 (99.2%)

Percentages for responses refers to the percentage of respondents who answered each question. Percentages for each supervision code refers to the percentage of those responses where the question was answered.
*One respondent marked A and P. **One respondent marked S-TU and P. ***One respondent marked S-TU and P.

Table 3 Differences in responses between consultants and trainees in Ireland and in the UK

	Trainees: Irish V UK	Consultants: Irish V UK	Consultants V Trainees	Ireland: Consultants V Trainees	UK: Consultants V Trainees
Question 1	N/A	N/A	N/A	N/A	N/A
Question 2	0.0044	0.99	0.0449	0.0496	0.079
Question 3	0.20	0.0048	0.0317	0.0482	0.16
Question 4	0.14	0.07	0.22	0.48	0.16
Question 5	0.96	0.77	0.20	0.11	0.16
Question 6	0.15	0.0318	0.14	0.17	0.49
Question 7	0.63	0.0358	0.35	0.34	0.0391
Question 8	0.15	0.35	0.38	0.16	0.16

Table 4 Majority responses for trainee supervision status

	Majority Response
1. Consultant and trainee are both scrubbed for a procedure. The consultant completes the procedure from start to finish.	A
2. Consultant and trainee are both scrubbed for a procedure. The trainee performs the approach and prepares the bone/joint for implants. The consultant inserts the implants. The trainee then closes the wound.	A/S-TS*
3. Consultant and trainee are both scrubbed for a procedure. The trainee completes the procedure from start to finish.	S-TS
4. Trainee is scrubbed for a procedure. The consultant is not scrubbed, but is in the operating theatre. The trainee completes the procedure from start to finish.	S-TU
5. Trainee is scrubbed for a procedure. The consultant is not in the operating theatre, but is in the theatre suite. The consultant regularly enters the operating theatre during the procedure. The trainee completes the procedure from start to finish.	S-TU
6. Trainee is scrubbed for a procedure. The consultant is not in the operating theatre, but is scrubbed in an adjacent op rating theatre. The consultant does not enter the operating theatre during the procedure. The trainee completes the procedure from start to finish.	P
7. Trainee is scrubbed for a procedure. The consultant is not in the operating suite, but is in the hospital. The consultant does not enter the operating theatre during the procedure. The trainee completes the procedure from start to finish.	P
8. Trainee is scrubbed for a procedure. The consultant is not in the hospital. The trainee completes the procedure from start to finish.	P

Scenario 2: The differentiation between Assisting on the procedure and performing the procedure Supervised, Trainer Scrubbed, should be discussed between the trainee and consultant at the end of the procedure. The supervision code will depend upon the respective inputs of the trainee and the consultant during the procedure.

Scenario 2 was conceived by the situation experienced by trainees during total hip arthroplasty, where the trainee performs the approach, preparation of bone surfaces, and wound closure, but the consultant inserts the implants. This does not happen in all institutions, and indeed one consultant did not answer the question stating that the question was inappropriate in his/her practice. We found significant differences of opinion with regards to this scenario (Table 2). Overall, almost two thirds of those polled felt that the procedure should be documented as S-TS, and just over one third felt it should be A. In an annotation published in 2005, the designers of the e-logbook state that in order for a case to be designated S-TS, the trainee must have performed more than 70% of the operation[1]. It is the authors' opinion that final supervision status should be agreed between consultant and trainee on a case by case basis. In scenario 3, more than 96% of those polled agreed that the procedure should be documented as S-TS, yet there was still some significant differences of opinion. All (100%) of UK consultants polled stated that this scenario should be documented as S-TS, but 12.2% of Irish consultants stated that the procedure should be documented as P. Despite this, 96% of Irish trainees and 99% of UK trainees agreed that the procedure should be documented as S-TS. The significant difference then occurs between the opinions of the Irish consultants and the UK consultants and all trainees.

In scenario 6, we found a significant difference of opinion between UK consultants and Irish consultants. Our study shows that 26.1% of Irish consultants felt that the trainee's procedure should be documented as S-TU, but only 9.6% of UK consultants agreed. In scenario 7 we found a significant difference of opinion between UK consultants and Irish consultants, and between UK consultants and UK trainees. UK consultants agreed almost unanimously that the procedure should be documented as P, whereas almost 10% of UK trainees and Irish consultants felt that the procedure should be documented as S-TU.

Our study has shown that overall there is a general consensus with regards to consultant supervision of trainees for all of the scenarios, with the exception of scenario 2. From those who did respond to this scenario, there was almost a 1/3 to 2/3 split in opinion. Some of this disagreement may come from the fact a specific case was not presented. It seems that this particular scenario will remain an area of contention, and must be dealt with on a case by case basis by agreement between trainer and trainee. The e-logbook currently offers options for the trainee with regards to supervision status during arthroplasty cases. This option breaks the case down into stages, and allows the trainee to select different supervision status for different stages of the procedure. This feature of the e-logbook was not available at the time of our study, but would certainly seem to address some of the issues raised by scenario 2. This 'staging' of a procedure is more common in the neurosurgery logbook, and perhaps could be developed further for other complex cases in the T&O e-logbook. We accept that this study has limitations. Ideally we would have liked to have included all UK trainees and consultants, logistically this was not possible. The questionnaire was distributed in two different formats in different regions, but content of the questionnaire remained consistent throughout. The electronic survey did not enable us to calculate a response rate as we could not guarantee that all e-mail addresses used were accurate and/or current. Based on the results that we have gathered we have provided a summary of responses for trainee supervision (Table 4). In all cases, it is imperative that the case is discussed between the trainee 'performing' the procedure and the consultant responsible for the procedure, prior to bringing the case to theatre.

The applications of the e-logbook continue to expand, and if it is to be used to monitor training units and trainee development then it is imperative that all trainees are documenting their operative cases consistently. A formal process of mandatory validation of trainee logbooks would help in this regard. This process will help validate the e-logbook as a form of assessment and will ensure accuracy of data for the purposes of audit. All trainees who responded to our questionnaire use the e-logbook. This level of participation ensures that the e-logbook is a unique and invaluable source of information for research and audit. We would recommend that all consultants who are involved in post-graduate training be encouraged to register as users of the e-logbook. This would further strengthen the validity of information derived from the e-logbook.

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An Audit of Smoking Prevalence and Awareness of HSE Smoking Cessation Services among HSE Staff

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Abstract
This audit estimated smoking prevalence and awareness of quit services among Health Service Executive (HSE) staff. A questionnaire posted to a random sample of 1,064 staff received a 71% response rate. Staff smoking prevalence was 15.0% overall, and 4.4% among Medical/Dental staff. Front-line healthcare staff were less likely to smoke than other staff categories (adjusted OR 0.38, p<0.001). Only 63.6% of staff were aware of HSE quit services. Targeted interventions are required to help staff to quit smoking and to boost awareness of quit services.

Introduction
Healthcare staff who smoke are less likely to advise patients to quit.[1] There is limited national information on the number of healthcare staff who smoke,[2-4] or of their awareness of cessation supports. This national study was carried out to address these gaps.

Methods
1,064 HSE staff, stratified by staff category, were randomly selected to receive a pre-piloted postal questionnaire on their smoking status and their knowledge of cessation supports in April 2012. To maximise the response rate, cover letters were personalised, reply-paid envelopes were included and two reminders were sent. Data were analysed in SPSS® version 20.

Results
From the 1,064 questionnaires, 755 (71.0%) valid responses were received. The overall smoking prevalence was 15.0% (10.9% daily, 4.1% occasional), range: 4.4% (Medical/Dental) to 24.7% (General Support staff), Table 1. Front-line healthcare staff (Health & Social Care, Medical/Dental and Nursing) were 2.5 times less likely to smoke (adjusted odds ratio 0.38, p<0.001) than other staff categories, while General Support staff were almost twice as likely to be current smokers (adjusted OR 1.93, p=0.026). Of the 113 smokers, 54 (47.8%) had tried to quit in the previous year, and 91 (80.5%) expressed a desire to quit. 63.6% of staff were aware of quit services, ranging from 28.9% of Medical/Dental to 78.9% of Nursing staff. Medical/Dental staff (adjusted OR 0.25, p<0.001) were less likely to be aware of quit services, as were General Support staff (adjusted OR 0.43, p=0.002). Only 20.0% of Medical/Dental and 22.1% of General Support staff were aware of the Quitline.

Table 1 Smoking status, quitting intentions and awareness of support services

	General Support	Health & Social Care	Management & Administration	Medical / Dental	Nursing	Other Patient & Client Care	Total
Smoking status no(%)							
Daily	15(19.5)	6(5.0)	22(14.7)	2(4.4)	17(6.9)	20(17.1)	82(10.9)
Occasional	4(5.2)	5(4.2)	8(5.3)	0(0.0)	10(4.1)	4(3.4)	31(4.1)
Ex-smoker	9(11.7)	37(30.8)	35(23.3)	11(24.4)	80(32.5)	34(29.1)	206(27.3)
Never	46(59.7)	72(60.0)	81(54.0)	32(71.1)	134(54.5)	54(46.2)	419(55.5)
Not stated	3(3.9)	0(0.0)	4(2.7)	0(0.0)	5(2.0)	5(4.3)	17(2.3)
Quitting intentions no(%)							
Tried to quit in last year	8(42.1)	7(63.6)	13(43.3)	0(0.0)	16(59.3)	10(41.7)	54(47.8)
Would like to quit	17(89.5)	9(81.8)	21(70.0)	1(50.0)	22(81.5)	21(87.5)	91(80.5)
Awareness of quit services no(%)							
Cessation clinics	18(23.4)	54(45.0)	84(56.0)	10(22.2)	162(65.9)	35(29.9)	363(48.1)
Quitline	17(22.1)	59(49.2)	78(52.0)	9(20.0)	129(52.4)	44(37.6)	336(44.5)
Quit.ie website	15(19.5)	32(26.7)	47(31.3)	8(17.8)	75(30.5)	24(20.5)	201(26.6)
Any service	37(48.1)	70(58.3)	108(72.0)	13(28.9)	194(78.9)	58(49.6)	480(63.6)

Discussion
With a smoking prevalence of 15.0%, HSE staff are less likely to smoke than the population aged 18-65 years (24.2%),[5] but General Support staff smoke just as much as the working population and do not seem to enjoy any "protective benefit" against smoking from working in the health sector. Whilst the smoking prevalence estimate of 4.4% among Medical/Dental staff is lower than the 21.7% observed among non-consultant hospital doctors in 2006,[3] it is close to the estimate of 5.0% among all medical staff in the same year.[2] It is reassuring that nurses and Health & Social Care staff (which includes psychologists, dieticians and social workers) exhibit a relatively low smoking prevalence, as they may have opportunities to support smokers who wish to quit. This study's estimated smoking prevalence of 11.0% among Nursing staff is less than previous estimates of 21%[6] and 22.5%.[2] This difference may be explained by successful cessation; this audit found that 32.5% of Nursing staff were ex-smokers. Our estimated smoking prevalence of 5.0% among Health & Social Care staff approximates Fitzpatrick's estimate of 2.5% among Allied Health Professionals.[2]

The smoking status of healthcare workers is important because they are seen as a model for patients and clients of the health services.[2] In addition, because smoking is associated with impaired perceptions of the risks of smoking, negative attitudes to cessation, and a diminished desire for training in smoking cessation,[1,6,7] it is important that healthcare workers are encouraged and facilitated to quit. There is a strong trend for healthcare workers to quit: 27.3% are now ex-smokers. So, for every current smoker, almost two have quit. It is encouraging that four-fifths of smokers wish to quit, and that half of them had attempted to quit in the last 12 months. It is important that healthcare staff are aware of the cessation support services available for themselves and the smoking population. Unfortunately, less than two-thirds are aware of any cessation service. In particular, only 28.9% of Medical/Dental staff were aware of quit services. The low level of awareness among Medical/Dental staff suggests that they are not fully equipped to direct their smoking patients or clients to relevant services.

It is important that the HSE provides incentives and supports to motivate and encourage all smoking staff to quit. In particular, targeted interventions are required to support General Support and Other Patient & Client Care staff in smoking cessation. In addition, the HSE must ensure that all its staff are aware of the supports that are available to patients who wish to quit and that they have the relevant skills training to help their patients quit. Finally, the finding that less than 5% of doctors/dentists smoke underscores the point that a tobacco-free Ireland (population smoking prevalence <5%) could be achieved by 2025.

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Pulmonary Langerhans Cell Histiocytosis

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Abstract
We report the case of a 57 year old man who presented with increased shortness of breath together with increased pulmonary nodules in his upper lobes over a two year period. His strong smoking history and pattern of distribution makes Langerhans cell Histiocytosis a likely diagnosis that was confirmed on biopsy.

Case Report

This patient has a background of stage D COPD, Obstructive Sleep Apnea and type 2 diabetes. He is a current smoker with 80 pack a year history. He works in an office in a drug rehabilitation centre and is fully independent in his activity of daily living. He initially presented to the outpatient department with exertional dyspnea. He had a CXR done which showed a tiny 4mm nodule in the right lower lobe. Since 2009, he had been on surveillance register. Follow up CT Thorax in June 2011 showed two non specific nodules in the right lower lobe measuring 7mm and 6mm. As per the fleishner criteria he was booked for a follow up CT Thorax in the following three month time which showed new bilateral upper lobes inflammatory nodules in a peribronchovascular distribution.

Over the intervening time period, there was a deterioration in his functional status as he was getting more breathless on minimal exertion, occasional non productive cough, no chest pain, no fever, no weight loss, no night sweat. His vitals and clinical examination were normal. His FBC, U&E, LFT, ESR, CRP, Tumour markers (PSA, HCG, AFP, CA 19.9, CEA), ACE and mantoux test all came back normal. His quantiferon however came back positive. His PFT done showed: FEV1 – 1.25L (33% predicted), FEV1/FVC – 34%, TLCO – 79%, KCO – 95%. His transthoracic echocardiogram was normal. Bronchoscopy showed a nodule on the vocal cord otherwise no endobronchial lesion found. BAL and transbronchial biopsies all came back normal. After being discussed at our lung cancer MDT, it was agreed to proceed ahead with a right lower lobe wedge biopsy. The microscopy came back as follows: airways stellate scars and several nodules

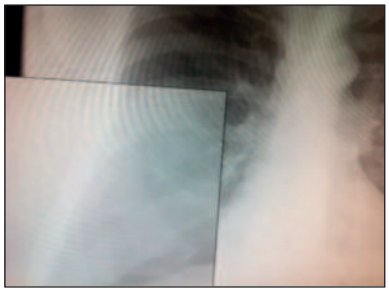

Figure 1
CXR showing right lower lobe nodule (magnify)

Figure 2
CT thorax showing upper lobes inflammatory nodules in a peribronchovascular distribution

present composed of grooved histiocytic cells (CD1a+) and a scattering of eosinophils consistent with Langerhans cell Histiocytosis.

Discussion

Pulmonary Langerhans cell histiocytosis (LCH) in adults (Eosinophilic granuloma, Histiocytosis X) is characterised by monoclonal proliferation and infiltration of organs by Langerhans' cell[1]. The lung is the principal site of involvement. The histiocyte society has established a simplified classification ranging from involving single organs to more aggressive multiorgan disease[2].

Its presentation ranges from asymptomatic (25% of cases) to rapidly progressive (non productive cough and dyspnea most common). Immunohistochemical studies are useful in recognising Langerhans' cells, which stain for the S-100 protein, CD1a and HLA- DR. However the mere presence of Langerhans' cell is not diagnostic of LCH. Ground glass infiltrates may be radiologically indistinguishable from features s of hypersensitivity pneumonitis, bronchiolitis obliterans with organising pneumonia or chronic eosinophilic pneumonia. The histological lesion progress from cellular nodules to entirely fibrotic nodules that are often stellate in configuration and may connect with nodules in adjacent lung parenchyma to produce a distinctive honeycomb-like structure with enlargement of air spaces and hyperinflation. In later stages fibrotic nodules may lack Langerhans' cells entirely. A number of histologic findings are commonly associated with the lesions of pulmonary LCH. Since the majority of patients are smokers, the findings of respiratory bronchiolitis is not surprising. In some cases respiratory bronchiolitis is sufficiently extensive that the

clinical symptoms could be due to interstitial lung disease associated with respiratory bronchiolitis. Filling of the air spaces by pigmented macrophages is common and may cause confusion with desquamative insterstitial pneumonia. Emphysematous changes of the underlying lung tissue are also common as is air-space enlargement with fibrosis.[3]

In adults it has been reported to be associated with lymphoma and rarely carcinoma, thereby outlining the importance of early detection.[4,5] Open or thoracoscopic surgical lung biopsy has the highest diagnostic yield. There is no definitive therapy and therefore discontinuation of smoking should be emphasised as a cornerstone of treatment. Finally its outcome can be variable ranging from spontaneous remission to remission following cessation of smoking to progression to end stage fibrosis.[3]

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Spinal Cord Stimulation in Pregnancy with Failed Back Surgery Syndrome

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Abstract
Women of child-bearing age who are candidates for trial and possible implantation of a spinal cord stimulator (SCS) may express concerns regarding its effect on their ability to become pregnant, to maintain a pregnancy and to breastfeed. Despite the large number of SCS implanted worldwide there is a paucity of data regarding its effect on fertility and the course of the pregnancy. We describe a case of 32 year old lady in our centre who became pregnant after SCS implantation and had an uneventful pregnancy with delivery of a healthy baby which was breastfed.

Introduction

The last three decades have witnessed a rapid increase in the technologic development and wider use of spinal cord stimulation (SCS) for refractory chronic pain conditions. The likelihood of a woman with a SCS in situ becoming pregnant is increasing. There is an earnest need to investigate the effects of SCS on fertility, fetal well-being, pregnancy and lactation.

Case Report

A 32 year old lady presented in the Pain Clinic with failed back surgery syndrome (FBSS) after lumbar discectomy. Maximal medical therapy including oxycontin, pregabalin and amitriptyline had provided minor analgesic benefit only. The patient had significant disability as judged by Oswestry disability index score[1]. The main complaint was left L5 radicular symptoms and MRI scan had revealed a good clearance of the disc with no indication for re-operation. Two L5 dorsal root ganglion treatments provided short-term relief only. After psychometric analysis and education, a Medtronic Restore Advanced system was implanted successfully. The electrodes were advanced through the L3-4 interspace, with the tips at T9-10 epidural space. The implantable pulse generator (IPG) was placed in the right gluteal region. Significant improvement in pain was reported at one month post implantation follow-up. Her quality of life improved dramatically and she was well able to perform and participate in her day to day activities.

Analgesic medication consumption had reduced to solpadeine only. The SCS worked extremely well and one year after implantation the patient became pregnant. The effects of SCS on the developing fetus are unknown and there are no guidelines regarding the management of pregnancy with a SCS in situ. Based on the recommendations by all manufacturers, the device was switched off for the entire duration of pregnancy.

Unfortunately, the radicular pain recurred and oxycontin was restarted. The obstetrician was advised of the presence of the SCS and it was suggested to avoid epidural labour analgesia or spinal anaesthesia. The patient developed pregnancy induced hypertension and underwent elective cesarean section under general anaesthesia. A healthy baby was born with Apgar score of 8. SCS was turned four days post surgery and patient was discharged home after one week with a reducing dose of oxycontin which ceased at one month. At three month follow-up post delivery, the SCS was working well and solpadeine again was the only oral analgesic taken when required.

Discussion

Women of child bearing age who suffer with a chronic pain condition amenable to SCS therapy are concerned about the possible effects of SCS on their ability to reproduce. Implantation of spinal cord stimulators in such group of patients requires special consideration of future obstetric and anesthetic needs[2]. Abdominal placement of the Implantable pulse generators may result in technical complications. The IPG may easily be damaged during an urgent/emergent cesarean delivery by either direct surgical trauma or from the electrocautery. Gluteal placement prevents repositioning during pregnancy and progressive pain associated increased abdominal girth. Generally neuromodulatory device is deactivated once the diagnosis of pregnancy is made. There remains uncertainty about the impact of SCS on fertility, pregnancy, labour and lactation[3,4]. There are no human studies on fetal development and spinal cord stimulation.

However, animal studies do not report any adverse effects from conventional stimulation low-frequency electromagnetic fields (EMF)[5]. In fact, Bernardini et. al in a case series and review of literature suggest neuromodulation may indirectly cause a relative

increase in fertility by reducing pain, enhancing activity and sense of well-being thereby promoting sexual activity[2]. This case illustrates successful implantation of SCS with return of normal activity, achieving conception and uneventful pregnancy and labour. Avoidance of the abdominal site for implantation of the IPG in women of childbearing age would be a reasonable consideration. Temporary deactivation of the stimulator may be a more prudent option once pregnancy is established. Early activation of SCS following pregnancy should be encouraged as this will avoid the potentially harmful effects of pain medications during lactation.

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An Audit of the Management of Thyroid Disease in Children with Down Syndrome

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Abstract
Children with Down syndrome are at a higher risk of thyroid dysfunction than children in the general population. The aim of this audit was to determine thyroid screening practice at University Hospital Limerick and to compare it to the Irish guidelines for the medical management of children with Down syndrome. The thyroid function tests (TFT) of 148 children with Down syndrome were assessed through retrospective database review. Overall compliance with the guidelines was 79/148 (53%), although this varied by age category. The 0-5 years category had a compliance rate of 47/54 (87%), the 6-11 years category was 22/51 (43%), and the 12-17 years category had a compliance rate of 10/43 (23%). The guidelines are effective for monitoring purposes, although performing an annual TFT throughout childhood may be warranted.

Introduction

Thyroid dysfunction is common in children with Down syndrome.[1] Subclinical hypothyroidism i.e. an elevated thyroid stimulating hormone (TSH) result in the presence of normal thyroxine (T4) and triiodothyronine (T3) is particularly common in children with Down syndrome with prevalence ranging from 25.3%[2] to 60%[3]. The Irish guidelines for screening for thyroid disease in children with Down Syndrome were last reviewed in 2009[4] and recommend routine TSH after birth (on Guthrie screening test), then TSH and free T4 annually until age 5 years; and TSH and free T4 every 2 years thereafter.[5] Thus, every child with Down syndrome should have had at least 1 TFT performed in the past 2 years. A retrospective database review was carried out with the purpose of auditing clinical practice in the University Hospital Limerick Complex (UHL Complex). The aim of this audit was to determine thyroid screening practice at UHL and to compare it to the Irish guidelines for the medical management of children with Down syndrome.[6]

Methods

The study design was an audit which was conducted through a retrospective database review. Children with karyotype confirmed Down syndrome aged 0-18 years were eligible for inclusion in this study. There were no exclusion criteria. Searching local (hospital and community) databases identified 148 children with Down syndrome attending services in Limerick, and all were included in this audit. The patients were out-patients of the UHL or attended a community clinic. The patients attended Early Intervention Clinics/School Age Disability Team Clinics, HSE Mid West Regional Disability Services and General Paediatrics Clinics at UHL. None attended Paediatric Endocrinology. All were under the auspices of the Department of Paediatrics at UHL. The cohort was sub-divided by age as follows: 54 patients in the 0-5 years category, 51 in the 6-11 years category, and 43 in the 12-17 years category.

All TFTs were venous samples analysed in the UHL central laboratory. Plasma Ft4 was measured by IMMULITE 2000 Free T4, a solid-phase, enzyme-labelled chemiluminescent competitive immunoassay. The reportable range of this assay is 3.9-77.2 pmol/L. TSH was measured by IMMULITE 2000 Rapid TSH, a solid-phase, chemiluminescent immunometric assay. The calibration range of this assay extends to 75uIU/ml. Current cost of an fT4 test in the UHL central laboratory is €3. A TSH assay also costs €3. The results of all TFTs (TSH, free T4, T4 and thyroid autoantibodies) for each child with Down syndrome, performed over the lifetime of each child since the introduction of the Irish guidelines in 2001, were collected through a retrospective database review. Results were interpreted according to the age of the child, and frequency of TFT testing was compared to published Irish standards for children with Down syndrome at various ages[7] (see Figure 1). Subclinical hypothyroidism was defined as an elevated TSH i.e. > 3.2mU/L

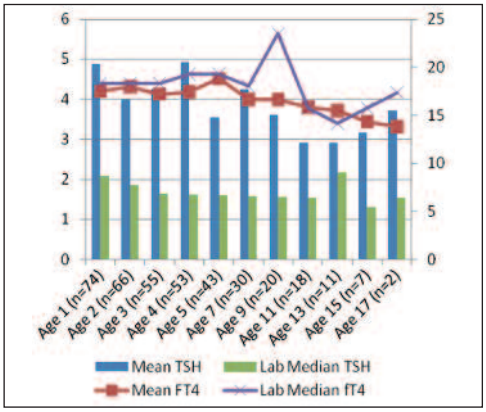

Figure 1 Mean TSH and mean Free T4 results compared to age of child when TFTs performed

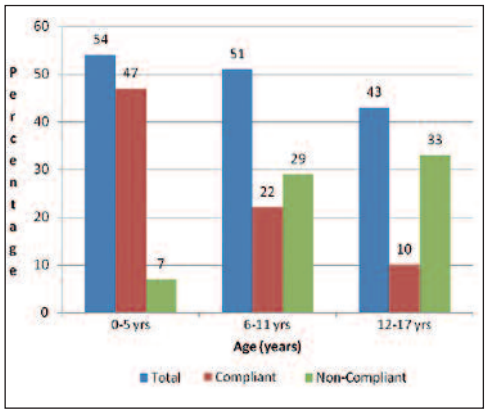

Figure 2 Compliance with age-related guidelines on performing screening TFTstt

(reference range 0.15-3.2mU/L), paired with a normal free T4 i.e. < 20.1pmol/L (reference range 9.9-20.1pmol/L). Summary statistics were applied to the data.

Results

Description of the cohort

The study population comprised 148 patients (90 males and 58 females). The mean age was 8.4 ± 5.0 (range 0.2-18.0) years. In total, 715 TFTs were reviewed, with mean 5.1 ± 3.7 tests per child. At first TFT, mean TSH was 4.2 ± 2.3 mU/L and mean fT4 was 17.8 ± 3.8 pmol/L. At first TFT 90/137 children had subclinical hypothyroidism and 45/137 had a normal TSH result. Of those patients who had subclinical hypothyroidism at first TFT, 21/85 (24.7%) had a normal TSH result at second TFT (see Figure 1). Figure 1 demonstrates that in each age group mean TSH was elevated above the laboratory range for that age.

Results of the Audit

Overall compliance with the guidelines was 53% (79/148) since 2001. Compliance is highest at 87% (47/54) in the patient age category 0-5 years old. Compliance in the patient age category 6-11 years old is 43% (22/51). The lowest compliance is for the patient age category 12-17 years at 23% (10/43) (see Figure 2). Of the 148 patients, 117 (79%) have had a TFT in the last two years, which is the minimum time recommended for a TFT check, regardless of the age of the child. Thus, 31 (21%) patients had not received a TFT in >2 years.

Discussion

Although overall compliance with the guidelines since 2001 is just 53%, the percentage of patients who have received a TFT in the last 2 years is 79%. This suggests a recent improvement in compliance. Overall, just 21% of patients have gone >2 years since having received a TFT. This study has limitations; it is a small, retrospective study. It is possible that children had TFTs performed that were not captured in our records. If this is the case, our results underestimate compliance. This is disappointing, given that this study suggests non-compliance in 1 in 5 children in the past 2 years. Also, our databases are limited and do not allow for an accurate review of the clinical details of children diagnosed with thyroid dysfunction, which might change the population averages for TSH and free T4 and also change the frequency with which these children have repeat TFTs performed. The clinical information which was not gathered and which could be expected to influence the frequency of testing includes: the presence of autoimmune disease; cardiac disease; or thyroxine use in the cohort. We anticipate that a prospective study will address these limitations. Also each child's test results were interpreted according to recommendations for their specific age; therefore the results of children with a diagnosed thyroid disorder and consequent increased monitoring, will not significantly affect the number of abnormal test results in this study.

If the Irish guidelines are followed consistently, the expectation would be a reduction in the number of children with Down syndrome presenting with overt hypothyroidism. However, the risk of acquiring hypothyroidism increases with age in children with Down syndrome[8]. Thus, the Irish guidelines may need to introduce yearly thyroid screening after 5 years of age. Other national guidelines suggest more frequent thyroid screening in this population.[9-12] More evidence is needed regarding the point at which treatment should be commenced in cases of subclinical hypothyroidism. Children with Down syndrome are at risk of developing health issues and attend many medical appointments. Any move to increase this burden should be carefully considered. Furthermore, more appointments and tests imply increased healthcare costs. The live birth rate in Ireland in 2010 was 73,724[13]. The estimated prevalence of Down syndrome in Ireland is 1 in 546 live births[14]. Thus in 2010, the estimated number of babies born with Down syndrome was 135. The increased cost of 8 extra TFTs for these children up to age 18 years is €6480; including the cost of the assays only. The cost-benefit of this guideline change should be analysed scientifically after any change in practice.

In conclusion, compliance with the guidelines is highest in the 0-5 years age group, and lowest in the 12-17 years age-group. Consideration should be given to amending Irish guidelines to include TFT annually throughout childhood as well as offering guidelines on the management of subclinical hypothyroidism in this population. Prospective Irish studies are required to evaluate the benefits and disease prevention achieved by our current guidelines and any further benefits that may be realised by changing current Irish guidelines.

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Sialoendoscopy in the Management of Salivary Gland Disorders – 4 Years Experience

To receive CPD credits, you must complete the questions online at www.imj.ie.

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Abstract
Sialoendoscopy is a minimally invasive technique used in the diagnosis and management of salivary gland disorders with promising success rates. Our objective is to describe our experience in sialoendoscopy, outlining our technique, success rates and complications, and to compare our data to those reported in the literature. A retrospective review and data analysis of all sialoendoscopic procedures performed by our service between 2006 and 2010 was performed. 41 patients were identified. 4 (9.7%) patients had normal findings, 2 (4.8%) had anatomical variants, 4 (9.7%) had benign strictures, 11 (26.8%) had mucinous debris and 20 (48%) had obstructing stones. Stone removal was successful in 19 (95%) of the 20 cases and symptomatic relief was achieved in 34 (83%) cases. In our experience a single interventional modality was used, despite that our success rates are similar to those reported in the literature where multiple therapeutic modalities were used.

Introduction

Hippocrates of Cos (ca. 460 BC – ca. 370 BC) was the first to describe salivary gland disease. In 17th century Thomas Wharton and Neils Stensen described the submandibular ductal system and the parotid one respectively.[1,2] Major salivary gland infection and obstruction present a diagnostic and therapeutic challenge to otolaryngologists. Sialoendoscopy, a minimally invasive method for investigating and managing these conditions, has evolved rapidly over the past few of years. Konigsberger and Gundlach separately performed sialoendoscopy on major salivary glands in 1990.[3,4] Katz described his first experience in 1991 when he introduced a 0.8-millimeter flexible endoscope to diagnose and treat salivary gland stones.[5] Nahlieli in 1994 used a rigid miniendoscope in his technique.[6] Recent major advances in optical technology have allowed full exploration of the salivary ductal system, allowing precise diagnosis which is further augmented by the functionality of the sialoendoscope and its instruments.[7] It is now possible to perform the procedure as a day case to directly visualise the ductal system, dilate strictures and retrieve stones therefore limiting the need for the traditionally practiced sialolithotomy and gland excision. Success rates are very promising and the need for invasive therapeutic procedures to manage salivary flow obstruction is now rarely indicated

Methods

A retrospective study on 41 patients undergoing sialoendoscopy between 2006 and 2010 was performed. All patients presented with signs and symptoms of chronic or recurrent salivary gland obstruction. Most patients had a preoperative radiological evaluation, this included ultrasound, CT and/or MRI evaluation. Data regarding patient's gender, affected gland, findings at sialoendoscopy, success rate, post operative complications and the need for further intervention were collected. Patients with recurrent or persistent obstructive symptoms, even in the absence of abnormal findings on clinical examination or radiological evaluation undergo diagnostic sialoendoscopy initially followed by a therapeutic one if pathology is found. Contraindications included acute sialadenitis, intraparenchymal stones, stones in the proximal part of the duct and stone diameter greater than 7mm.

In our institute, patients undergo sialoendoscopy under general anaesthesia using a rigid mini-endoscope manufactured by TEKNO Surgical; single port diagnostic endoscope with a 1.1mm diameter and a double port therapeutic endoscope of a 1.7mm diameter. Following progressive dilatation of the papilla with a lacrimal probe a diagnostic endoscope is introduced into the ductal orifice. Once the endoscope is introduced saline irrigation is used to maintain ductal luminal distension and lubrication, easing the introduction of the endoscope and preventing local trauma. The entire ductal system is visualised until a stone or an obstructive pathology is encountered. Encountered stones are removed using a mini-grasper or a basket in one piece or after crushing into smaller pieces using the grasper. Strictures are occasionally encountered and dilated by passing the endoscope through the narrowed segment. Mucinous plugs are cleared away with a gentle continuous irrigation. Prophylactic antibiotic administration is not routinely done and the decision regarding that is based on intra-operative findings. Patients are discharged six hours post operatively, unless complicated, with 6 and 12 weeks outpatient follow up appointments and an advice on saliva stimulation and gland massaging.

Results

Out of the 41 patients, 20 (48.7%) were males and 21(51.2%) were females. Mean age at first procedure was 47 years (range 21 – 73yrs). Twenty nine (70.7%) cases were due to obstructive submandibular gland symptoms and 12 (29.2%) due parotid obstructive symptoms. Twelve (29.2%) patients had Ultrasound scans, 4 (9.6%) patients had CT imaging and 2 (4.8%) had MRI pre-operatively. Successful exploration of the entire ductal system was possible in 40 (97.5%) patients. 1(2.4%) case was abandoned due to a severe ductal stricture. Four patients (9.7%) had normal findings, 2 (4.8%) had anatomical variants, 4 (9.7%) had benign strictures, 11 (26.8%) had mucinous debris and 20 (48.7%) had obstructing stones. All imaging modalities were equally sensitive in identifying obstructing calculi.

Ninteen (95 %) of these calculi were in the submandibular ducts and 1 (5%) in the parotid duct. The largest stone was < 7mm in size. Stone retrieval was successful in 19 (95%) of the 20 cases. In 1 (5%) case a large stone in the proximal part of the submandibular duct required an intraoral sialolithotomy. One (2.4%) patient developed sialadenitis post operatively and required an overnight stay. Out-patient follow up of patients following sialoendoscopy revealed symptomatic relief in 34 (83%) patients over 2 years period. Seven patients (17%) had persistent symptoms and required further intervention; 6 (14%) underwent submandibular gland excision and 1(2.5%) required superficial parotidectomy.

Discussion

Sialolithiasis accounts for more than 50% of all major salivary gland disorders.[7,8] The exact mechanism of sialolithiasis is unknown. Many theories have been proposed to explain this. These include calcifications around a foreign body, desquamated ductal epithelial cells and micro-organisms. Increased saliva viscosity due to dehydration or certain medication which potentially lower saliva production and saliva stasis, as a result of mechanical obstruction or reduced secretion due to reduced oral intake have also been proposed.[9-12] Ultrasound, CT and MRI imaging are being increasingly used to diagnose salivary gland disorders and replacing the traditional x-ray sialography. Mosier et al[13] compared all modalities and reported equal sensitivity in demonstrating obstructing calculi. Traditionally, salivary gland sialolithiasis was divided into two groups. Stones in the anterior part of the duct that can be removed by an intraoral sialolithotomy approach; and stones which removal necessitate removal of the whole gland.[14] As sialoendoscopy evolved, the incidences of finding of other obstructive pathologies such as strictures and

CPD available online at www.imj.ie and questions on page 127.

mucus plugs have risen making patients with low-grade symptoms less likely to require hospital admission and unnecessary open procedures.[14] Other options are also available should the endoscopic extraction be not amenable or have failed. Shock wave fragmentation was first reported by Marmary et al in 1986.[15] Multiple authors have since reported their experience using Extracorporeal Shockwave Lithotripsy (ESWL), Intracorporeal Endoscopic Lithotripsy and combination of ESWL and sialoendoscopy.[16,17] This is often used in cases where calculi are present in the gland parenchyma or at the genu of the duct and in cases of very large stones.

Reported stone retrieval using sialoendoscopy in conjunction with an additional interventional technique is very promising. Success rates are 70% - 90%.[6,8,14,16-19] This is likely to reflect success rates in the experienced hands and proper case selection which depends largely on stone size and mobility[18]. Only few studies in the literature reported high success rates without prior stone fragmentation. Using a combination of sialoendoscopic interventional techniques, Nahleili et al[8] reported a success rate in stone removal of 82% and symptomatic relief of 83%. Marchal et al[13] success rate in stone removal was 82% and resulted in symptomatic relief in 85%. Luers et al[18] reported an overall success rate in endoscopic removal of stones of 61% while Marish et al[19] reported symptomatic relief of 84% after sialoendoscopy and stone removal in 80 % of cases.

Our success rate in stone retrieval using this single modality alone is 95 %. This also resulted in symptomatic relief in 83% of all 41 patients. Despite using a single therapeutic modality our success rates are consistent with previous reports where multiple therapeutic modalities were used.[6,8,14,16-18]

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Does Eliminating Fees at Point of Access Affect Irish General Practice Attendance Rates in the Under 6 Years Old Population? A Cross Sectional Study at Six General Practices

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Abstract
With the introduction of free point of access GP care for children aged under six imminent, we sought to determine consultation rates among this group. We interrogated data from practice management systems at six general practices (total patient population 27080). A total of 1931 children aged under six were responsible for 5814 surgery consultations. The mean annual consultation rate was 3.01; 4.91 for GMS' patients, 5.07 for 'Doctor Visit' patients and 2.03 for private patients. Our findings suggest the introduction of free GP care for children under six will considerably increase GP consultations. We also highlight the value of routinely collected general practice data in facilitating health services planning. We estimate that there will be an additional 750,000 GP consultations annually.

Introduction
In June 2014, Ireland intends to implement legislation to provide free point of access GP care to all children aged under 6.[1] While it has been suggested that 'the increase in total number of GP visits arising from the introduction of a GP service without fees is expected to be low',[2] considerable literature suggests otherwise. Firstly, becoming eligible for free GP care may result in increased consultation rates after controlling for demographic, socio-economic and health factors[3,4]. Secondly, data reported by Ireland's Health Services Executive (HSE) in respect of fees paid

to GPs who hold 'fee-per-item' type contracts, suggests an annual GP consultation rate by patients who are eligible for free GP care through Ireland's General Medical Services scheme (GMS patients) of 7.52.[5] Thirdly, UK data from 21.7 million consultations estimates an annual GP attendance rate of 5.5 consultations.[6] With the imminent introduction of free GP care for children aged under six, we sought to determine consultation rates among this group by interrogating data from GPs' practice management systems.

Methods

Using a methodology previously described,[7] we examined the practice management systems of six practices (27080 registered patients), reflective of Ireland's national population in terms of age, deprivation, GMS profile and urban/rural location. As all Irish children are potentially exposed to free health checks with their GP at two and six weeks of age and have five opportunities for primary immunisation, the study population was all children aged under six years who had first attended the practice more than 12 months previously and had also attended more than once in their lifetime. The total number of patients and attendance rates were extracted from each practice by the GP principal and collated by the main author. To estimate additional clinical activity, we reviewed GP Cooperative, Deputising Service and telephone contacts at the main author's practice. The study period was 1/1/13 to 31/12/13.

Results

A total of 1931 children aged under six were eligible for inclusion in the study, of whom 1277(66%) were private' patients, 583(30%) were GMS eligible and 71(4%) had Doctor Visit' cards. The 1931 children were responsible for 5814 surgery consultations during 2013, mean annual consultation rate of 3.01. The mean annual consultation rate by patient category was: 4.91 for GMS patients, 5.07 for 'Doctor Visit' patients and 2.03 for private patients. The combined out of hours and telephone consultation rates in the main author's practice were an additional 0.69 p.a. for 256 private patients and 0.8 p.a. for 60 GMS patients.

Discussion

Among children aged under six, this study estimates a mean annual consultation rate of 3 with an additional 0.7 GP Co-operative / Deputising Agency / Telephone clinical consultations. Consultation rates among 'Doctor Visit' patients (5.1) and GMS patients (4.9) were considerably higher than among private patients (2). Though considerably higher than that reported in much larger studies (e.g. Ireland's longitudinal study of childhood)[8], our estimate of GP consultations is based on documented clinical activity as opposed to recollection by patient / parents and more consistent with international data which adopts a similar approach.[6] Work previously conducted by our team has highlighted how workload estimates based on documented clinical activity result in a higher consultation rates than methods which rely on population surveys.[7]

Though we again acknowledge the limitations / possible bias of our sample, our findings are based on a sample of over 1900 children and a total population comparable to Ireland's national population in terms of proportion aged between 1 and 6 (7% versus 8% nationally) and GMS eligibility (34% versus 33% nationally)[9] While policy that will enhance access to primary care by introducing free general practice care is welcome, this study highlights the need for accurate data to allow effective planning and establishment of sustainable models of healthcare. Maximising the use of clinical records for this purpose (to complement data from large population surveys) is a priority. The introduction of free GP care for children aged under six is likely to result in considerable additional workload. Were the 250000 children who currently have neither GMS nor Doctor Visit card, to attend at the same rate as children who currently have a free point of access GP care, then our findings suggest Ireland's health system should plan for an additional 750000 GP consultations per year and an inevitable increased workload across the system.

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The Romano-Ward Syndrome – 1964–2014: 50 Years of Progress

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Abstract

This year marks the 50th anniversary of publication in the then Journal of the Irish Medical Association of the seminal work by Irish paediatrician Professor Conor Ward entitled 'A new familial Cardiac Syndrome in Children'[1]. The condition soon became known by the eponym Romano-Ward Syndrome and is now recognised as the congenital Long QT Syndrome. Here we review the major developments in the field over the past fifty years, with special mention of the important contributions made by Irish researchers.

'Attacks of ventricular fibrillation following exertion or emotional disturbance, a prolonged QT interval on cardiogram and a familial incidence'.[1] The now pathognomonic trio of symptoms and signs of the Long QT Syndrome (LQTS) as described by Professor Ward in his 1964 Journal of the Irish Medical Association case series publication. A 6-year-old girl, suffering from repeated syncope, had been referred for cardiology review by her tenacious GP who thus far, had unsuccessfully consulted widely on this troublesome and novel case. The child was admitted to hospital and her symptoms recreated by running her around the ward – she collapsed, pulseless and unconscious. The electrocardiographic changes are punctiliously described – marked QT prolongation at baseline and 'bizarre' ventricular extrasystoles degenerating into ventricular fibrillation of an 'abnormal configuration'[1]. We now know this to represent Torsades de pointes.

It was noted that clinical examination and basic biological testing were normal. Based on the astute observations of the author, it was correctly concluded that this new disorder was an abnormality of repolarisation – 'as evidenced by the normal interval between the first and second heart sounds, the abnormality is confined to the recovery phase in which the heart prepares for the next contraction'[1]. Furthermore, it was suggested that 'Undue sensitivity of the myocardium to sympathetic stimulation'[1] may underlie the condition, given attacks occurred during stress and the dilated pupils of the child. In terms of heritability, it was noted that the child's brother was also affected. Another brother had a normal electrocardiogram (ECG), as did their father however, the mother's ECG showed QT prolongation. It was concluded from these observations that this cardiac syndrome had an autosomal dominant inheritance pattern[2].

Fortuitously, the IMJ article was picked up by The Lancet and published as an Annotation in their July issue 1964[3]. They noted that it was the 'first time this condition had been described' and they recommended that an ECG be carried out in fainting children. Perhaps even more fortuitously, the annotation was noticed by Caesaro Romano, a Genoese paediatrician[4] who had also recently published a series of three siblings suffering from syncopal events, abnormal QT interval and T waves and ventricular fibrillation on cardiogram[5]. Following reports of further cases from groups in Sweden[6] and South Africa[7], publication of the eleventh case in 1970 referred to the condition as the Romano-Ward Syndrome[8], the term that was widely adopted thereafter. Of note, the Professors Romano and Ward never actually met each other.[9]

Both Ward and Romano commented on the similarities between their cases and the previously described Jervell Lange-Nielsen syndrome (JLN). In 1957, two Norwegian physicians published[10] the 'obscure' case of 4 siblings (from a family of 6) each suffering from deaf mutism (sic) and fainting attacks. Consistent with the cases reported by Romano and Ward, the attacks happened soon after effort, the ECG was normal apart from a prolonged QT interval and clinical examination was unremarkable. The children all died suddenly. As none of the children in Romano or Ward's series were deaf, it was considered that the conditions were linked but separate entities. With remarkable foresight however, Ward noted that the cardio-auditory JLN syndrome was likely to represent the autosomal recessive form of the Romano-Ward Syndrome.[2]

Meanwhile, in the North of Ireland, at Queen's University Belfast, Professor (now Sir) Peter Froggatt was collaborating with researchers in Oxford and Detroit[11] to perform ECGs on congenitally deaf people throughout Ireland and Britain. This was a very large endeavour at the time (1964) and they succeeded in assessing the QT interval of 1460 patients. From these, nine new cases of JLN were identified, four of them from Ireland. In order to define the normal limits of the QT interval in their population, they conducted ECGs in a control group of 369 Belfast school children and measured the distribution of the QT interval. The group also produced a regression equation to normalise QT for age, sex and heart rate. This equation was essentially a paediatric QT correction formula.[11] In their discussion, the authors touch on some of the issues that remain pertinent in the Long QT community today. They note that, even within families, penetrance (as measured by the QT interval) seems to be varied and not necessarily linked to fatality. Even 50 years later in the era of genetic testing, while risk stratification in LQTS is somewhat more accurate, the same questions in regard to variable presentation of LQTS genotypes remain.[12]

A decade later, in one of his first publications on the subject (now totalling >160), Peter Schwartz reported 6 new cases of long QT in both deaf and normal hearing children.[13] This brought the total reported cases to 203. This particular publication is notable for several reasons. First, it described the successful therapeutic use of beta-blockers, and based on an earlier case report from Arthur Moss[14], they also performed a left stellate ganglion sympathectomy, which successfully shortened the QT interval and rendered the patient syncope-free. Second, this paper also introduced the key concept of the importance of T wave morphology in addition to the QT interval, made the distinction between acquired and congenital LQTS and again commented on the unanswered questions regarding risk stratification and penetrance. Additionally, the umbrella term 'Long QT Syndrome', encompassing both Romano-Ward and Jervell Lange-Nielsen, first appeared in this article.

Two pivotal publications on LQTS appeared in 1985. Schwartz formulated diagnostic criteria, particularly useful in borderline cases[15] and the first report from the International Long QT registry was published in Circulation[16]. The follow-up data on 146 patients provided significant insight into the natural history of the syndrome and identified risk factors for sudden death – namely congenital deafness, history of syncope, female gender and documented Torsade de pointes or ventricular fibrillation. They noted that the absolute QT interval was not necessarily proportional to mortality risk and indeed, that the QT interval was actually normal (<440ms) in several patients with documented syncope, Torsade de pointes and family history. This was an important observation, as we now know that there is considerable overlap in the QTc intervals of controls versus LQTS mutation carriers.[17]

The early to mid nineties saw the most fundamental advances in the unravelling of the pathogenesis of LQTS. Genetic linkage studies performed by Mark Keating's group (Utah) in 1991 mapped a gene locus on Chromosome 11.[18] In 1994, they mapped further loci on chromosomes 3 and 7.[19] The following year, in a seminal single issue of Cell, mutations in the genes KCNH2/hERG (encoding a voltage-gated potassium channel)[20] and SCN5A (encoding a voltage-gated sodium channel),[21] were identified as the cause of LQT subclass 2 and subclass 3 respectively. By 1996, with the discovery of potassium channel KVLQT1as the LQT 1 linked gene (KCNQ1)[22] a molecular basis for the majority of congenital LQT syndrome cases had been established. With a growing awareness of the Long QT Syndrome amongst cardiologists, updated and more refined diagnostic criteria were required. Schwartz's new points-based criteria recognised the spectrum of disease (graded scale based on the QTc value), sex differences in QT interval and the importance of T wave morphology.[23] These diagnostic criteria remain in use today.

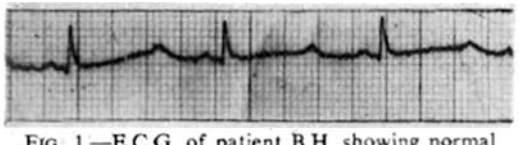

FIG. 1.—E.C.G. of patient B.H. showing normal rhythm, with marked prolongation of QT interval. (QT=0.60. Normal maximum 0.42).

Figure 1 The original article from OC Ward, Journal of the Irish Medical Association 1964. Note the subtle T wave notching of the first beat of the ECG.

In relation to T wave morphology, we note that in Figure 1 of Ward's original article[1] (Figure 1), subtle T wave notching is evident in the first beat of the ECG. This suggests that the patient was suffering from LQT subclass 2.

2005 marked the 25th anniversary of the International Long QT registry.[24] The well-defined and phenotyped clinical pedigrees now contained in the registry (families from both North America and Europe) provided not just insights to the clinical natural history of the LQT spectrum but also the biochemical material for genetic analyses. The ever-present transatlantic cooperation in the Long QT syndrome was further evident in 2013 with the publication of a joint Heart Rhythm Society / European Heart Rhythm Association statement on the Diagnosis and Management of Patients with inherited Primary Arrhythmia syndromes.[25] This most recent guidance endorsed the LQTS risk score model, the therapeutic use of beta-blockers with implantable cardiac defibrillators in selected cases and the use of specific genetic testing. Despite the extraordinary progress in the characterisation, pathophysiology and treatment of the Long QT syndrome over the short period of fifty years, questions still remain. Risk stratification remains imprecise. The advances in the molecular aspects of the disease have enabled mutation-specific risk assessment[26] but it has also been demonstrated that the presence or absence of QT-modifying single nucleotide polymorphisms act as a 'second hit' to the mutation and either prolong or indeed shorten the QT interval.[27] Of particular clinical importance, is the need to improve identification of the highest risk patients who would benefit from implantation of a cardiac defibrillator.

Over the past fifty years, advances in the field of inherited cardiac arrhythmias have been rapid and substantial. However, as Ward demonstrated 1964, precise and accurate description of the phenotype remains key when dealing with novel diseases.

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Intrathecal Baclofen Therapy

Sir,

Intrathecal baclofen therapy has been used in the treatment of severe, intractable spasticity resistant to oral agents in brain and spinal cord injury since 1992. A successful trial of intrathecal baclofen infusion administered with a test dose of baclofen injection via a lumbar puncture precedes the therapy and those

who respond favorably in the standard screening test go on to receive intrathecal baclofen pump therapy long-term.[1,2]

An intrathecal pump delivers baclofen directly into the CSF through a catheter. The pump is surgically placed under the skin of the abdomen near the waistline, under general anesthesia. It stores and releases prescribed amounts of medication and is refilled by inserting a needle through the skin into a filling port in the centre. Pumps can be programmable or nonprogrammable. Using an external programmer, a physician can make adjustments in the dose, rate and timing. The reservoir can be refilled approximately every 2-3 months by percutaneous injection. The pump is taken out and replaced at the end of the battery's life span (approximately 5-7 years). The length of time that the treatment is administered depends upon the nature of the underlying disease. For a progressive disease like multiple sclerosis, the length of time intrathecal baclofen infusion may be beneficial will be dependent upon the progression of the disease. For other conditions such as spinal cord injury and cerebral palsy, where progression does not affect the spasticity, there is no defined limit as to how long the treatment may be required and there are no firm recommendations for tolerance management. Due to limited battery life, the initial pump procedure will need to be repeated every 5-7 years. The dosage of baclofen maybe increased due to increased tolerance of the drug.[3]

Advantages of intrathecal baclofen infusion are direct drug administration to the CSF, reduced side effects of oral baclofen such as drowsiness or confusion, increased concentration of the drug in the CSF at higher level as compared to the oral route. Adjustable/programmable continuous infusion makes it possible to finely titrate patient's doses and to vary the doses over the hours of the day. For example, the dose can be relatively low to give the patients the extensor tone needed for ambulation during the day, and increased at night, thereby improving quality of sleep.[4] It is essential for the patient or the care giver to know the pump size, the next alarm date (which goes off to signal low pump volume), the next refill appointment which is generally a week before the alarm goes off, signs and symptoms of withdrawal and overdose of baclofen and whom to call in case of a pump problem.

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General Practice, Multimorbidity and Evidence Based Policy Making: A Key Challenge

Sir,

Dr. Iona Heath, former President of the Royal College of General Practitioners, asked the medical profession to rise to the "challenge of multimorbidity"[1]. Heath argued for the "necessary paradigm shift from a disease based model of care to one that focuses on care for patients" and to move away from single-disease focused guidelines, which silo patients inappropriately. Multimorbidity is defined as the co-existence of two of more chronic illnesses within the same patient[2]. We know that multimorbidity is very common- half of all patients over 65 will have at least three coexisting diseases, with 20% having over five[3].

With a proposed radical overhaul of Irish general practice rapidly approaching, including free-at-the-point-of-delivery universal access, what is our knowledge about how such changes will affect care provision? Associate Professor Susan Smith recently concluded in a meta-analysis "evidence on the care of patients with multimorbidity is limited, despite the prevalence of multimorbidity and its impact on patients and healthcare systems."[3] There is little current evidence on what effects universal access to Irish primary care will have on workload, health utilisation and outcomes for 'real-world' multimorbid patients.

We simply looked at health utilisation rates between GMS and non-GMS eligible patients in two chronic conditions, in a multimorbid population. We looked at 7,213 patients from the CLARITY database, all of whom had established heart disease. This was designed to research a multimorbid cardiovascular population, including patients aged over 50 years, who had two or more consultations over the previous two years, selected from 67,422 patients within 11 practices in the West of Ireland. We found that multimorbid asthma patients, with GMS eligibility, had significantly more primary care visits per annum than non-GMS patients, after modelling for confounding variables such as age, gender and smoking. GMS asthma patients had a mean of 10.7 consultations annually (95% CI 9.9 to 11.5) and non-GMS had a mean of 5.1 consultations (95% CI 4.2 to 6.1). Similarly, multimorbid COPD patients that were GMS eligible had significantly more primary care visits per annum than non-GMS patients. GMS COPD patients had a mean of 11.4 consultations annually (95% CI 10.4 to 12.4) compared to non-GMS having a mean of 6.6 consultations (95% CI 4.0 to 9.1).

We believe the provision of universal entitlement to primary care could result in three distinct outcomes, or a complex combination of all three. Firstly, utilisation rates for those who currently do not have GMS eligibility could increase to the levels of those currently with GMS eligibility. Alternatively, GMS-eligible patients could continue to have higher healthcare usage, albeit relatively lower than before. Finally, and least likely, no changes in utilisation may occur. What is clear is that further research needs to be performed regarding multimorbid patients in the community, so that evidence based policy is possible.

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Paediatric Type 1 Diabetes in Ireland – Results of the First National Audit

CP Hawkes, NP Murphy. Ir Med J. 2014; 107: 102-4.

Question 1
The total number of children in the study was

a) 2318
b) 2418
c) 2518
d) 2618
e) 2718

Question 2
The number of centres who initiate pump therapy is

a) 4
b) 6
c) 8
d) 10
e) 12

Question 3
The number of newly diagnosed diabetic children in 2012 was

a) 287
b) 297
c) 307
d) 317
e) 327

Question 4
At diagnosis diabetic ketoacidosis is present in

a) 5%
b) 15%
c) 25%
d) 35%
e) 45%

Question 5
The number of centres with the appropriate diabetes nurse specialist to patient ratio is

a) 1
b) 2
c) 3
d) 4
e) 5

Arrest in Hospital: A Study of in Hospital Cardiac Arrest Outcomes

NK Fennelly, C Mc Phillips, P Gilligan. Ir Med J. 2014; 107: 105-7.

Question 1
The return to spontaneous circulation among those with a cardiac arrest on the wards was

a) 8%
b) 18%
c) 28%
d) 38%
e) 48%

Question 2
The return to spontaneous circulation among patients with a witnessed cardiac arrest was

a) 42%
b) 52%
c) 62%
d) 72%
e) 82%

Question 3
The return to spontaneous circulation among patients with an initial shockable rhythm was

a) 45%
b) 55%
c) 65%
d) 75%
e) 85%

Question 4
The return to spontaneous circulation when the first dose of adrenaline was administered within 2 minutes was

a) 34%
b) 44%
c) 54%
d) 64%
e) 74%

Question 5
The return to spontaneous circulation when the patient had a cardiac arrest in the ICU was

a) 26%
b) 36%
c) 46%
d) 56%
e) 66%

Sialoendoscopy in the Management of Salivary Gland Disorders – 4 Years Experience

W Hasan, A Curran. Ir Med J. 2014; 107: 120-1.

Question 1
The number of patients in the study was

a) 37
b) 39
c) 41
d) 43
e) 45

Question 2
The number of patients with obstructing stones was

a) 16
b) 18
c) 20
d) 22
e) 24

Question 3
The number of patients with benign strictures was

a) 2
b) 4
c) 6
d) 8
e) 10

Question 4
Stone removal was successful in

a) 55%
b) 65%
c) 75%
d) 85%
e) 95%

Question 5
The mean age at first procedure was

a) 43 Years
b) 45 years
c) 47 years
d) 49 years
e) 51 years

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- ARFs (Approved Retirement Funds) and annuity options.
- Retirement options for your private income pension arrangements.

IMO Financial services are Authorised Advisors who deal with many different providers and offer independent advice.

Should you wish to speak to us regarding the above, you can contact us to arrange an appointment at your convenience.

In the meantime, should you have any queries please don't hesitate to contact us.

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