~ Established 1867 ~

IMJ
Official Journal of the Irish Medical Organisation

Irish Medical Journal

APRIL 2015 ■ Volume 108 ■ Number 4

IRISH MEDICAL ORGANISATION
Ceardchumann Dochtúirí na hÉireann

Re: Medical Students' Views on Selection Tools for Medical School – A mixed methods study

Sir,

It was with great interest that I read the article by Stevens et al. regarding medical students view on selection tools for medical school.[1] As the authors have stated, the selection tools must be acceptable to all stakeholders involved, one of whom are the medical students. While it is interesting to see that 76% of year 1 medical students supported the use of the HPAT-Ireland for selection purposes,[1] it is important not to interpret this as being acceptable to all applicants. The 291 respondents in this study only represent 9% of the 3270 students who wrote the HPAT-Ireland in 2010 (personal communication).

Surveying only successful applicants to medical school increases the possibility of selection bias, with successful applicants being more likely to favour selection tools that were used in their application process. The work by Stevens et al. has added to our understanding of HPAT-Ireland acceptability to stakeholders.[1] However, in order to dispel concerns or limitations regarding any selection bias against race, gender or socio economic status, future studies are needed seeking views from all applicants, not just those who are successful.

P Gouda
Clinical Science Institute, NUIG, Costelloe Road, Galway
Email: p.gouda1@nuigalway.ie

References

1. L Stevens, ME Kelly, M Hennessy, J Last, F Dunne, S O'Flynn. Medical Students' Views on Selection Tools for Medical School - A Mixed Methods Study. Ir Med J. 2014;107

Subscriptions 2015
6 Month Subscription:
Ireland, UK, EU €125
Outside EU €200

Address: IMJ Editorial Office
IMO House, 10 Fitzwilliam Place, Dublin 2
Tel: (01) 676 7273. **Fax:** (01) 661 2758
E-mail: lduffy@imj.ie **Web:** www.imj.ie

In this Month's IMJ

Does this child really have Penicillin allergy: Murphy et al describe the outcome in 38 children referred for assessment of suspected Penicillin allergy. The children were administered an oral Penicillin challenge while being monitored and medically supervised. 36 (95%) of the challenges were negative and 2 (5%) of the children demonstrated an allergic response

Table 2 Protocol for oral amoxicillin challenge

	1-5 years	5-12 years	12-16 years
Dose 1	15mg	30mg	60mg
Dose 2	30mg	60mg	120mg
Dose 3	60mg	120mg	250mg
Dose 4	125mg	250mg	500mg

Neurodevelopmental outcome at seven years in term, acidotic newborns: Diviney et al performed cognitive and behavioural assessments on 7 year old children who had been acidotic at birth. Those who were acidotic at birth but didn't have neonatal encephalopathy, were normal at 7 years.

Table 2 Demographic information for the children with and without HIE and for children with mild and severe acidosis

		Without HIE (n=32) No. (%)	With HIE (n=12) No. (%)	Mild Acidosis (n=25) No. (%)	Severe Acidosis (n=19) No. (%)
Age	Mean months	91.31 (8.7)	87.58 (8.3)	91.42 (8.3)	88.67 (9.6)
School Type	Mainstream	32 (100)	11 (91.7)	25 (100)	18 (94.7)
	Special Needs	0 (0)	1 (8.3)	0 (0)	1 (5.3)
Special Help in School	Yes	10 (31.3)	4 (33.3)	6 (24.0)	8 (42.1)
	No	22 (68.8)	8 (66.7)	19 (76)	11 (57.9)
Speech and Language Delay	Yes	8 (25)	3 (25)	7 (28.0)	4 (21.1)
	No	24 (75)	9 (75)	18 (72.0)	15 (78.9)

Table 4 Does CME-SGL influence medical practice?

Competency	Answered 'yes' and gave an example N (%)	Illustration of Examples given	Meeting topic
I have changed how I managed a patient in the past year as a result of a new knowledge or skill that I learned at a CME-SGL meeting	1077 (78.8)	I vaccinated all my diabetics with pneumonococcal vaccine	Vaccinations
		I now use CBT to treat my patients who have anxiety or work stress	CBT meeting
My attitudes to a patient/a group of patients has changed as a result of attending a CME-SGL meeting	812 (59.4)	I am more aware of the different needs of refugees	Care of refugees
		I learned methods of coping with heart sink patients	Heart Sink Patients
As a result of a CME-SGL meeting I have changed how I investigate my patients (i.e. blood tests, x-rays, referrals etc)	938 (68.7)	I now know when to order a PSA test	Prostate Cancer update
		I check for Chlamydia more often	Management of STIs
I have made changes regarding prescribing of medication as a result of attending a CME-SGL meeting	1015 (74.3)	I reduced my benzodiazepines prescribing	Prescribing of benzodiazepines
		I use less antibiotics in children with upper respiratory symptoms	Antibiotic prescribing
I learned about a new protocol or practice guideline in a CME-SGL meeting that I can now apply to my practice	934 (68.4)	I now use guidelines to treat patients with epilepsy	Update on epilepsy
		I improved my treatment of patients with hypertension	Use of guidelines in hypertension
CME-SGL has helped me to perform audit in my practice	843 (61.7)	I now record BMI before prescribing the COC	Audit on contraception
		I changed how I monitor patients on methotrexate	Audit of patients on methotrexate

Does participation in CME SLG (small group learning) influence medical practice? The experience of general practitioners attending CME SLG after the introduction of the medical practitioners act: Dowling et al state that CME for GPs is delivered by a national network of 37 tutors. The small group sessions are convened 8 times annually. Among 1366 attendees, 86.3% agreed that CME had helped them to improve their clinical practice

Fitness to drive in cognitive impairment - A quantitative study of GPs experience: A total of 125 GPs responded to a survey about the GPs role in fitness to drive assessments. The majority 86(68.85%) use guidelines when assessing fitness to drive, and 83(66.4%) formally assess cognitive function. Most GPs 102(81.6%) feel confident in assessing fitness to drive.

Table 3 GP attitudes towards certifying fitness to drive (FTD) in cognitive impairment.

	Agree or Strongly agree		Disagree or strongly disagree		Neutral	
	n	%	n	%	n	%
I feel confident in assessing fitness to drive	102	81.6	2	1.6	21	16.8
I feel adequately resourced	60	48	23	18.4	42	33.6
I have concerns about legal liability	96	76.8	6	4.8	23	18.4
A GP should be the primary person to assess FTD	75	60	21	16.8	29	23.2
There should be medical practitioners specifically trained for assessing FTD	56	44.8	33	26.4	36	28.8
Certifying FTD is important	121	96.8	0	0	4	3.2
The RSA provides adequate guidance for GPs	39	31.2	40	32	46	36.8
I would contact the RSA for guidance	32	25.6	40	32	53	42.4
Assessing FTD interferes with the doctor-patient relationship	59	47.2	22	17.6	44	35.2

Table 1 Characteristics of patients on ICU admission

Median Length of ICU Stay	3.5 days (2 - 7)
Admission Source	
Medical Ward	39 (64%)
Outside Hospital	16 (26%)
Emergency Department	6 (10%)
Primary Hepatic Reason for Admission	
Decompensated Alcoholic Cirrhosis	28%
Infective Hepatitis	31%
Paracetamol Overdose	8%
Other	33%

Predictors of outcome in decompensated liver disease: validation of the SOFA-L score: ffrench-O'Carroll et al have found the sequential organ failure assessment (SOFA score) predictive when combined with the lactate level. Patients with a SOFA-L <12 had a reasonable medium term survival, while patients with a SOFA-L > 23 had an almost certain in-patient mortality.

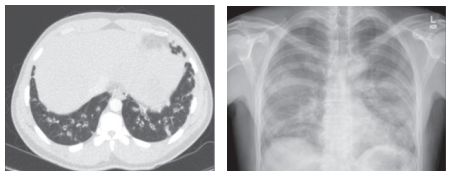
Using softcast to treat torus fractures in a paediatric emergency department: O'Callender and Koe outline the use of softcase for immobilization after fractures of the lower radius. Softcast is flexible and allows better maintenance of muscle tone, improved circulation, and patient comfort. There were 119 children in the study. There were no adverse events and referral to the fracture clinic was avoided.

Transition to adult care for adolescents with diabetes- a national survey: Letshwiti et al found that among 19 paediatric units, 10 had a transition clinic for children with diabetes. Most centres transition after the adolescent finishes secondary education.

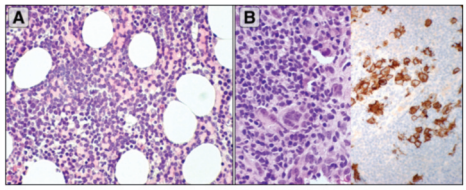
Table 1 tSummary of transition details

	N=19	%
Designated diabetes clinics	17	89.5
Psychology services	6	31.6
Adult endocrinologists in the same hospital	15	78.9
Transition clinic	10	52.6
Screening pre transition	19	100
Individual transition	15	78.9
Template letter for transition	3	15.8
Gradual transition process	15	78.9
Continuity with the same diabetes nurse	13	68.4
Continuity with the same dietician	9	47.4
Continuity with the same eye service	17	89.5
Information sessions on transition	6	31.6
Group discussions on transition	3	15.8
Choice of transition service	15	78.9

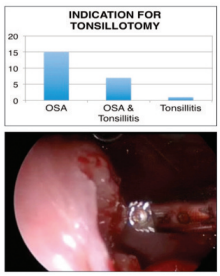
Bird fanciers lung in mushroom workers: Hayes and Barrett describe 2 mushroom workers who developed hypersensitivity pneumonitis. Both patients had positive responses to poultry antibodies. The source was the poultry manure used in the mushroom production.



Hodgkin Lymphoma in a patient with chronic lymphocytic leukaemia- a rare presentation of Richter's transformation: De La Harpe Golden et al present a case where CLL transformed to Hodgkin's lymphoma. This is termed Richter's transformation.



Paediatric tonsillectomy- an Irish perspective on potential evolving indications: Fitzgerald et al describe 23 tonsillectomies in children with a median age of 31 months. The main indications were obstructive sleep apnoea OSA 15, OSA & tonsillitis 7 and tonsillitis 1. There were no complications and the OSA resolved in most cases.



The initial management of epistaxis: Tanner and Harney state epistaxis affects 60% of people. In their study the authors found that the public's knowledge of epistaxis is poor. In a survey they found that 25% did not use compression, and 60% of those who used compression did not compress the lower one-third of the nose.

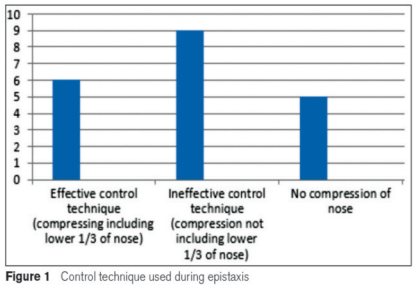


Figure 1 Control technique used during epistaxis

Medical Education for the 21st Century

In recent years many commentators have stated that undergraduate medical education needs to be radically altered to embrace the modern day demands and needs of patients. The current medical curriculum is still largely based the Flexner Report, which was published in the US in 1910[1]. Abraham Flexner's document, which ran to 364 pages, was the first large scale attempt to standardise medical education. He divided the curriculum into 2 years of basic sciences based in universities, and 2 years of clinical training based in academic medical hospitals. Medical education was changed from an apprenticeship model to an academic model. Following publication of his report, medical training became more centralised and small rural medical schools were closed. In the new curriculum the emphasis was on basic sciences and clinical experience. Over the ensuing 100 years, scientific medicine and discovery flourished. These fundamental ideals have resulted in an overall consistent quality of medical care. The reforms, instituted by Flexner, were one of the factors that led to the doubling of human being's lifespan during the 20th century.

Jason and Douglas[2] have recently stated that Flexner's philosophy on medical education is not fit for purpose in the current era. Twentieth century education strategies are unfit to tackle 21st century challenges. They state that healthcare needs of patients have changed radically but medical education has not kept pace. There are problems with a narrow technical focus without the broader contextual understanding.

Students need to be continually reminded that health is about people rather than just technology and buildings. Every medical encounter is between someone who needs a service and someone who has been entrusted to deliver that service. This ideal embraces the concept of socially responsible professionalism. Professionalism signifies a set of behaviours that underpin the trust of the public. Doctors are the human face of the health system.

Currently, students are not being sufficiently prepared to be productive members of collaborative medical teams. Crisp and Chen[3] have also emphasised the importance of teamwork. Insular training for individual professions does not promote an understanding of the role of other allied professionals. Training each profession in isolation until they eventually join the workforce, where they are expected to function as a team, needs to be reviewed. Class sizes are a concern. It is suggested that learning groups with more than eight participants are inefficient. Medical science should not be taught in abstract to future clinicians. It should be integrated with their early interactions with patients. There should be a greater focus on ambulatory and primary care, which relates to the needs of most patients.

There have some modifications since Flexner. In the middle of the 20th century, educational reform introduced problem-based innovations. In the 1960s, McMaster University, Canada, pioneered student-centered learning based on small groups instead of didactic teaching. In Newcastle, UK, an integrated rather than a discipline bound curriculum was developed. A third generation reform is now needed in which core professional competencies are adapted to specific competencies, while drawing on global knowledge. Frenk et al[4] distinguish between informative, formative, and transformative learning. Informative learning is about acquiring knowledge and skills. Formative learning is concerned with socializing medical students around values. Transformative learning is concerned with the development of leadership skills. The transformative process involves the movement from fact memorization to analysis, the achievement of core competencies for effective teamwork, and the adaptation of global resources for local use. The other key components of a modern medical education should be evidence based practice, continuous quality improvement, and the use of the new informatics.

There have been 11,045 publications on education, 73% being on medicine, 25% on nursing, and 2% on public health. Half of the articles focus on the US, a quarter on Europe, and other quarter on other regions.

The worldwide shortage of doctors is alarming. The estimated shortfall is 15%. One of the concerns is that 31 countries in the third world have no medical schools, and 44 countries have only one medical school. The distribution of medical schools does not match well with country size or national disease burden. Currently there are 9.2 million doctors worldwide. It is estimated that there are 2420 medical schools graduating 389,000 doctors annually for the world's 7 billion population. There are 541,000 nurses produced annually. International estimates indicate that expenditure on medical education is extremely modest. In the US the amount spent on medical schools is only 2% of the healthcare budget. This approach is very short-sighted when one considers that medical graduates have a very important role in determining whether healthcare expenditure is effectively delivered.

The increased demand on medical schools to produce more doctors is due to a number of factors. The populations of many countries are ageing and in need of more healthcare. The disease burden of chronic diseases, musculoskeletal disorders, and mental has increased rapidly. The stakes are very high. Health expenditure amounts to 10% of the world's gross domestic product. Over $6.6 trillion is spent on health annually. Within this vast expenditure, there are great inequalities between rich and poor countries.

The Commission on the Education of Health Professionals for the 21st century has made a number of proposals. After a 100 years of the Flexner model, new challenges have emerged. Some of the important concerns include difficulties in primary care, problems around teamwork, and the concerns around high costs and lack of affordability. The problems appear to be similar in both rich and poor countries, although at considerably different proportions. The goal is a new type of professionalism that is patient focused and team based. A competency-based approach is repeatedly emphasised. Competency is defined as the habitual and judicious use of knowledge, clinical reasoning, communication, technical skills, and reflection in daily practice for the benefit of the patient. There must be a greater emphasis on reasoning and communication skills rather than on memorising and regurgitating facts.

In Ireland, the Fottrell Report 2006 has had a major influence on undergraduate education[5]. Among its wide reaching recommendations, it directed that the intake of EU students be increased 305 to 725 students annually. There should be a 60:40 ratio between undergraduate and graduate programmes. Non-EU students should be no more than 25% of the total annual intake. In additional to the leaving certificate results it recommended an additional aptitude assessment. It advised that there should be a commensurate increase in the number of interns in line with the higher number of students. Most of these recommendations have been fulfilled. Fottrell's stated objective was the production of competent, safe doctors whose undergraduate education prepared them for the needs of patients and society.

JFA Murphy
Editor

1. Flexner A. Medical education in the United States and Canada. Boston: The Merrymount Press, 1910.
2. Jason H, Douglas A. Are the conditions right for a 21st century medical school? Lancet 2015;385:672-3.
3. Crisp N, Chen L. Global supply of health professionals. N Engl J Med 2014;370:950-957.
4. Frenk J, Chen L, Bhutta ZA et al. Health professionals for a new century: transforming education to strengthen health systems in an interdependent world. Lancet 2010;376:1923-58
5. Fottrell P. Medical education in Ireland, a new direction: Report of the working group on undergraduate medical education. 2006

Antibiotic Prophylaxis in Children with Vesicoureteric Reflux: Has RIVUR Answered All Our Questions?

The interest in urinary tract infections (UTI) and vesicoureteral reflux (VUR), which is the retrograde flow of urine from the bladder into the ureter, started gaining pace in the late 1950s after the introduction of voiding cystourethrography.[1] VUR is present in one third of children presenting with febrile urinary tract infections (UTI) and is associated with renal scarring.[1] In an effort to reduce renal scarring as a result of VUR, various surgical repairs of the vesicoureteral junction, and later endoscopic injection techniques were introduced.[2] With the emerging understanding of the strong association between UTI and VUR, antibiotic prophylaxis gained popularity after an observational study showed that VUR improved with long-term, low-dose antibiotic treatment.[3] Smellie et al found that prophylaxis significantly reduced the number of UTI recurrences compared to before prophylaxis.[4] The use of antibiotic prophylaxis became standard practice after two large prospective randomised trials comparing surgical intervention and antibiotic prophylaxis found no difference between the two interventions in relation to UTI recurrence and new renal damage.[5-7] Endoscopic and surgical treatments were reserved for severe reflux.

The natural history for lower grades of VUR is spontaneous resolution at a rate of 13% per year.[8,9] In a prospective 5-year follow-up study of children <5 years of age with primary VUR and radiographically normal kidneys, grade I VUR resolved in 82%, grade II in 80% and grade III in 46% of ureters.[8] Rate of resolution of grades IV and V VUR over a 5-year period are approximately 30% and 13% respectively.[10] Recent data suggest that mild and moderate VUR do not increase the incidence of UTI, pyelonephritis or renal scarring, and that antibiotic prophylaxis is associated with increased antibiotic resistance.[11,12] A well-powered, placebo-controlled, randomized study by Craig et.al. involving children from birth to 18 years of age showed a modest decrease in new infections in the prophylaxis group.[13] It found that 14 children would have to be treated to prevent one case of UTI, with its benefit most marked in the first 6 months of treatment (most likely time of UTI recurrence), but found prolonged use of antibiotics resulted in increased risk of symptomatic UTI from resistant bacteria. It was however underpowered to ascertain if antibiotic prophylaxis reduced the incidence of new renal scarring. These conflicting results meant that the value of antibiotic prophylaxis as the standard of care in children with VUR remain controversial four decades after it was introduced.

The Randomized Intervention for Children with Vesicoureteral Reflux (RIVUR) trial recently published in the New England Journal of Medicine, was a multicenter, randomized, double-blind, placebo-controlled trial where 607 children (2-71 months of age) with grades I-IV VUR after a first or second UTI, received either trimetroprim-sulfamethoxazole or placebo.[14] They were followed for 2 years, of which technetium-99m-labeled dimercaptosuccinic acid (DMSA) scan was performed at baseline and after 1 and 2 years. Fewer recurrent UTIs occurred in the prophylaxis group than in the placebo group (relative risk 0.55; 95% confidence interval 0.38-0.78). However, more children in the prophylaxis group had breakthrough UTI with resistant organisms (63% vs 19%). Antibiotic prophylaxis was particularly effective in children whose index infection was febrile and in those with bladder and bowel dysfunction. They found that 8 children (95% CI, 5-16) would have to be treated for 2 years to prevent one febrile/symptomatic UTI. Subgroup analysis showed that recurrent infection was more common among children with grades III or IV VUR than those with grade I or II VUR (22.9% vs 14.3%). The number of renal scars reported was low (12.2%) with no significant between group differences in the incidence of renal scarring (11.9% in prophylaxis group vs 10.2% in placebo group), severe renal scars (4.0% vs 2.6%) or new renal scar formation (8.2% vs 8.4%). At the end of the study, VUR resolved in 218 of 428 (50.9%) children.

The participants of the RIVUR study were young children (<6 years of age); the criteria for diagnosis of UTI were stringent (catheterization/suprapubic aspiration samples in non-toilet trained children and clean, voided urine sample in toilet-trained children); and two radiologists centrally scored renal scarring with radionuclide scanning at baseline and annually for 2 years. Adherence to study medication/placebo was realistic - 85% of parents reported to having administered it at least 50% of the time. While the well-designed RIVUR study improved our understanding of the management of UTIs in children with VUR, there remains unanswered questions: as only one antibiotic was used, the results only speak for the effectiveness of trimetoprim-sulfamethoxazole in reducing the number of UTI recurrences; with only 2 years of follow-up, the longer term degree of renal injury remains unknown. Very few boys (8%) were enrolled, thus limiting the generalisability of its results to boys. Although primary VUR is more common in girls, such a huge sex difference has not been reported outside the United States.[15] This is important because boys did not benefit from prophylaxis in a Swedish trial.[15]

In our opinion, the 'take home' message from the RIVUR study is that antibiotic prophylaxis reduces the incidence of recurrent UTIs in children with VUR grades I-IV (especially those with VUR grades II and IV, and bladder/bowel dysfunction), but at the expense of increased antibiotic resistance. Eight children need to be treated for 2 years to prevent one symptomatic UTI - all this with no significant difference in the incidence of new renal scarring. One would have to question whether this 'trade-off' is cost-effective. We concur that antibiotic prophylaxis would benefit a selected group of high-risk children with multiple episodes of recurrent UTIs that impact significantly on their well-being. However, we opine that in the vast majority, early diagnosis and treatment of UTIs remain the mainstay of treatment; while antibiotic prophylaxis be used according to risk stratification rather than to the mere presence of VUR.

CW Teoh, A Awan
Department of Paediatric Nephrology Transplantation, The Children's University Hospital, Temple St, Dublin 1
Email: cwteoh88@hotmail.com

References

1. Hoberman A, Charron M, Hickey RW, Baskin M, Kearney DH, Wald ER. Imaging studies after a first febrile urinary tract infection in young children. N Engl J Med 2003; 348: 195-202
2. Brandstrom P, Hansson S. Long-term, low-dose prophylaxis against urinary tract infections in young children. Pediatr Nephrol. 2014 Jun 7
3. Edwards D, Normand IC, Prescod N, Smellie JM. Disappearance of vesicoureteric reflux during long-term prophylaxis of urinary tract infection in children. Br Med J. 1977 Jul 30;2: 285-8
4. Smellie JM, Katz G, Gruneberg RN. Controlled trial of prophylactic treatment in childhood urinary-tract infection. Lancet. 1978 Jul 22; 2(8082): 175-178
5. Olbing H, Claesson I, Ebel KD, Seppanen U, Smellie JM, Tamminen-Mobius T, Wikstad I. Renal scars and parenchymal thinning in children with vesicoureteral reflux: a 5-year report of the International Reflux Study in Children (European branch). J Urol. 1992 Nov; 148: 1653-6
6. Weiss R, Duckett J, Spitzer A. Results of a randomized clinical trial of medical versus surgical management of infants and children with grades III and IV primary vesicoureteral reflux (United States). The International Reflux Study in Children. J Urol. 1992 Nov; 138: 1667-167
7. Birmingham Reflux Study Group. Prospective trial of operative versus non-operative treatment of severe vesicoureteric reflux in children: five years' observation. Br Med J. 1987; 295: 237-41

8. Arant BS, Medical management of mild and moderate vesicoureteral reflux: follow up studies of infants and young children. A preliminary report of the Southwest Pediatric Nephrology Study Group. J Urol. 1992 Nov;138: 1683-7
9. Schwab CW, Wu H-Y, Selman H, Smith GHH, Snyder HM, Canning D. Spontaneous resolution of vesicoureteral reflux: a 15 year perspective. J Urol 2002 Dec; 168: 2594-9
10. McLorie GA, McKenna PH, Jumper BM, Churchill BM, Gilmour RF, Khoury AE. High grade vesicoureteral reflux: analysis of observational therapy. J Urol. 1990 Aug; 144(2 Pt 2): 537-54
11. Montini G, Rigon L, Zucchetta P, Fregonese F, Toffolo A, Gobber D, Cecchin D, Pavanello L, Molinari PP, Maschio F, Zanchetta S, Cassar W, Casadio L, Crivellaro C, Fortunati P, Corsini A, Calderan A, Comacchio S, Tommasi L, Hewitt IK, Da Dalt L, Zacchello G, Dall'Amico R. Prophylaxis after first febrile urinary tract infection in children? A multicenter, randomized, controlled, non-inferiority trial. Pediatrics. 2008 Nov; 122: 1064-10
12. Pennesi M, Travan L, Peratoner L, Bordugo A, Cattaneo A, Ronfani L, Minisin S, Ventura A (North East Italy Prophylaxis in VUR study group). Is antibiotic prophylaxis in children with vesicoureteral reflux effective in preventing pyelonephritis and renal scars? A randomized, controlled trial. Pediatrics 2008 Jun; 121: e1489-e14
13. Craig JC, SImpson JM, Williams GJ, Lowe A, Reynolds GJ, McTaggart SJ, Hodson EM, Carapetis JR, Cranswick NE, Smith G, Irwig LM, Caldwell PH, Hamilton S, Roy LP (Prevention of Recurrent Urinary Tract Infection in Children with Vesicoureteric Reflux and Normal Renal Tracts (PRIVENT) Investigators). Antibiotic prophylaxis and recurrent urinary tract infection in children. N Engl J Med 2010 Feb 11; 361: 1748-175
14. RIVUR Trial Investigators. Antimicrobial prophylaxis for children with vesicoureteral reflux. N Engl J Med 2014 May 4; 370: 2367-237
15. Brandstrom P, Esbjorner E, Herthelius M, Swerkessson S, Jodal U, Hansson S. The Swedish reflux trial in children: III. Urinary tract infection pattern. J Urol 2010 Jul; 184: 286-29.

Pitfalls of the Urinary Albumin Creatinine Ratio in Detection of Early Diabetic Kidney Disease

Diabetic Kidney Disease (DKD) is the leading cause of kidney disease world-wide, for which albuminuria is the currently accepted biomarker. Despite the increased use of glucose-lowering medications and renin-angiotensin-aldosterone system (RAAS) inhibitors, prevalence of DKD continues to rise in proportion to the prevalence of diabetes[1]. Development of chronic kidney disease in patients with diabetes is associated with a significant increase in morbidity and mortality as well as health care costs, even before the development of end stage renal failure (ESRF), and its onset can be clinically silent.

Microalbuminuria (MA) was established as the primary predictor of risk for the advanced stages of DKD based on three follow-up studies published in the 1980's which showed that over a follow-up period of seven to fourteen years, 60-90% of patients with MA developed advanced diabetic nephropathy (DN)[2-4]. This led to the conventional model of diabetic nephropathy comprising three sequential stages; microalbuminuria leading to proteinuria and eventually end stage renal failure, along with the adaptation of MA as a proxy for development of renal function decline.

However, over the subsequent two decades, this paradigm of DN has been refuted and the natural history of DN has been reformed. Rather than a rigid process as described above, the onset of microalbuminuria is now seen as a dynamic process with the likelihood of remission to normal urinary albumin levels far outweighing the risk of progression to proteinuria. In an evaluation of participants in the DCCT/EDIC Study with incident persistent microalbuminuria (defined as albumin excretion rate ≥30 mg/24 h at two consecutive study visits), the ten year cumulative incidence of progression to macroalbuminuria was 28%, impaired GFR was 15%, ESRF was 4%, and regression to normoalbuminuria was 40%[5]. A greater risk of remission compared with that of progression to proteinuria has been replicated in epidemiological studies and clinical trials[6]. Thus while MA increases the relative risk of developing DN at epidemiologic scales, its predictive value in an individual patient is less certain over the longterm. Moreover, with the use of serum cystatin-C based estimates of glomerular filtration rate (cC-GFR), researchers have shown that the process of renal function loss can begin prior to the onset of proteinuria, supporting the concept of early renal function decline in DKD[7]. Renal function and albuminuria status are not completely coupled, suggesting that separate mechanisms might account for loss of renal function and development of albuminuria.

While microalbuminuria reliably reflects DKD across the disease population this does not necessarily hold true at the level of the individual patient, a fact that should be considered in day to day clinical practice. T1DM patients, despite long-standing normal urinary albumin excretion, have well established pathological changes of DKD shown by renal biopsy. They may also have a reduced GFR, and this can be associated with more advanced glomerular lesions[8]. Despite the universal use of microalbuminuria for screening, diagnostic and prognostic purposes, there remain many inconsistencies in how microalbuminuria is tested and reported. Measurement of the ratio of the albumin to creatinine concentration (uACR) in a spot urine sample has superseded the largely cumbersome error-prone 24 hour urine collection. First morning void is preferred because it is less influenced by factors such as hydration status and physical activity, reducing the biological variability that is caused by these factors. In clinical practice however, for convenience, many of these samples are collected later in the day at outpatient visits.

At present, there are no reference materials for albumin or creatinine in urine and no reference method for albumin in urine. The accuracy of currently used methods is therefore unknown. In order to achieve the required sensitivity, immunoassays are routinely used and may be subject to 'hook' effects'. Additional procedures to detect antigen excess such as qualitiative measurement of urinary albumin by reagent strip or specimen dilution are therefore required. International recommendations vary regarding the reporting units to use and the criteria for interpretation of results. This has implications for consistency across clinical practice and research. Albumin and creatinine excretion rates have been shown to vary with time of day, gender, age, ethnicity, exercise and other factors. Despite this, only gender-specific cut-offs for ACR exist, and even these are not universally applied. Moreover, the use of a single decision threshold negates the predictive power of ACR as a continuous variable.

It is important to be aware of the limitations of using uACR in predicting development and progression of DN, particularly as our understanding of the natural history of microalbuminuria has evolved. Since the risk of remission of MA outweighs the risk of progression, MA can no longer be seen as the independent predictive marker for DN. This new model of DN demands that emphasis be placed on research into better biomarkers that could identify those at risk of DKD prior to its development. Such biomarkers could enhance the prediction of the conventional markers for early nephropathy (MA, serum creatinine) by inclusion in a multi-variate assessment tool, or replace them. Biomarkers should be detected using an accurate, comparable and precise test with a standardised approach, which is currently not the case for uACR. Current research areas include urinary proteomics, measurements of tubular function and identification of genes associated with increased or decreased risk of development of DN. Although research is rapidly evolving, current progress suggests that at a clinical level we will be using uACR for some time yet and therefore efforts are required to ensure consistency

in sample collection, analytical materials and methods, and units and cut-offs for reporting.

A Garrahy[1], WP Tormey[2]
1Diabetes Day Centre, Galway University Hospital, Newcastle Rd, Galway
2Department of Chemical Pathology, Beaumont Hospital, Dublin 9
Email: aoife.garrahy@gmail.com

References

1. Bailey RA, Wang Y, Zhu V, Rupnow MF. Chronic kidney disease in US adults with type 2diabetes: an updated national estimate of prevalence based on Kidney Disease: Improving Global Outcomes (KDIGO) staging. BMC research notes. 2014;7:415.
2. Viberti GC, Hill RD, Jarrett RJ, Argyropoulos A, Mahmud U, Keen H. Microalbuminuria as a predictor of clinical nephropathy in insulin-dependent diabetes mellitus. Lancet.1982;1:1430-2.
3. Parving HH, Oxenboll B, Svendsen PA, Christiansen JS, Andersen AR. Early detection of patients at risk of developing diabetic nephropathy. A longitudinal study of urinary albumin excretion. Actaendocrinologica. 1982;100:550-5.
4. Mogensen CE, Christensen CK. Predicting diabetic nephropathy in insulin-dependent patients. The New England journal of medicine. 1984;311:89-93.
5. de Boer IH, Rue TC, Cleary PA, Lachin JM, Molitch ME, Steffes MW, et al. Long-term renal outcomes of patients with type 1 diabetes mellitus and microalbuminuria: an analysis of the Diabetes Control and Complications Trial/Epidemiology of Diabetes Interventions and Complications cohort. Archives of internal medicine. 2011;171:412-20.
6. Perkins BA, Ficociello LH, Roshan B, Warram JH, Krolewski AS. In patients with type 1 diabetes and new-onset microalbuminuria the development of advanced chronic kidney disease may not require progression to proteinuria. Kidney international. 2010;77:57-64.
7. Perkins BA, Ficociello LH, OstranderBE, Silva KH, Weinberg J, Warram JH, et al. Microalbuminuria and the risk for early progressive renal function decline in type 1 diabetes. Journal of the American Society of Nephrology : JASN. 2007;18:1353-61.
8. Caramori ML, Fioretto P, Mauer M. Low glomerular filtration rate in normoalbuminuric type 1 diabetic patients: an indicator of more advanced glomerular lesions. Diabetes. 2003;52:1036-40.

Does This Child Really Have a Penicillin Allergy?

K Murphy, B Scanlan, D Coghlan
Department of Paediatrics, AMNCH, Tallaght, Dublin 24

Abstract
Penicillins, the most prescribed paediatric medications worldwide, are also the most commonly reported cause of medication allergy, although this is rarely confirmed. An oral penicillin challenge is considered the gold standard in assessing children with suspected allergy but is seldom performed due to lack of appropriately trained staff and insufficient facilities. We introduced a standardised nurse-led protocol to evaluate children with suspected penicillin allergy fulfilling low risk criteria. In total, 40 children participated, including 22 girls and 18 boys, of which 38 met study criteria. There were 36 (95%) negative challenges completed, allowing these children to be safely prescribed oral penicillin in the future. There were 2 (5%) positive challenges developing similar signs to their initial reaction. This standardised protocol appears to be safe for use and efficient in the evaluation of low risk children with suspected penicillin allergy.

Introduction

Penicillin and penicillin-based antibiotics are the most frequently prescribed antibiotics in children worldwide[1-3]. However, penicillin allergy or hypersensitivity is also the most common medication allergy reported[1-7]. Anaphylaxis is the most severe form of allergic reaction to penicillin and can be fatal, although occurring very rarely (1/100,000 treated patients)[1,2,6,8]. The most common reaction reported in children is a delayed non-IgE, T-cell mediated response, usually presenting with a maculopapular or morbilliform rash during treatment[5,7-10]. Penicillin allergy is rarely confirmed[1-3,5] and research indicates that 80-90% of people with suspected penicillin allergy are found not to be allergic when tested[1,2,5,11,12]. When a child is diagnosed with a suspected penicillin allergy, they are then prescribed non-penicillin based antibiotics which are frequently more expensive, may be less effective, and are more likely to give rise to antibiotic resistance.[2,3,5,9,13,14] Thus, highlighting the importance of confirming or out-ruling penicillin allergy. Traditionally, penicillin allergy was assessed by obtaining a detailed history of the reported allergic event in combination with expensive and invasive skin prick testing (SPT) and/or specific IgE blood testing. Research has demonstrated that SPT and specific IgE blood tests have poor sensitivity and specificity in children[1,4-7,9,11,14,15]. Furthermore, SPT reagents have been inconsistently available for commercial use[4,6,9,14]. Oral penicillin challenges remain the gold standard for diagnosing penicillin allergy in low risk children,[1,4,5,7,12,15] but are very rarely performed due to the lack of dedicated services and appropriately trained staff to carry out the challenges. The purpose of this study is to assess whether a standardised protocol[3] for the evaluation of children (<16years) with suspected penicillin allergy, fulfilling a low risk criteria (Table 1), can be safely and efficiently used in the day ward of an acute paediatric hospital.

Methods

Ethical approval for this study was obtained from the Ethics Committee of the National Children's Hospital, Tallaght, Ireland, and St. James's Hospital, Ireland in December 2011. Children under the age of 16 years were recruited by a paediatric doctor and nurse from the emergency department, inpatient wards and out-patient clinics at the National Children's Hospital, Tallaght, Dublin. The children were recruited over a period of thirteen months, beginning in February 2013 and ending in March 2014. Initially, a letter of invitation to the study was given to the parents/guardians of the child with a suspected allergy. This letter was followed up with a phone call to the parents/guardians from a paediatric clinical research nurse to answer any questions and facilitate a date for first visit. At first visit, informed written consent was obtained from the parents/child, a questionnaire gathering demographic details and background to the child's suspected penicillin allergy was completed, and a thorough history about allergic reactions/history of atopy was taken by a trained nurse or doctor. Based on this information, the child was assigned into a high or low risk group. Children within the high risk group were then excluded from the study. For inclusion and exclusion criteria[3] please refer to Table 1.

Children classified as low risk took part in an oral penicillin challenge, carried out in the paediatric day ward with a trained nurse in attendance and a duty doctor available at all times. Oral amoxicillin was the penicillin of choice for the challenge as it is the most widely prescribed penicillin in children. Baseline observations including blood pressure, heart rate, respiratory rate and oxygen saturation were recorded prior to commencing the challenge, and thereafter every 15 minutes until discharge home. Doses were administered as per protocol (Table 2). If the child developed a skin reaction or other symptoms during the dose escalation, the

GILEAD
FELLOWSHIP PROGRAMME
UK AND IRELAND

Gilead UK & Ireland Fellowship Programme

Cystic fibrosis grant applications are now open in Ireland

The 2015 cystic fibrosis fellowship programme is being run in partnership with Cystic Fibrosis Ireland (CFI) and Irish Thoracic Society (ITS)

The grant objective is to help a young clinician with an interest in cystic fibrosis, who is in the early stages of his or her career in Ireland, to carry out basic or clinical research projects, and to develop, acquire, and apply advanced research procedures and techniques in the area of cystic fibrosis medicine and healthcare. Priority would be given to candidates who are members of Specialist Registrar programmes in Respiratory Medicine or Paediatric Medicine and who intend to register with a university for an MD (or equivalent) degree. Research projects must be carried out in the Republic of Ireland. Awards are conditional on the availability of appropriate facilities and resources in the host institution.

The application period is open now until Monday 27 April 2015.

For further details and to apply for a grant please go to **www.irishthoracicsociety.com**

GILEAD

www.ukifellowshipprogramme.com

Job bag 000/UK/14-11/MM/1030a
Date of preparation: February 2015

its
Irish Thoracic Society

Cystic Fibrosis Ireland

challenge was stopped. Emergency medication for the management of both mild reactions and anaphylaxis was readily available. Otherwise, the child was observed for 2 hours following their final dose and if no allergic reaction was observed, they were discharged home on 48 hours of the antibiotic to assess for any delayed reactions as per previous protocols[1]. Discharge information was provided to parents/guardians on what to do if a delayed reaction occurred and a follow-up phone call was conducted by a paediatric clinical research nurse two days after the challenge. Correspondence was then made with the child's General Practitioner to inform them of their participation in the oral penicillin challenge and their result. Data was entered into a Microsoft Excel spreadsheet for statistical analysis.

Table 1 Inclusion and Exclusion criteria for Oral Penicillin Challenge[3]

Exclusion Criteria (High risk group)	Inclusion Criteria
▪ urticaria <1 hour after administration of a penicillin/beta-lactam antibiotic ▪ multiple reactions with the same or different penicillin/beta-lactam antibiotics ▪ serious reactions both systemic and non-mild skin rashes including Stevens-Johnson Syndrome and Toxic Epidermal Necrolysis ▪ reactions to intra-venous penicillin antibiotics ▪ severe allergic diseases including severe asthma	▪ the child was <16 years of age ▪ absence of symptoms seen in the high risk group ▪ usually had a single, non-immediate (>2hours) episode of skin rash after penicillin/beta-lactam antibiotic administration

Table 2 Protocol for oral amoxicillin challenge

	1-5 years	5-12 years	12-16 years
Dose 1	15mg	30mg	60mg
Dose 2	30mg	60mg	120mg
Dose 3	60mg	120mg	250mg
Dose 4	125mg	250mg	500mg

Results

During the study period, 40 children were recruited with suspected penicillin allergy. We excluded 2 children as on detailed questioning they hadn't suffered a clinical reaction themselves but their parents perceived them to be at risk because of a family history of penicillin allergy. There were 22 girls and 18 boys with a mean age of 3 years at the time of the suspected allergic reaction, and a mean age of 6.2 years at the time of oral challenge. The majority of children, 30 cases, were direct referrals from General Practitioners and Consultants regarding penicillin allergy. The remaining 8 children were opportunistic cases with a history of suspected penicillin allergy noted during history taking. All children presented with a history of a delayed rash on exposure to penicillin, with 2 (5%) also reporting vomiting. There were 2 children with non-specific rash to penicillin on the first day of treatment. However as their symptoms were not severe they were deemed low risk. The implicated antibiotics received by the children are displayed in Figure 1. Thus 38 children were deemed to be low risk and suitable for challenge under the protocol.

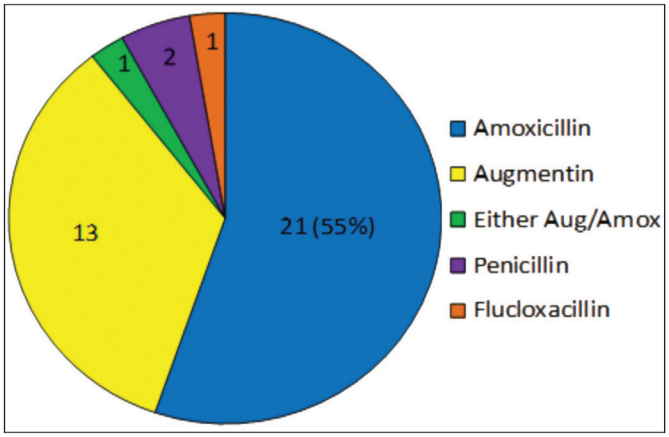


Figure 1 Betalactam antibiotics implicated in suspected reaction

Of the 38 children who were deemed low risk, 36 (95%) had a negative challenge result, while 2 (5%) had a positive challenge result. The two positive challenge results included one child who developed erythematous patches over their back following two doses of amoxicillin. The challenge was stopped and the rash resolved with oral anti-histamine administration. Subsequently, the child was re-challenged at a later date with a single therapeutic dose of amoxicillin and developed the same mild reaction requiring no intervention, but confirming penicillin allergy. The second child developed a generalised rash on their torso after three doses of amoxicillin identical to their initial reaction. The rash resolved following treatment with oral anti-histamine. Two other participating children developed a delayed maculopapular rash after completing 48 hours of the antibiotic. However, both children developed the rash coupled with symptoms of vomiting and diarrhoea, leading us to believe it was unrelated to the penicillin and confirming a negative challenge result. Both children have had penicillin since their challenge with no adverse events.

Discussion

Our results confirm that this standardised protocol can be safely used to assess suspected penicillin allergy in children fulfilling a low risk criteria, in a day ward setting. The majority of children tolerated amoxicillin and thus could be safely prescribed oral amoxicillin in the future. Furthermore, the protocol can be performed by an appropriately trained paediatric nurse, in a cost effective and time efficient way. Our results support the findings of Moral et al[3], who introduced this protocol, challenging 50 low risk children with suspected penicillin allergy, resulting in only 1 mild delayed reaction. Similarly, a study evaluating Skin Prick Testing (SPT) versus Drug Provocation Testing (DPT) concluded that oral challenges in children who meet a certain criteria (low risk) are the preferred option for penicillin allergy diagnosis[15]. In addition, a large scale 20 year study carried out in France, involving 1865 children, investigated penicillin allergy diagnosis through detailed history taking, SPT, and DPT. The authors concluded that in low risk children in whom penicillin allergy is unlikely, SPT has minimal value and following a detailed history, proceeding to oral challenge is safe[12]. Likewise, Caubet et al[1], whose study involved 88 children undergoing SPT, blood testing and DPT, out of whom 7 developed a rash, highlighted the inaccuracy of SPT and specific IgE blood testing in assessing delayed reactions to penicillin, but confirming the safety of DPT. They also suggest a single dose DPT in children within a low risk group; however this has yet to be validated[1,16].

As noted previously, the pre-test probability of a true penicillin allergy in children is low[8]. We have shown that potentially 5% of an at-risk population may have their allergy confirmed on testing. Secondly, while most delayed reactions are minor, some children do develop severe reactions such as Stevens-Johnson Syndrome or Toxic Epidermal Necrolysis which can be life threatening, and clearly require specialist input to assess the potential medical risks for the future[4]. Other benefits include allowing us to modernise the service where we removed the requirement for IV cannulation and could allow this protocol be nurse-led, where a junior doctor had been required in the past. This brought considerable cost savings. Other minor savings included removing the need for specific IgE blood testing to Penicillin V and G prior to oral penicillin challenge, leading to a cost saving of approximately €49.50 per patient. Finally, the protocol used is minimally invasive, causing little pain or distress to the child as IV cannulation is avoided and the children spend a minimum time of 4 hours in hospital. Our research involved a small number of children referred to an acute secondary centre. However, the risk of true penicillin allergy is likely to be even lower in the community and thus this standardised protocol could ultimately be delivered in a primary care setting with the correct education and support. This study only challenged participating children with oral penicillin, there continues to be an unquantifiable risk of an allergic reaction for a given child following intravenous administration of penicillin.

In conclusion, this standardised protocol is safe in assessing low risk children with suspected penicillin allergy. This standardised protocol could be disseminated to other acute paediatric units and in time could be utilised in a primary care setting. Further research is required to examine the pharmacoeconomic implications of a diagnosis of suspected penicillin allergy.

Correspondence: K Murphy
Department of Paediatrics, AMNCH, Tallaght, Dublin 24
Email: karen22murphy@hotmail.com

References

1. Caubet JC, Kaiser L, Lemaître B, Fellay B, Gervaix A, Eigenmann PA. The role of penicillin in benign skin rashes in childhood: a prospective study. J Allergy Clin Immunol. 2011; 127: 218-222.
2. Karabud S, Motala, C. Penicillin allergy in children. Current Allergy and Clinical Immunology. 2009 June; 22:64-66.
3. Moral L, Garde J, Toral T, Fuentes MJ, Marco N. Short protocol for the study of paediatric patients with suspected betalactam antibiotic hypersensitivity and low risk criteria. Allergol Immunopathol. 2011; 39: 337-341.
4. Blana-López N, Zapatero L, Alonso E, Torres MJ, Fuentas V, Martínez-Molero MI, Blanca M. Skin testing and drug provocation in the diagnosis of nonimmediate reactions to aminopenicillins in children. Allergy. 2009; 64: 229-233.
5. Corzo-Higueras JL. Drug provocation tests in children: indications and interpretation. Allergol Immunopathol. 2009; 37: 321-332
6. O'Dowd L, Atkins P. UpToDate. Waltham, MA: UpToDate. 2006. Penicillin and related antibiotic allergy; skin testing; and desensitization.
7. Romano A. Recognising antibacterial hypersensitivity in children. Paediatr Drugs. 2000 Mar-Apr; 2: 101-112.
8. Pichichero ME. A review of evidence supporting the American academy of pediatrics recommendation for prescribing cephalosporin antibiotics for penicillin-allergic patients. Pediatrics. 2005 April; 115: 1048-1057.
9. Gruchalla RS, Pirmohamed M. Antibiotic allergy. The New England Journal of Medicine. 2006 Feb; 354: 601-609.
10. Romano A, Blanca M, Torres MJ, Bircher A, Aberer W, Brockow K, Pichler WJ, Demoly P. Diagnosis of nonimmediate reactions to ß-lactam antibiotics. Allergy. 2004; 59: 1153-60.
11. Ponvert C, Le Clainche L, de Blic J, Le Bourgeois M, Scheinmann P, Paupe, J. Allergy to ß-lactam antiobiotics in children. Pediatrics. 1999 Oct; 104:1-9.
12. Ponvert C, Perrin Y, Bados-Albiero A, Le Bourgeois M, Karila C, Delacort C, Scheinmann P, De Blic J. Allergy to betalactam antibiotics in children: results of a 20-year study based on clinical history, skin and challenge tests. Pediatric Allergy and Immunology. 2011; 22: 411-418.
13. Borch JE, Andersen KE, Bindslev-Jensen C. The prevalence of suspected and challenge-verified penicillin allergy in a university hospital population. Pharmacology & Toxicology. 2006; 98: 357-362.
14. Wöhrl S, Vigl K, Stingl G. Patients with drug reactions- is it worth testing? Allergy. 2006; 69:928-934.
15. Blanca M, Romano A, Torres MJ, Férnandez J, Mayorga C, Rodriguez J, Demoly P, Bourquet PJ, Merk HF, Sanz ML, Ott H, Atanaskovic-Markovic M. Update on the evaluation of hypersensitivity reactions to betalactams. Allergy 2009; 64: 183-193.
16. Chiriac AM, Demoly P. Drug provocation tests: up-date and novel approaches. Allergy 2013; 9: 1-5.

Neurodevelopmental Outcome at Seven Years in Term, Acidotic Newborns

M Diviney[1], R Pinnamaneni[1], JFA Murphy[2], B Lynch[2], H Rushe[2], C Madigan[2], M Geary[1], A Foran[1]
[1]Rotunda Hospital, Parnell St, Dublin 1
[2]Children's University Hospital, Temple St, Dublin 1

Abstract
The objective was to follow up a cohort of acidotic full-term infants with or without hypoxic ischemic encephalopathy (HIE) and determine if at 7 years they displayed any neurodevelopmental delays. Children (n=44) were divided according to those with mild (n=25) or severe (n=19) acidosis and were then further subdivided into those with or without HIE. Participants were assessed using the Wechsler Intelligence Scale for Children (WISC-IVUK) and Achenbach Child Behaviour Checklist (CBCL). No differences in WISC-IVUK scores in children without HIE irrespective of the cord pH values were found. Children with HIE grade I scored significantly higher in perceptual reasoning than those with grade III ($p<0.01$). CBCL scores revealed no differences between groups. Findings suggest evidence of impairment at school-age that correlates with the degree of encephalopathy. Acidosis without the presence of clinical encephalopathy was associated with normal outcome.

Introduction

HIE occurs in 1-3/1000 live births and can result in significant neurologic morbidity and mortality in the term infant[1-3]. There is a spectrum of severity ranging from Sarnat grade I to grade III. Grade I refers to mild HIE, grade II moderate HIE and grade III severe HIE[4]. Research has traditionally focused on developmental consequences at relatively young ages[5-7]. Studies suggests normal cognitive and behavioural development in mild grade I HIE groups[8], moderate grade II HIE display increased hyperactivity and lower scores[9-12], whereas the severest grade III HIE group show poorest cognitive attainment[8,13]. There remains continued uncertainty about the relationship between acidosis at birth, the development of HIE following perinatal asphyxia and long-term outcomes[14]. One study found that once the umbilical cord pH is <7.2, it can lead to neurodevelopmental dysfunction at 1-2 years[14-16] that can continue to school age, with deficits particularly seen in verbal functioning[17]. Contrary findings, however, found that lower cord pH (<7.0) did not result in any significant deficits in cognitive or behavioural functioning when compared with similar aged controls[18]. Given these inconsistencies, this study aimed to examine the effect of both acidosis and HIE on cognitive and behavioural outcomes. It is hypothesised that the more significant the level of acidosis at birth, the greater the implication for negative cognitive impact on development. It is also hypothesised that all children with HIE will have less positive cognitive outcomes, and that within the HIE group those with severe acidosis will do worse than those with mild acidosis.

Methods

A cohort of term infants (n=64; >37 weeks gestation) were recruited who met one of the following criteria: emergency section, instrumental delivery, presence of meconium stained liquor or low pH (=7.25) from fetal blood sampling taken during labour. All infants who met the inclusion criteria had arterial cord pH values taken after delivery. Infants with a cord pH value = 7.0 and all infants who had clinical signs of encephalopathy irrespective of cord pH values were recruited. All infants were

examined clinically and were deemed to be either normal or have varying degrees of encephalopathy. The degree of encephalopathy was classified during the first week of life as mild, moderate or severe (stages I, II or III according to Sarnat and Sarnat (1976)). The remaining infants were then subdivided based on cord pH value. Exposure to severe acidosis was quantified as a cord pH value = 7.0 (n=25). The non-exposed were those infants with an arterial cord pH value of 7.0 - 7.25 (n=606). For each infant with a pH value = 7.0 and who had no signs of encephalopathy, the next three consecutive infants who met the study criteria, were clinically normal and had a pH value of 7.0-7.25 were taken as controls (n=32). As spontaneous vaginal delivery and elective Caesarean section were considered low risk deliveries, those infants were excluded. During the study period there were 5,800 term deliveries, of which 631 were acidotic (arterial cord pH value = 7.25). Of these 631 infants, 25 were severely acidotic with a cord pH value = 7.0 and 606 were mildly acidotic with a cord pH value at birth of 7.01 - 7.25. We prospectively recruited all infants with a cord pH value = 7.0 who met the study criteria and all infants who had clinical signs of encephalopathy irrespective of cord pH values. From this population, it was found that as the cord pH dropped below 7.0 the rate of encephalopathy increased 16 fold (see Table 1). 61 children were eligible for follow-up; 22 with HIE and 42 controls. 44 completed follow up giving us a total follow up rate of 72%. There were 22 children with HIE, of which 3 had died and 3 were not contactable leaving an available 16. Of this, 3 declined consent, giving a follow-up rate of 13/16 (81%) in the available HIE group. There were 42 in the control group; 7 were not contactable and 4 refused, giving a follow-up rate of 31/35 (89%) in the available control group.

Follow-up cognitive and behavioural assessment was carried out on this group of infants at age 7 years 6 months (n = 44) by one psychologist (MD).Two highly experienced psychologists (CM and HR) supervised the training and ensured the standard of assessments. The assessor was blinded to cord pH values. After all assessments were complete, children were divided according to those with HIE (n = 13) and without HIE (n = 31). These were further subdivided after assessment into those with HIE with severe acidosis (n=8), or with mild acidosis (n=5), and those without HIE, with either severe (n=11) or mild (n=20) acidosis. In addition, HIE children irrespective of cord pH were compared based on Sarnat grading: HIE I (n=5), HIE II (n=5) and HIE III (n=3). All children were assessed in the hospital. Cognitive ability was measured using the Wechsler Intelligence Scale for Children-4th Edition^{UK} (WISC-IV). This clinical instrument provides scores that represent intellectual functioning across a number of indices, including the verbal comprehension (VCI), working memory (WMI), perceptual reasoning (PRI) and processing speed (PSI) and the full scale IQ (FSIQ) with each index having a mean composite score of 100 and a standard deviation of 15.

Behavioural development was measured using the Achenbach Child Behaviour Checklist 6–18 years (CBCL)[19] which was completed by the parent on the day of the assessment. All scores were categorised into competence, internalising and externalising behaviours and the T-scores for each of these areas were computed. Statistical analysis of the data was carried out using SPSS (v17). Due to a violation of the assumption of normality in the study sample, non-parametric tests including Mann-Whitney U tests and Kruskal Wallis were used. Statistical significance was reached when $p < 0.05$. Ethical approval was obtained from the Children's University Hospital, Temple Street ethics committee and full consent obtained from all parents.

Results

Demographic Information

Demographic details of all children were obtained. Few differences were noted between the groups (Table 2).

WISC-IV Composite Scores

Mann-Whitney U tests were used to analyse composite score data on each of the five WISC-IV indices. Mean scores of the severe acidotic group (+/- HIE) were lower than the mildly acidotic group (+/- HIE), however this was not statistically significant (p values>0.05; Table 3). Examination of the mean scores of the severe acidotic group with HIE revealed an overall pattern of lower scores across all five WISC-IV indexes when compared to severely acidotic children without HIE. However, this was not statistically significant (p values>0.05; Table 3).

Comparison between children with or without HIE

The effect of HIE alone, irrespective of cord pH, revealed no statistical significance in any of the WISC-IV composite scores (p>0.05; see Table 3).

HIE Sarnat Score Comparisons

WISC-IV composite scores were assessed within the HIE group; this revealed a pattern of lower scores only for the HIE III group on all indexes. Significant differences between the groups were only revealed in the perceptual reasoning index, with HIE grade III children (Mean: 76.33 SD: 15.7) scoring significantly lower than those with HIE grade I (Mean: 112.75, SD: 5.5; p<0.01).

Table 1 Rates of hypoxic ischemic encephalopathy (Sarnat I/ II/III) in infants with a cord pH ≤ 7.0 compared, to those infants with cord pH 7.01 - 7.25.

Cord pH	Total No. Infants	No. (%) Infants with HIE
<7.0	25	8(32)
7.01-7.25	606	14(2.3)
Total	631	22(3.4)

(p = 0.000002; OR = 20.49; RR = 16.)

Table 2 Demographic information for the children with and without HIE and for children with mild and severe acidosis

		Without HIE (n=32) No. (%)	With HIE (n=12) No. (%)	Mild Acidosis (n=25) No. (%)	Severe Acidosis (n=19) No. (%)
Age	Mean months	91.31 (8.7)	87.58 (8.3)	91.42 (8.3)	88.67 (9.6)
School Type	Mainstream	32 (100)	11 (91.7)	25 (100)	18 (94.7)
	Special Needs	0 (0)	1 (8.3)	0 (0)	1 (5.3)
Special Help in School	Yes	10 (31.3)	4 (33.3)	6 (24.0)	8 (42.1)
	No	22 (68.8)	8 (66.7)	19 (76)	11 (57.9)
Speech and Language Delay	Yes	8 (25)	3 (25)	7 (28.0)	4 (21.1)
	No	24 (75)	9 (75)	18 (72.0)	15 (78.9)

Standard deviation is presented in parentheses.

Achenbach Child Behaviour Checklist Scores

Behavioural problems were assessed using the CBCL. Mann-Whitney U tests comparing T-scores on the competence, internalising and externalising scales revealed no significant differences between the children with or without clinical HIE, with either severe or mild acidosis on any of the scales. There was also no differences noted in the severely acidotic children with or without HIE (p values>0.05; Table 4).

Comparison between children with or without HIE

CBCL behavioural comparisons were made between children based on the presence or absence of HIE. Significant differences between the groups on the internalising T-score only were found (p=0.014), however neither groups' score reached clinical significance.

HIE Sarnat Score Comparisons

CBCL scores were further assessed to determine if the grade of encephalopathy lead to any long term behavioural problems. For this, each of the HIE Sarnat groups (I-III) T-scores were assessed. Results revealed no differences between groups in any score.

Discussion

Acidotic infants, irrespective of the severity of acidosis, without any clinical signs of encephalopathy did not display long-term cognitive or behavioural impairment at age 7.5 years, with both the mild and severe acidotic groups scoring within the average range

Table 3 Mean WISC-IV composite score comparison of children with and without clinical HIE according to those with mild and severe acidosis at birth.

	With HIE			Without HIE		
Composite Score	Mild Acidosis (n=5)	Severe Acidosis (n=8)	p	Mild Acidosis (n=20)	Severe Acidosis (n=11)	p
VCI	104.8(5.4)	91.13(23.55)	0.338	97.2(16.7)	92.8(10.54)	0.482
PRI	108.2(9.71)	89.00(21.81)	0.054	96.05(15.14)	95.0(10.17)	0.709
WMI	92.8(5.89)	86.38(22.48)	0.657	95.35(14.76)	92.64(9.53)	0.455
PSI	98.8(10.73)	91.75(21.79)	0.445	94.2(15.42)	92.64(7.69)	0.694
FSIQ	106(9.11)	87.63(24.5)	0.092	94.5(17.18)	91.82(8.02)	0.397

Standard deviation is presented in parentheses.

Table 4 CBCL T-score comparison of children with and without clinical HIE according to those with severe and mild acidosis at birth.

	With HIE			Without HIE		
Acidosis	Competence T-Score	Internalising T-score	Externalising T-Score	Competence T-Score	Internalising T-score	Externalising T-Score
Severe	48.7(12.5)	46.8(8.6)	47.14(14.8)	51.5(7.5)	52.4(11.7)	52.8(8.5)
Mild	57.2(10.6)	46.0(4.8)	48.8(10.4)	45.5(9.7)	49.4(8.7)	47.9(11.6)
p-value	0.522	0.8	0.52	0.064	0.27	0.21

Standard deviation is presented in parentheses.

on all indices. A similar finding has been reported by Wildschut et al[20], i.e. no correlation between cognitive outcomes and cord pH when assessing children at 4 years. Others also suggest that low cord pH does not lead to long-term neurological problems and that only very low pH scores have later undesirable effects[21,22]. Yudkin et al[10], also report that acidotic infants without encephalopathy had no significant cognitive delays when compared to normal controls at 5 years. Acidotic infants with encephalopathy at birth were also assessed for follow-up. In this group, infants with severe acidosis had consistently lower scores on all WISC-IV indexes in comparison to the mild acidotic group; however, these differences did not reach statistical significance. This could be due to the low numbers observed in each group, as a similar significant pattern of lower scores were reported by Toh[23], who had a study population of 35. Specifically, Toh[23] found, through retrospective assessment, that infants with HIE who were also acidotic at birth were more likely to have disability at 18 months. Takenouchi[24] also found that the parallel occurrence of HIE and acidosis led to later abnormal developmental outcomes during infancy, suggesting that acidosis is a critical factor to consider when looking at the long-term outcome of infants, particularly when it is coupled with the presence of HIE.

Interestingly, descriptive statistics initially indicate higher mean scores on the WISC-IV for children with HIE who had mild acidosis in comparison to mildly acidotic children without HIE. Further analyses, however, indicate no significant differences between these groups (data not shown). Further comparisons made between children with or without HIE indicated no differences on cognitive or behavioural scores. Further subgroup analysis of encephalopathic children revealed cognitive impairments in the most severe HIE group in the area of perceptual reasoning. This finding may signify a spectrum of cognitive impairment at school age which correlates with the degree of encephalopathy at birth. Due to low numbers in these subgroups, however, it is difficult to accurately interpret the findings. Earlier research has, however, provided evidence of a similar spectrum of difficulty with normal cognitive development evident in mild and moderately encephalopathic groups at school age 8-9, whereas those severely affected displaying most significant impairment[25].

Overall the encephalopathic group also displayed a relative area of weakness in working memory scores when compared to verbal reasoning outcomes. Marlow et al[9] similarly noted a lower score in the area of memory in children with HIE. This discrepancy may also be due to attentional deficits; an area often compromised in neurologically damaged patients. While behavioural assessment with the CBCL did not reveal attentional disorders within this group, it has been previously reported that children with HIE display attention and hyperactivity difficulties[11]. Overall, our findings suggest evidence of cognitive impairment at school-age that correlates with the degree of encephalopathy. Acidosis without the presence of clinical encephalopathy was associated with normal outcome.

Correspondence: A Foran
Department of Neonatology, Rotunda Hospital, Dublin 1
Email: aforan@rotunda.ie

References

1. Shevell MI, Bodensteiner JB. Cerebral palsy: defining the problem. Semin Pediatr Neurol. 2004; 11:2-4.
2. Finer NN, Robertson CM, Richards RT, Pinnell, LE, Peters, KL. Hypoxic-ischemic encephalopathy in term neonates: perinatal factors and outcome. J Pediatr. 1981; 98:112-117
3. Smith J, Wells L, Dodd K. The continuing fall in incidence of hypoxic-ischaemic encephalopathy in term infants. Br J Obstet Gynaecol. 2000; 107:461-466.
4. Sarnat HB, Sarnat MS. Neonatal encephalopathy following fetal distress. A clinical and electroencephalographic study. Arch Neurol. 1976; 33:696-705.
5. Perlman JM. Brain injury in the term infant. Semin Perinatol. 2004; 28:415-424.
6. Carli G, Reiger I, Evans N. One-year neurodevelopmental outcome after moderate newborn hypoxic ischaemic encephalopathy. J Paediatr Child Health. 2004; 40:217-220.
7. Van Handel M, Swaab H, de Vries LS, Jongmans MJ. Long-term cognitive and behavioural consequences of neonatal encephalopathy following perinatal asphyxia: a review. Eur J Pediatr. 2007; 166:645–654
8. Robertson CM, Finer NN, Grace MG. School performance of survivors of neonatal encephalopathy associated with birth asphyxia at term. J Pediatr. 1989; 114:753-760.
9. Marlow N, Rose AS, Rands CE, Draper ES. Neuropsychological and educational problems at school age associated with neonatal encephalopathy. Arch Dis Child Fetal. Neonatal Ed. 2005; 90:F380-F387.
10. Yudkin P, Johnson A, Clover L, Murphy K. Clustering of perinatal markers of birth asphyxia and outcome at age five years. Br J Obstet Gynaecol. 1994; 101:774-781.
11. Moster D, Lie RT, Markestad T. Joint association of Apgar scores and early neonatal symptoms with minor disabilities at school age. Arch Dis Child Fetal Neonatal Ed. 2002; 86:F16–F21.
12. Zappitelli M, Pinto T, Grizenko N. Pre-, peri-, and postnatal trauma in subjects with attention-deficit hyperactivity disorder. Can J Psychiatry. 2001; 46:542–548.
13. Pin TW, Eldridge B, Galea MP. A review of developmental outcomes of term infants with post-asphyxia neonatal encephalopathy. Eur J Paediatr Neurol. 2009; 13:224–234.
14. Malin GL, Morris RK, Khan KS. Strength of association between umbilical cord pH and perinatal and long term outcomes: systematic review and meta-analysis. Br Med J. 2010; 340:c1471.
15. Gjerris AC, Staer-Jensen J, Jørgensen JS, Bergholt T, Nickelsen C. Umbilical cord blood lactate: a valuable tool in the assessment of fetal metabolic acidosis. Eur J Obstet Gynecol Reprod Biol. 2008; 139:16-20.
16. Gaudier FL, Goldenberg RL, Nelson KG, Peralta-Carcelen M, Johnsin SE, DuBard MB, Roth TY, Hauth JC. Acid-base status at birth and subsequent neurosensory impairment in surviving 500 to 1000 gm infants. Am J Obstet Gynecol. 1994;170:48-53.
17. Ingemarsson I, Herbst A, Thorngren-Jerneck K. Long term outcome after umbilical artery acidaemia at term birth: influence of gender and duration of fetal heart rate abnormalities. Br J Obstet Gynaecol. 1997; 104:1123-1127.
18. Svirko E, Mellanby J, Impey L. The association between cord pH at birth and intellectual function in childhood. Early Hum Dev. 2008; 84:37-41.

19. Achenbach TM, Rescorla, LA. Manual for the ASEBA School-Age Forms and Profiles. Burlington, VT: University of Vermont 2001.
20. Wildschut J, Feron F, Hendriksen J, van Halla M, Gavilanes-Jiminez DWD , Hadders-Algrae M, Vlesa JSH. Acid-base status at birth, spontaneous motor behaviour at term and 3 months and neurodevelopmental outcome at age 4 years in full-term infants. Early Hum Dev. 2005; 81:535-544.
21. Dennis J, Johnson A, Mutch L, Yudkin P, Johnson P. Acid-base status at birth and neurodevelopmental outcome at four and one-half years. Am J Obstet Gynecol. 1989; 161:213-220.
22. Ingemarsson I, Herbst A, Thorngren-Jerneck K. Long term outcome after umbilical artery acidaemia at term birth: influence of gender and duration of fetal heart rate abnormalities. Br J Obstet Gynaecol. 1997; 104:1123-1127.
23. Toh VC. Early predictors of adverse outcome in term infants with post-asphyxial hypoxic ischaemic encephalopathy. Acta Paediatr. 2000; 89:343–347.
24. Takenouchi T, Cuaycong M, Ross G, Engel M, Perlman JM. Chain of brain preservation—A concept to facilitate early identification and initiation of hypothermia to infants at high risk for brain injury. Resuscitation. 2010; 81:1637-1641.
25. Cowan F. Outcome after intrapartum asphyxia in term infants. Semin Neonatol. 2000; 5:127-140.

Does Participation in CME SLG (Small Group Learning) Influence Medical Practice? The Experience of General Practitioners Attending CME SLG after the Introduction of the Medical Practitioners Act

S Dowling[1], H Finnegan[2], C Collins[3]
[1]Western House, Western Road, Clonmel, Co Tipperary
[2]CME National Director, Marina Point, Ballinasloe, Co Galway
[3]ICGP, 4-5 Lincoln Place, Dublin 2

Abstract
In Ireland, Continuing Medical Education (CME) for GPs is delivered by a national network of 37 tutors who coordinate learning sessions for between 2 and 5 small groups of physicians (SGL). Each group meets up to 8 times per year; 1100 to 1700 doctors attend CME-SGL nationally each month, with numbers increased since the Irish Medical Practitioners Act. This study investigated whether CME-SGL improves clinical knowledge of doctors. A questionnaire was administered by 35 CME tutors at their scheduled meetings in November/December 2012; 1366 (96%) attendees responded. In total 1312 (97%) doctors reported that they want to improve their clinical practice, and 1143 (86.3 %) agreed that CME had helped them to do so. Of these, 1041 (91.1%) doctors gave specific examples. This survey provides evidence of how CME-SGL has impacted on the knowledge, skills, attitudes, prescribing, use of investigations, and application of guidelines and audit of these Irish GPs.

Introduction

Continuing Medical Education (CME) has been described as any and all ways by which doctors learn following formal completion of their training.[1] Increasing attention is being paid to CME as a mechanism for improving physician and patient outcomes.[2] According to Fox and Bennett,[3] CME is the systematic attempt to facilitate change in physicians' practice. The Irish Medical Practitioners Act of 2007 places a statutory obligation on all Medical Practitioners registered in Ireland to maintain their professional competence by participating in a recognized Professional Competence Scheme (PCS).[4] Such schemes require regular attendance at accredited educational meetings, and include an audit component. CME activities are underpinned by the belief that gains in knowledge lead physicians to improve their medical practice with resultant benefits for patient outcomes.[5] A number of reviews have been published during the past decade which have assessed the effectiveness of CME.[6-8] In March of 2009 the American College of Chest Physicians (ACCP) produced evidence based guidelines which make recommendations on the effectiveness of CME.[9] While the ACCP acknowledged that most of the evidence for CME was of low quality due to the heterogeneity of the studies, the guidelines nevertheless conclude that live media is more effective than print media, that multiple media techniques are more effective than single techniques, and that multiple exposures are more effective than single exposures. An earlier meta-analysis found that CME interventions designed and run for groups of participants from a single (medical) discipline were associated with better outcomes.[8] The authors suggest that it is possible that interventions with a single group of participants (e.g., only general practitioners) are more focused and present materials that are more relevant to the particular group. The finding that small group size also improves outcomes is thought to be linked to the opportunity to actively participate and to obtain information directly linked to practice concerns.[8]

In Ireland, CME-SGL for GPs is delivered by 37 tutors based locally throughout the country, and who coordinate small group learning (SGL) sessions for between two and five groups of physicians. Small groups of clinicians (usually between 8 and 12 members) meet to discuss cases, reflect on evidence presented in the meeting and consider what changes they will make to their own practice. Group leaders (who are themselves members of the small groups) help to facilitate teaching with the help of the tutor; there are approximately 68 group leaders involved in teaching in CME-SGL in Ireland. Groups usually meet in the evenings after work for approximately two hours. There are commonly between 7 and 8 meetings per group per year. Nationally, between 1100 and 1700 doctors attend each month. The tutor network is funded by the Health Service Executive (HSE), the national health authority. The Irish College of General Practitioners (ICGP) has a governance role, and administers the PCS for GPs. Teaching methods used in the delivery of CME-SGL include case discussion, use of video, problem based analysis, practice visits, discussion of clinical experiences, practical demonstrations, case review, practice management meetings and discussion of errors made in practice. The tutors who facilitate these meetings attend three tutor workshops annually. These workshops include discussion of the curriculum for CME-SGL, clinical updates and formative feedback for tutors on their leadership skills. The CME-

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

SGL model of learning was started in 1983 by Dr Michael Boland and over the past 30 years the national network of tutors has grown to cover the entire country (Republic of Ireland). There are currently 1,074 small group meetings annually and approximately 2,900 GPs on the CME mailing list. This study was designed to see whether all this activity influences medical practice among doctors attending ICGP CME-SGL.

Methods

This study consisted of a self-administered questionnaire to be completed by all doctors attending CME-SGL. The first page of the questionnaire gathered demographic data, while the second page asked about the reasons doctors attend CME meetings. The third page asked doctors to give specific examples of how CME-SGL had influenced their own medical practice. Following ethical approval from the ICGP (June 2012), piloting and a discussion regarding implementation with all tutors occurred in September 2012. Subsequently, 35 tutors administered the questionnaires to all attendees at their next scheduled CME meetings (November / December 2012). Each tutor was asked to provide a list of the topics covered in CME-SGL during the previous year, and participants were asked to provide their answers based on this list. Doctors were asked to give specific examples of how CME had changed their practice in six domains including knowledge and skills, prescribing, attitudes, audit, investigations and use of guidelines in practice.

Table 1 Attendances for ICGP-SGL in Ireland from 2009-2013

Academic Year	Number of small groups nationally	Total annual attendances
2009- 2010	125	7,907
2010-2011	129	9,594
2011-2012	145	13,571
2012-2013	146	13,980

Results

Questionnaires were completed by 1366 GPs, a response rate of 96% of those attending CME meetings in November and December of 2012. The numbers attending CME have increased since the Irish Medical Practitioners Act came into effect on 1st May 2011 (Table 1). The demographics of respondents was typical of those working in Irish general practice, including a slight preponderance of males, a majority between 40 and 60 years of age, and a little less than one third (30%) working in single-handed practice (Table 2). Almost 60% of those surveyed had been in practice for 15 years or more.

Table 2 Demographic Profile of Respondent (n=1366)*

	N	%
Gender		
Male	729	54.2
Female	616	45.8
Age Group		
≤39	300	22.2
40-49	364	27.0
50-59	387	28.7
≥70	297	22.0
Years in practice		
<5	140	10.5
5-<15	399	29.8
15-<30	505	37.7
≥30	295	22.0
Single/Group Practice		
Group	908	69.4
Single-handed	401	30.6
Practice Location		
City or Town	1100	83.3
Village / Rural	220	16.7
Years attending CME		
<2	194	14.4
2-<5	242	18.0
5-<10	279	20.7
≥10	631	46.9

*Subtotals in various categories reflect some missing data

Overall 97% of respondents said that they attend CME-SGL because of a desire to improve their clinical practice. A total of 86.3% of respondents agreed that CME had changed their clinical practice (Table 3), and of these, 91.1% gave specific examples of how this had occurred (Table 4). Ninety four percent of the total group of GPs who responded wanted the current CME structure to stay the same. A little over two thirds (70.6%) of doctors reported that CME-SGL helped them to comply with the audit requirements of PCS (Table 3). Out of this group of doctors, 843 (61.7%) gave specific examples of the CME topic or session in which audit teaching occurred. There was a positive linear relationship between the proportion of doctors agreeing that CME impacted on their practice and the number of years doctors had been attending CME. In a logistic regression comparing those who agreed that CME impacted on their practice with those who did not agree (combining disagreed/unknown), both age group and years attending CME remained significant independent predictors of whether CME has impacted on practice, while the number of years in general practice did not remain as a significant independent predictor.

Table 3 Reasons participants attend CME-SGL: GPs level of agreement with specific statements

Statements	Strongly Agree/ Agree	Neither Agree/ Disagree	Disagree / Strongly Disagree
I attend meetings as I want to improve my clinical practice(n=1354)	97.1%	2.3%	0.6%
I attend CME-SGL meetings due to the requirements of the professional competence schemes (PCS)(n=1356)	79.0%	9.9%	10.1%
If there was no PCS I would still go to CME-SGL meetings(n=1360)	92.9%	5.2%	1.9%
I reflect more on my practice as a results of attending CME-SGL (n=1356)	91.1%	7.7%	1.2%
I attend meetings for social reasons (n=1353)	47.9%	28.7%	22.4%
I attend meetings for peer support from colleagues (n=1360)	74.7%	17.9%	7.4%
I have changed my clinical practice as a result of CME-SGL (n=1351)	86.3%	11.2%	2.5%
CME-SGL helps me to comply with the audit requirement of the PCS (n=1356)	70.6%	19.3%	10.1%
Meetings should stay in the current small group format (n=1356)	93.9%	5.1%	1.0%
Alternative formats for CME should be explored e.g. e-learning, video conferences, web based seminars (n=1347)	39.8%	27.2%	33.0%

Table 4 Does CME-SGL influence medical practice?

Competency	Answered 'yes' and gave an example N (%)	Illustration of Examples given	Meeting topic
I have changed how I managed a patient in the past year as a result of a new knowledge or skill that I learned at a CME-SGL meeting	1077 (78.8)	I vaccinated all my diabetics with pneumonococcal vaccine	Vaccinations
		I now use CBT to treat my patients who have anxiety or work stress	CBT meeting
My attitudes to a patient/a group of patients has changed as a result of attending a CME-SGL meeting	812 (59.4)	I am more aware of the different needs of refugees	Care of refugees
		I learned methods of coping with heart sink patients	Heart Sink Patients
As a result of a CME-SGL meeting I have changed how I investigate my patients (i.e. blood tests, x-rays, referrals etc)	938 (68.7)	I now know when to order a PSA test	Prostate Cancer update
		I check for Chlamydia more often	Management of STIs
I have made changes regarding prescribing of medication as a result of attending a CME-SGL meeting	1015 (74.3)	I reduced my benzodiazepines prescribing	Prescribing of benzodiazepines
		I use less antibiotics in children with upper respiratory symptoms	Antibiotic prescribing
I learned about a new protocol or practice guideline in a CME-SGL meeting that I can now apply to my practice	934 (68.4)	I now use guidelines to treat patients with epilepsy	Update on epilepsy
		I improved my treatment of patients with hypertension	Use of guidelines in hypertension
CME-SGL has helped me to perform audit in my practice	843 (61.7)	I now record BMI before prescribing the COC	Audit on contraception
		I changed how I monitor patients on methotrexate	Audit of patients on methotrexate

CBT, cognitive beahvoiour therapy; STI, sexually transmitted infection; BMI, body mass index; COC, oral contraceptive pill

Discussion

Irish CME-SGL is the first in Europe to provide structured countrywide access to education for GPs on a monthly basis. The unique, local, small group setting emphasizes live peer-group interaction, including reflection on practice. Meetings have varied structure and content, and a variety of teaching methods are applied. Evidence indicates that face-to-face activities provide effective education, especially in the setting of multiple exposures, while the use of multi-media and multiple education techniques have been shown to improve outcomes in CME.[8,9] Knowledge is a critical element of expertise, and is a good predictor of performance.[9,10] In this study we asked doctors to provide specific examples of knowledge and skills learned at CME-SGL. Almost all GPs currently participating in the CME-SGL program who responded to this survey (97%) stated that they want to improve their clinical practice, and nearly 9 out of 10 (86.3%) agreed that CME had changed this. Of those, 91.1% gave specific examples of how CME-SGL has impacted on their knowledge, skills and attitudes, including their prescribing practice, use of investigations, application of guidelines and implementation of audits (Table 3). The Professional Competence Scheme (PCS) in Ireland includes a requirement for GPs to actively participate in one audit exercise annually; 70.6% reported that CME-SGL helped them to comply with this. Several studies have attempted to better understand the characteristics of CME that are associated with improvement in the clinical performance of physicians.[8,11] These show a close link between the intensity of teaching strategies applied and their effect on clinical performance; moreover CME which focuses on interaction and active participation (e.g. case discussions, role-play, hands-on practical sessions) is most likely to affect changes in the performance of participants.[8,11] In contrast, evidence for the impact of formal lectures on performance is poor. Irish CME-SGL uses multiple teaching methods and multiple exposures; thus, the positive findings in this Irish study are consistent with international studies.[11]

Most doctors who participated in this study reported they also attend CME-SGL for peer support from their colleagues. The importance of this should not be underestimated; Zaher et al found that sharing experiences with colleagues in SGL helps doctors to reflect, as well as to acquire new knowledge and skills.[12] Most of these Irish GPs (91.1%) reported that reflection on practice occurred at CME-SGL. Activities that help participants to reflect on current clinical practice, relate that practice to established guidelines, and recommend evidence based strategies to overcome identified gaps have been shown to be very effective.[13] To our knowledge this is the first study to report on CME-SGL in Ireland. The questionnaire was administered by all tutors in a consistent fashion countrywide; the high response rate (96%) indicates that most doctors who attended CME meetings in late 2012 participated. Demographic data of respondents (Table 2) is representative of Irish GPs nationally, and reflect the feminization of general practice, as well as the desire of older GPs to satisfy the requirements of the PCS and so stay on the Medical Register. It is acknowledged that the use of self-reports is a potential source of bias. Reporting was limited to the content of the previous year's teaching, and did not include doctors who were unable to attend CME meetings through illness, sabbatical or other reasons. Furthermore, it is possible that some responses may have been influenced by other meetings that GPs had attended during the previous year. The extent to which these factors may have influenced our results is unknown. As the structure of Irish CME-SGL consists of both a formal curriculum and informal learning opportunities, GPs may learn more from CME meetings than we were able to measure in this study. Moreover, our findings might have been different if GPs had been asked to complete the survey based on all the years they had been attending CME.

The numbers attending CME-SGL have increased markedly since the Irish Medical Practitioners Act came into force in May 2011, with 2013 attendances almost double those of 2009 (Table 1). GPs report their attendance is influenced by the requirements of the PCS (Table 3); each meeting provides 2 internal and 2 external CME credits, accumulated locally. Enlarging group size may have a negative impact on the small group learning methods employed in CME, as the opportunity for interaction between participants and reflection on practice may be diminished. In order to maintain the current format, shown by this study to be effective, expansion of the number of the tutors in the network is necessary. In conclusion, this study suggests that Irish CME-SGL has a positive impact on the clinical practice of GPs who attend, and supports the maintenance of CME-SGL in the current format. Future research is needed to assess the effect of CME interventions on doctors' actual performance, patient outcomes and population health.

Correspondence: S Dowling
Western House, Western Road, Clonmel, Co Tipperary
Email: drstephanie.dowling@gmail.com

Acknowledgements

All 35 CME tutors who carried out this study and who worked so hard to give us the response rate we obtained; C McNicholas, assistant National Director, for all her work and support; B Kelly for the administrative work on this research; and all the GPs who very kindly participated in this study.

References

1. Davis D. Does CME work? An analysis of the effect of educational activities on physician performance or health care outcomes. Int J Psychiatry Med. 1998; 28: 21-39.
2. Benett N, Davis D, Easterling W, Friedmann P, Green J, Koeppen B, Mazmanian P, Waxman H. Continuing medical education: A new vision of the professional development of physicians. Acad Med 2000; 75:1167-1172
3. Fox R, Bennett N. Continuing medical education: Learning and change: Implications for continuing medical education. BMJ. 1998; 316:466-468
4. Irish Medical Council; Professional Competence: Guidelines for Doctors. The Irish Medical Council April 2011; pages 1-48
5. Davis DA, Thomson O'Brien MA, Freemantel N, Wof FM, Mazmanian P, Taylor-Vaisey A. Impact of formal continuing medical education. JAMA. 1999; 282: 867-874
6. Tian J, Atkinson L, Portnoy B, Gold R; A systematic review of Evaluation in Formal Continuing Medical Education. Journal of continuing education in health professionals 2007; 27:16-27
7. Davis DA, Mazmanian PE, Fordis M, Harrison RV, Thorpe KE, Perrier L. Accuracy of physician self assessment measures of competence: A systematic review. JAMA. 2006; 296:1094-1102
8. Mansouri M, Lockyer J. A metanalysis of Continuing Medical Education Effectiveness. Journal of Continuing Education in Health Professions 2007; 27:6-15
9. Davis D, Galbraith R. Continuing medical education effect on practice performance: effectiveness of continuing medical education: American College of Chest Physician Evidence-Based Educational Guidelines for Continuing Medical Education Interventions. Chest 2009; 135:42S-48S
10. Mazmanian PE, Davis DA, Galbraith R. Continuing medical education effect on clinical outcomes: effectiveness of continuing medical education; American College of Chest Physicians evidence based educational guidelines. Chest 2009; 135: 49S-55S
11. Davis DA, Thomson MA, Oxman AD, Haynes RB. Evidence for the effectiveness of CME. A review of 50 randomized controlled trials. JAMA 1992; 268:1111-17
12. Zaher E, Ratnapalan S. Practice-based small group learning programs. Can Fam Physician 2012; 58: 637-42
13. Davis DA, Thomson MA, Oxman AD, Haynes RB. Changing physician performance. A systematic review of the effect of continuing medical education strategies. JAMA. 1995; 274:700-705.

Fitness to Drive in Cognitive Impairment – A Quantitative Study of GPs' Experience

U Doherty, AL Hawke, J Kearns, M Kelly
Western Training Programme in General Practice, University College Hospital, Newcastle Rd, Galway

Abstract
Assessing fitness to drive is part of the role of general practitioners. Cognitive impairment may affect an individual's ability to drive safely. The aims of our study were to question GPs about their experience of assessing patients with cognitive impairment for driving fitness and to explore their attitudes to this role. We carried out a quantitative cross-sectional anonymous postal survey of 200 GPs in counties Galway, Mayo and Roscommon. Ethical approval was obtained from the Irish College of General Practitioners. Data was analysed using Epi Info. The response rate was 62.5% (n=125). 86 (68.8%) GPs used guidelines when assessing fitness to drive in cognitive impairment. 83 (66.4%) respondents formally assess cognitive function. 52 (41.6%) GPs would certify someone as fit to drive with verbal restrictions. 102 (81.6 %) respondents feel confident in assessing fitness to drive. 98 (78.4%) GPs have referred patients for further assessment.

Introduction

Assessing fitness to drive is part of the role of general practitioners. GPs act as medical examiners for driver licensing purposes and informed advisers to their patients in relation to safer driving[1]. Cognitive impairment may impair ability to drive. With an increasingly elderly population assessing fitness to drive in patients with cognitive impairment is something GPs are faced with regularly. Progressive cognitive decline is one of the main reasons to advise older drivers to stop driving[2]. However younger people may have cognitive impairment from a variety of aetiologies. Mild cognitive impairment is a state between normal cognition and dementia where there is evidence of cognitive decline but the activities of daily living are preserved[3]. The cognitive domains which may be impaired in dementia are memory, language, abstract thinking and judgement, praxis, visuospatial skills, personality and social conduct. Few studies have looked at mild cognitive impairment and driving. Review of the literature suggests that older drivers do not impose an increased crash risk to other road users in absolute terms, causing fewer crashes per capita compared to younger age groups[4]. However regardless of age, cognitive impairment has consistently been shown to increase the risk of crashing[5]. In Ireland, it is a legal requirement for those aged over 70 years to undergo a medical assessment to be certified as fit to drive. Certification may be granted for one or three years[1]. This may change as the National Programme Office for Traffic Medicine has recommended a shift in focus away from age-defined medical screening[6]. A study published in Denmark in 2012[7] demonstrated that cognitive screening of older patients and subsequent revoking of fit to drive status resulted in a significant increase in the mortality of older road users. This suggests that loss of their driving licence resulted in the use of significantly less safe modes of transportation.

Driving is a key element of social inclusion and independence at all ages, requiring the integration of numerous cognitive, visual and motor functions[8]. An elderly person who can no longer drive is less likely to receive the services they need and more likely to enter a nursing home[9]. Driving cessation can cause depression, social isolation and strain on the doctor-patient relationship[10]. Relatives may express their concerns to the GP about an individual's fitness to drive. Unfortunately patients with dementia will eventually lose the ability to drive. It is important to decide with the patient when driving cessation should occur, what assessments are needed and what alternative transport is available. Guidelines such as those from the Road Safety Authority (RSA) provide limited advice on driving and cognitive impairment[1]. Performance based road testing is the closest to a gold standard in the area of driving assessment. Problems associated with on-road testing including the cost and a lack of standardisation[11]. Restricted licensing (e.g. avoiding motorways or only driving by day), is practiced in parts of Australia and in the state of Utah for people with impaired driving ability[12]. There is no provision in Irish law for restricted licencing. The principle aims of this study were: to establish the general practice experience of assessing patients with cognitive impairment for driving fitness; to examine the GP's attitude to this role, and to investigate what factors influence GPs in this decision-making process.

Methods

This was an anonymous quantitative cross sectional postal survey. Two hundred GPs in Counties Mayo, Galway and Roscommon were randomly selected from a list of 350 from the Irish Medical Directory. Ethical approval was granted by the ICGP Research Ethics Committee. Questionnaires were posted to GPs in October 2012 with a follow-up reminder six weeks later. A previously validated questionnaire was adapted for an Irish context[13]. The questionnaire consisted of four sections. The first section looked at the demographics of the study participants. The second section asked about current practice for assessing fitness to drive in the context of cognitive impairment, and included questions on guidelines used, referral for second opinion, whether patients had left the practice over revocation of driving licence, and whether GPs had certified patients as fit to drive with verbal agreement for restrictions on their driving. Section three consisted of a Likert scale to assess the respondent's attitudes to certifying fitness to drive in cognitive impairment. Section four was also a Likert scale which aimed to assess factors influencing the decision to certify as fit to drive. Respondents were asked if they would like further education on assessing cognitive function. The data were analysed using Epi-Info.[14]

Table 1 Demographic of Study Participants

	Number (n=125)	%
Gender		
Male	84	67
Female	41	33
Years in practice		
<10	21	16.8
10-120	32	25.6
>20	72	57.6
Practice type		
Urban	23	19
Mixed	57	46
Rural	44	35

Results

The response rate was 62.5% (n=125). See Table 1 for demographics of study participants. 96.8% (n=121) of GPs agreed that assessing fitness to drive is an important issue, with 84% (n=105) of respondents assessing fitness to drive on a weekly or daily basis. 68.8% (n=86) use guidelines; with 75.5% (n=65) of those citing the Road Safety Authority (RSA) as the primary guideline in use. However only 31.2% (n=39) of GPs agreed that the RSA provide adequate guidance. When assessing fitness to drive 66.4% (n=83) formally assess cognitive function in patients where there are any concerns. The most commonly used assessment tool was the Mini-Mental State Examination (83.2%; n=104). 78.4% (n=98) of respondents have referred patients for further assessment. The commonest places of referral

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

were geriatrics (74.4 %; n=73), psychiatry of later life (32.6 %; n=32), external driving assessors (30.6 %; n=30) and Occupational Therapy (8%; n=8). Nearly all GPs (97.6% n=122) would refuse to certify someone fit to drive if they had concerns about cognitive impairment. More than one in five GPs (21.6%; n=27) had patients leave their practice over revoking a driving licence. 41.6% (n=52) of GPs stated that they would certify someone fit to drive with verbal restrictions on driving. However, rural GPs opted for this approach significantly more often than urban GPs (54.5% [24/44] versus 26% [6/23], p= 0.04).

Table 2 Factors that influence the decision to certify as fit to drive

	Agree or Strongly agree		Disagree or Strongly disagree		Neutral	
	n	%	n	%	n	%
Patient isolation/lack of independence	87	69.6	18	14.4	20	16
Lack of alternative public transport	68	54.4	29	23.2	28	22.4
Risk of increasing home visits	13	10.4	84	67.2	28	22.4
Doubt of diagnosis of cognitive impairment	70	56	24	19.2	31	24.8
Family pressure	54	43.2	34	27.2	37	29.6
Undue pressure from patient to certify	48	38.4	43	34.4	34	27.2

Table 2 is a Likert scale demonstrating the GPs' responses to a number of factors that may influence them when certifying a patient as fit to drive. GPs agreed that patient isolation (69.6%; n=87) and lack of alternative transport (54.4%; n=68) were factors which influenced their decision. Rural GPs were significantly more likely to be influenced by a lack of public transport than urban GPs (68.18% [n=30/44] vs 39.13% [9/23] p<0.05). Table 3 shows the responses to statements pertaining to attitudes towards certifying fitness to drive in cognitive impairment. 81.6% (n=102) of GPs felt confident in assessing fitness to drive, and 48% (n= 60) felt adequately resourced. The majority of respondents (76.8%; n=96) had concerns over their legal liability. 60% (n=75) of respondents felt that a GP should be the primary assessor of fitness to drive. Almost half (47.2%; n=59) stated that it may interfere with the doctor-patient relationship. 59.2% (n=74) of respondents indicated they would like further education on assessing cognitive function.

Table 3 GP attitudes towards certifying fitness to drive (FTD) in cognitive impairment.

	Agree or Strongly agree		Disagree or strongly disagree		Neutral	
	n	%	n	%	n	%
I feel confident in assessing fitness to drive	102	81.6	2	1.6	21	16.8
I feel adequately resourced	60	48	23	18.4	42	33.6
I have concerns about legal liability	96	76.8	6	4.8	23	18.4
A GP should be the primary person to assess FTD	75	60	21	16.8	29	23.2
There should be medical practitioners specifically trained for assessing FTD	56	44.8	33	26.4	36	28.8
Certifying FTD is important	121	96.8	0	0	4	3.2
The RSA provides adequate guidance for GPs	39	31.2	40	32	46	36.8
I would contact the RSA for guidance	32	25.6	40	32	53	42.4
Assessing FTD interferes with the doctor-patient relationship	59	47.2	22	17.6	44	35.2

Discussion

The majority of GPs in this study agree that assessing medical fitness to drive is an important issue that they deal with on a daily basis. GPs are confident in their ability to assess fitness to drive and would not certify someone if they had concerns about cognitive impairment. However there is a paucity of guidance both in Ireland and internationally for General Practitioners with regard to driving assessment in cognitive impairment. A 2009 Cochrane Review concluded that there was no randomised evidence to indicate whether neuropsychological, on road or other assessments of driving ability can help support safe drivers to remain mobile, or to reduce crashes[15]. The newly published guidelines from the Road Safety Authority, 'Sláinte agus Tiomáint', were unavailable at the time of this study[16]. Two thirds of GPs are formally assessing cognitive function as a part of their driving assessment- the majority use the MMSE. This is interesting as the MMSE is at best a screening tool for cognitive decline, and was not designed to examine the cognitive functions required for driving. Respondents said they believed that the GP should be the primary assessor of fitness to drive. However in difficult cases they access the help of outside agencies, mainly geriatrics, occupational therapy and psychiatry of old age services. In other countries, New Zealand for example, Occupational Therapists have a well-developed and established role in assessing fitness to drive and are frequently consulted with difficult cases[17]. This contrasts with the findings of this study, which shows that OTs are not being frequently referred to. OTs can assess visuoperceptual skills and judgement, cognitive domains which, from a practical perspective, are not amenable to comprehensive assessment in a GP surgery. There may be an opportunity in Ireland to expand the role of the community OT to encompass driving assessment. Rural GPs were more likely to take patient isolation and lack of public transport into account when making driving assessments. This would correlate well with a study in Saskatchewan[18], Canada. In this study rural GPs were also more likely to avail of restricted licencing compared to their urban colleagues, and also felt that the need to drive was more important for rural dwellers compared to those patients who live in cities. Many rural patients need their car to access basic services like the shops, post office and GP surgery. Taking away their licence may result in loss of the ability to live independently, and may have negative social, psychological and medical effects. Restricted Licencing is attractive as it allows the patient to maintain this vital link with society while protecting other road users.

This study highlights the fact that a significant number of GPs- 76.8% -have concerns about their own legal liability. Similar concerns are highlighted in the literature[10]. GPs also feel that assessing fitness to drive can have a negative effect on the doctor - patient relationship, with a fifth of GPs surveyed stating they have had patients leave their practice because of driving issues. GPs in this study also sited pressure from patients and patient's families as a factor which has influenced driving assessments. Studies performed on Australian GPs in Victoria[10] and Canadian GPs in Saskatchewan[18] and Ontario[13] showed similar opinions. Driving is a hugely emotive issue and a GP has to balance his/her role as an advocate for the patient's independence with their own responsibilities towards road safety. A strength of this study was the high response rate which indicated GP interest in this topic. However this study was limited by examining the issue of cognitive impairment and driving in isolation, whereas is reality patients may have co-morbidities that may also influence their ability to drive safely. Quantitative methods were used in this study, whereas qualitative methods such as focus groups or interviews may have yielded richer information.

There are several measures which would assist with the task of assessing patients with cognitive impairment for driving fitness. These include the issuing of clear driving assessment guidelines to GPs, the availability of a legal back up for restricted licencing, and government funded driving assessors to help GPs deal with difficult cases. This would enable patients to maintain maximum independence, keep the roads as safe as possible and improve the doctor-patient relationship.

Correspondence: U Doherty
Western Training Programme in General Practice, University College Hospital, Newcastle Rd, Galway
Email: unamdoherty@hotmail.com

Acknowledgements
Western Training Programme in General Practice.

References

1. Road Safety Authority. Medical Aspects of Driver Licensing: A Guide for Registered Medical Practitioners 2010. P3.

http://www.rsa.ie/Documents/Licensed%20Drivers/Medical%20Aspects%20of%20Driver%20Licensing.pdf. Accessed on the 11th of July 2012.
2. Iverson DJ, Gronseth GS, Reger MA, Classen S, Dubinsky RM, Rizzo M. Practice parameter update: evaluation and management of driving risk in dementia: report of the Quality Standards Subcommittee of the Americal Academy of Neurology. Neurology.2010;74:1316-24.
3. Winblad B, Palmer K, Kivipelto M, Jelic V, Fratiglioni L, Wahlund LO, Nordberg A, Backman L, Albert M, Almkvist O, Arai H, Basun H, Blennow K, De Leon M, Decarli C, Erkinjuntti T, Giacobini E, Graff C, Hardy J, Jack C, Jorm A, Ritchie K, Van Duijn C, Visser P, Petersen R.C.. Mild cognitive impairment – beyond controversies, towards a consensus: report of the International Working Group on Mild Cognitive Impairment. J Intern Med.2004;256:240-6.
4. Ryan GA, Legge M, Rosman D. Age related changes in drivers' crash risk and crash type. Accid Anal Prev.1998;30:379-87.
5. Carr DB, Duchek JM, Meuser TM, Morris JC. Older adult drivers with cognitive impairment. American Family Physician.2006;73:1029-1036.
6. O'Neill D. Submission of the National Programme Office for Traffic Medicine RCPI/RSA. Consultation Road Safety Strategy 2013-2020. Road Safety Authority: Dublin. 17/10/2012.
7. Siren A, Meng A. Cognitive screening of older drivers does not produce safety benefits. Accid Anal Prev. 2012Mar;45:634-8.
8. Wagnera JT, Mürib RM, Nefc T, Mosimannc UP. Cognition and Driving in Older Persons. Swiss Med Wkly. 2011;140:w13136
9. Freeman EE, Gange SJ, Munoz B, West Sheila K. Driving status and risk of entry into long-term care in older adults. Am J Public Health 2006;96:1254-9.
10. Sims J, Rouse-Watson S, Schattner P, Beveridge A, Jones KM. To Drive or Not to Drive: Assessment Dilemmas for GPs. International Journal of Family Medicine.2012:417512.
11. Carr DB, Ott BR. The Older Adult Driver With Cognitive Impairment "It's a Very Frustrating Life". JAMA. 2010;303:1632-1642
12. Keane RA, O'Neill D. Independence versus safety? Forum. 2012;29:10-11.
13. Jang RW, Man-Son-Hing M, Molnar FJ, Hogan DB, Marshall SC, Auger J, Graham ID, Korner-Bitensky N, Tomlinson G, Kowgier ME, Naglie G. Family Physicians' Attitudes and Practices Regarding Assessments of Medical Fitness to Drive in Older Persons. Journal of General Internal Medicine. 2007;22:531-543.
14. www.cdc.gov/epiinfo/7/
15. Martin AJ, Marottoli R, O'Neill D. Driving assessment for maintaining mobility and safety in drivers with dementia. Cochrane Database of Systematic Reviews 2009;issue 1. Article No: CD006222.
16. National Programme Office for Traffic Medicine; Royal College of Physicians Ireland/ Road Safety Authority. Slainte agus Tiomaint: Medical Fitness to Drive Guidelines (Group 1 Drivers). Ballina, Co. Mayo. February 2013.
17. Hoggarth P, Innes C, Dalrymple-Alford J, Croucher M, Severinsen J, Gray J, Oxley J, Brook B, Abernethy P, Jones R. Assessment of Older Drivers in New Zealand: The current system, research and recommendations. Australasian Journal on Ageing. 2011;30:148-155.
18. Marshall SC, Gilbert N. Saskatchewan physicians' attitudes and knowledge regarding assessment of medical fitness to drive. CAMJ. 1999;160:1701-4.

Predictors of Outcome in Decompensated Liver Disease: Validation of the SOFA-L Score

R ffrench-O'Carroll, S Frohlich, N Murphy, N Conlon
National Liver Transplant Centre, St Vincent's University Hospital, Elm Park, Dublin 4

Abstract
A growing number of patients with liver disease are being referred for critical care support. We have recently shown that a combination of lactate and SOFA score (SOFA-L score) may provide an accurate, objective measurement of prognosis in a group of patients admitted to ICU with alcoholic liver disease.[1] This score has not been validated in an independent patient cohort. A retrospective study was performed where patients admitted to our ICU with decompensated liver disease (any cause) were included. The SOFA-L score accurately predicted in-hospital mortality in this group of patients with an area under the ROC curve of 0.83. Sensitivity and specificity were 65% and 87% respectively. SOFA-L performed superior to SOFA, MELD and MELD-Na scores. This study validates the use of the SOFA-L score in the initial 24 hours of ICU admission as an accurate predictor of mortality in this group of patients with a high mortality.

Introduction

The outcome of patients with liver cirrhosis who are admitted to an Intensive Care Unit is generally poor, with predicted mortality rates varying from 50-100%.[1,2] The high mortality in this patient cohort underlines the need for appropriate triage of patients. Both liver specific and acute physiological scoring systems can assist in predicting prognosis and thus aid in decisions regarding triage and treatment limitations. Liver specific scoring systems used commonly in clinical practice in this cohort of patients include the Child Pugh Score, the Model for End Stage Liver Disease (MELD) score and the MELD-Na score (MELD score with inclusion of sodium). Acute physiological scores commonly used in the ICU cohort include the Acute Physiology and Chronic Health Evaluation (APACHE) score and Sequential Organ Failure Assessment (SOFA) score. It is unclear which scoring system best predicts outcome in this cohort of patients. Das et al[3] showed that the SOFA scores on day 1 of ICU admission (excluding points for haematological failure) was the score that best predicted in-hospital mortality in a cohort of patients with liver cirrhosis. However the validation group used in this study comprised all-comers with cirrhotic liver disease. Previous evidence suggested that mortality rates and predictors of death may be different for patients with alcoholic liver disease admitted to ICU than in a heterogeneous group of all cause liver failure, due in the main to a younger mean age and increased preponderance of acute GI bleeds.[1] Therefore we previously set about to investigate the demographic, physiological and laboratory parameters that would provide an optimal outcome prediction model in this group of patients. We found that a combination of lactate and SOFA score, as measured on day of admission may provide an accurate, objective measurement of prognosis.[1] This model had an area under the receiver operating characteristic curve of 0.93 on day 1, with 88.7% of predictions correct. Moreover, a SOFA-L score >12 at any time point during ICU admission correlated with a mortality rate greater than 80%. Given the highly accurate predictive ability of this score we investigated it's ability to predict mortality in an independent cohort of patients admitted to ICU with all-cause liver disease.

Methods

This retrospective observational study was carried out in the Intensive Care Unit of St Vincent's University Hospital. St Vincent's is the National Liver Transplant Centre and a tertiary referral centre for patients with liver disease. Inclusion criteria for the

study included admission to ICU with a diagnosis of decompensated cirrhosis, acute liver failure or GI bleed secondary to liver failure. Exclusion criteria included those patients on a liver transplant waiting list, or those with an elective post-operative indication for ICU admission. Patient data was collected retrospectively from July 2012 to June 2013. Demographic details, cause of liver disease, and relevant physiological and laboratory data were collected as well as number of organ failures and requirement for organ support. From this data MELD, MELD Na, SOFA and SOFA-L scores were calculated. In calculation of the scores, the poorest parameters during the first 24hours of their admission were used. Patients with multiple admissions were categorised as new admissions when >72 hours elapsed between admissions. Outcomes recorded were survival to ICU discharge, hospital discharge or six months. Scores were correlated with mortality rates.

MELD scores was calculated using the formula 9.57 * ln(serum creatinine [mg/dL]) + 3.78 * ln(serum bilirubin [mg/dL]) + 11.2 * ln(international normalized ratio[INR]) + 6.43.[4] The MELD-Na score was calculated as; MELD - serum sodium -[0.025 * MELD * (140 - serum sodium)] +140, with serum sodium values varying from 126 to 157 mmol/L.[5] The Sequential Organ Failure Assessment Score was calculated from 6 variables each representing an organ system with a score ranging from 0 to 24, each representing a degree of organ dysfunction.[6] Similar to our previous study a specific organ failure was defined by SOFA score >/=3 for the specified organ.[7] The SOFA-L score involved addition of a score from 0 to 8 to the SOFA score depending on the lactate level.[1] Discriminative capacity of the model to predict mortality was assessed using receiver operating characteristic (ROC) curves. Predictive scores were compared using area under the receiver operating characteristic curves (AUROC). The sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) associated with a high probability of death (>70%) were determined from the ROC curves.

Table 1 Characteristics of patients on ICU admission

Median Length of ICU Stay	3.5 days (2 - 7)
Admission Source	
Medical Ward	39 (64%)
Outside Hospital	16 (26%)
Emergency Department	6 (10%)
Primary Hepatic Reason for Admission	
Decompensated Alcoholic Cirrhosis	28%
Infective Hepatitis	31%
Paracetamol Overdose	8%
Other	33%

Results

Of the 690 patients who were admitted to ICU during the study period, 61 patients met inclusion criteria for the study. 64% of admissions were from the medical ward, 26% from an outside hospital and 10% from the Emergency Department. Reasons for admission included gastrointestinal hemorrhage in the majority of cases, followed by hepatic encephalopathy, acute kidney injury, sepsis, respiratory failure and others unspecified. Causes for liver disease included alcoholic liver disease in 17 cases (28% cases), infective hepatitis in 19 cases (31% cases), paracetamol overdose in 5 cases (8% cases) with other causes accounting for 33%.

Details of severity of illness are contained within table 2. Mean number of organ failures were 2.96 (Range 0-6). Vasopressors were required in 54% of cases, mechanical ventilation in 57% of cases and CRRT in 41% of cases during the first 24 hours of admission. Mortality rates in the ICU, in hospital and at six months were 45.9%, 50.8% and 55.7% respectively. SOFA, SOFA-Lactate, MELD and MELD Na scores were calculated from the data collected during the first 24 hours of ICU admission. Increasing SOFA-L scores on day 1 correlated with increased mortality. The SOFA-L score accurately predicted in-hospital mortality in this group of patients with an area under the ROC curve of 0.83. Sensitivity and specificity were 65% and 87% respectively. These results were superior to SOFA score with an AUC 0.82 with sensitivity and specificity of 55% and 90%. Similarly results were superior to MELD and MELD Na with an AUC of 0.74 and 0.73 respectively. Superior results were also demonstrated for ICU mortality and mortality at 6 months. For various SOFA and SOFA-L scores the sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) associated with a very high probability of death (>70%) were determined from the ROC curves. High SOFA-L scores (>20) predicted mortality in 94% of cases and were more sensitive in predicting mortality than similarly high SOFA scores.

Table 2 Severity of illness of patients on ICU admission

Characteristic	Value
SOFA	14 (10-17)
SOFA-L	16 (11-21)
MELD	22.73 (11.8-31.3)
MELD-Na	25.8 (14.6-31.3)
Number of Organ Failures	Mean 2.96 (0-6)
Vasopressor Requirement	54%
Respiratory	Mechanical Ventilation 57% PaO2 8.58kPa (8.01-9.88) PaO2/FIO2 Ratio 128.3 (77.5-183.4)
CRRT	41%
Platelets	59.5 (41-103)
GCS	7 (3-14)
Bilirubin	128 (47-293)
Creatinine	89 (124-2013)
Lactate	4.4 (2.5-9.3)
INR	2.5 (1.7-3.8)
Na	136 (129-142)
Mortality	
a. ICU	45.9%
b. In-hospital	50.8%
c. 6 monthly	55.7%

Table 3 Mortality Predictors at 3 time points

	AUC	Sensitivity	Specificity
SOFA-L	0.83 (0.72 – 0.93)	65	87
SOFA	0.82 (0.71 – 0.93)	55	90
MELD	0.74 (0.61 – 0.87)	45	80
MELD Na	0.73 (0.59 – 0.86)	42	80
Predictors of hospital mortality			
SOFA-L	0.88 (0.79 – 0.97)	75	84
SOFA	0.86 (0.76 – 0.95)	60	86
MELD	0.78 (0.66 – 0.90)	50	82
MELD Na	0.77 (0.65 – 0.89)	50	82
Predictors of ICU mortality			
SOFA-L	0.79 (0.67 – 0.90)	59	86
SOFA	0.79 (0.68 – 0.91)	50	81
MELD Na	0.68 (0.53 – 0.82)	38	81
MELD	0.69 (0.55 – 0.83)	38	82
Predictors of 6 month mortality			

Table 4: Values for sensitivity, specificity, positive predictive value (PPV) and negative predictive value (NPV) for each calculated score

Criteria	Sensitivity	Specificity	PPV	NPV
SOFA-L Score				
SOFA-L > 15	77%	77%	76%	77%
SOFA-L > 20	61%	94%	91%	71%
SOFA-L > 23	36%	100%	100%	61%
SOFA Score				
SOFA > 12	84%	63%	69%	80%
SOFA > 16	55%	90%	84%	67%
SOFA > 21	6%	100%	100%	52%

Discussion

Harmful use of alcohol is an increasing global health problem, responsible for half of all liver-related deaths in the developed world.[8-11] An increasing demand is being placed on critical care services to treat these patients.[12] Very limited and conflicting data are available on the outcome or predictors of prognosis in ICU-admitted ALD patients.[3,13-17] Due to the paucity of available data relating to predicting outcome in this specific patient cohort, and it's relevance to the Irish healthcare setting our group previously undertook a study to determine the optimal predictors of patient mortality in those presenting to critical care with alcohol related liver disease. We observed that the in-hospital mortality rate for patients with ALD admitted to ICU is very high, although a cohort of patients who were less severely ill had a reasonable chance of survival. A combination of SOFA score and lactate (a score we dubbed the "SOFA-L" score) was a better predictor of outcome than any other general or liver-specific illness severity scores.

Given the highly accurate predictive ability of this score we investigated it's ability to predict mortality in an independent cohort of patients admitted to ICU with all-cause liver disease.[1] Over a period of 1 year we retrospectively reviewed all patients admitted to our Intensive Care Unit with decompensated liver disease. Of these patients (n = 61) 72% had a non alcohol related cause of liver disease; a similar proportion to that in other studies.[11] All patients required at least one organ support. In hospital mortality rates of 50% are similar to those for a group of cirrhotic liver patients as shown by Das et al.[3] Survival rates were better when compared to a group of patients with decompensated alcoholic liver disease in the same institution, where survival rates in the ICU, in-hospital and at six months were 40.3%, 35.5% and 29% respectively[1]. It's worth noting a survival bias may result due to exclusion of patients not referred for admission to ICU as clinicians believed they would not survive, thus leading to an underestimate of mortality rate.

The SOFA – lactate (SOFA-L) score provided a superior ability to predict both ICU and in-hospital mortality, as measured by area under the receiver operator characteristic (ROC) curve than SOFA score or the liver specific scores MELD and MELD Na. Moreover the SOFA-L score provided the optimal combination of sensitivity and specificity when compared to the other scores. A SOFA-L score of > 23 was 100% accurate in predicting mortality. These results compare favourably to our initial validation study in which the SOFA-L score was highly predictive of mortality at any time point with an area under the ROC curve for predicting in-hospital mortality of 0.93. A similar SOFA-L score (> 20) was predictive of 100% in-hospital mortality in the initial validation dataset.[1] A dataset in which a scoring system is developed will tend to overestimate the predictive ability of any model developed within that group. However this independent dataset in a population of all-comers with decompensated liver cirrhosis demonstrates that our findings of a superior predictive ability of the SOFA-L score are corroborated in an independent dataset, increasing the potential usefulness in clinical practice.

An ideal predictive score needs high specificity, should be applicable at different time points, have a plausible clinical basis, and should be easy to apply at the bedside. The SOFA-L score satisfies these criteria and gives insights into the illness trajectory of critically unwell ALD patients. In our patient population, this score helped separate those patients with a reasonable medium-term survival (SOFA-L ≤12) from those with almost certain in hospital mortality (SOFA-L > 23). Those patients with SOFA-L scores between 12 and 23 inhabit a "gray zone" in which survival is increasingly unlikely; more information is needed about these patients, especially factors that might make them more likely to survive. This relatively small study conducted in a single centre is the first step in validating the SOFA-L score in an independent cohort of patients. If it is further validated in a larger study over multiple centers, the SOFA-L score may have a role in triaging patients before ICU admission. Self-fulfilling prophecy, resulting from the use of the same parameters that will be subsequently tested for their predictive performance to make decisions on withdrawal of life-sustaining treatments, is a source of confounding common to many observational outcome studies and may have influenced our results.[18] However, we think it unlikely that a higher SOFA-L actually caused withdrawal of care—in general, death and withdrawal of care followed a sustained period of worsening organ failure.

Correspondence: R ffrench-O'Carroll
National Liver Transplant Centre, St Vincent's University Hospital, Elm Park, Dublin 4
Email: robffrench@gmail.com

References

1. Fröhlich S, Murphy N, Kong T, Ffrench-O'Carroll R, Conlon N, Ryan D, Boylan JF. Alcoholic liver disease in the intensive care unit: outcomes and predictors of prognosis. J Crit Care. 2014;29:1131.e7-1131.e13.
2. Goldfarb G, Nouel O, Poynard T, Rueff B. Efficiency of respiratory assistance in cirrhotic patients with liver failure. Intensive Care Med. 1983;9:271-3.
3. Das V, Boelle PY, Galbois A, Guidet B, Maury E, Carbonell N, Moreau R, Offenstadt G. Cirrhotic patients in the medical intensive care unit: early prognosis and long-term survival. Crit Care Med. 2010;38;2108-16.
4. Kamath PS, Wiesner RH, Malinchoc M, Kremers W, Therneau TM, Kosberg CL, D'Amico G, Dickson ER, Kim WR. A model to predict survival in patients with end-stage liver disease. Hepatology. 2001;33:464-70.
5. Kim WR, Biggins SW, Kremers WK, Wiesner RH, Kamath PS, Benson JT, Edwards E, Therneau TM. Hyponatremia and mortality among patients on the liver-transplant waiting list. N Engl J Med. 2008;359:1018-26.
6. Vincent J.L, deMendonca A, Cantraine F, Moreno R, Takala J, Suter PM, Sprung CL, Colardyn F, Blecher S. Use of the SOFA score to assess the incidence of organ dysfunction/failure in intensive care units: results of a multicenter, prospective study. Working group on "sepsis-related problems" of the European Society of Intensive Care Medicine. Crit Care Med. 1998;26:1793-800.
7. Wehler M, Kokoska J, Reulbach U, Hahn EG, Strauss R. Short-term prognosis incritically ill patients with cirrhosis assessed by prognostic scoring systems. Hepatology. 2001;34:255-61.
8. Blanchier M, Leleu H, Peck-Radosavljevic M, Valla DM, Roudot-Thoraval F. The Burden of Liver Disease in Europe: a review of available epidemiological data. The European Association for the Study of the Liver; 2013 February. [cited 12th March 2014].
9. World Health Organisation. Global Strategy to reduce the harmful use of alcohol;2010. [cited 12th March 2013].
10. Mongan D, McCormick PA, O'Hara S, Smyth B, Long J. Can Ireland's increased rates of alcoholic liver disease morbidity and mortality be explained by per capita alcohol consumption? Alcohol Alcohol. 2011;46:500.
11. Cholongitas E, Senzolo M, Patch D, Kwong K, Nikolopoulou V, Leandro G, Shaw S, Burroughs AK. Risk factors, sequential organ failure assessment and model for end-stage liver disease scores for predicting short term mortality in cirrhotic patients admitted to intensive care unit. Aliment Pharmacol Ther. 2006;23;883-93.
12. Welch C, Harrison D, Short A, Rowan K. The increasing burden of alcoholic liver disease on United Kingdom critical care units: secondary analysis of a high quality clinical database. J Health Serv Res Policy. 2008;13 Suppl 2:40-4.
13. Kress JP, Rubin A, Pohlman AS, Hall JB. Outcomes of critically ill patients denied consideration for liver transplantation. Am J Respir Crit Care Med. 2000;162:418-23.
14. Singh N, Gayowski T, Wagener MM, Marino IR. Outcome of patients with cirrhosis requiring intensive care unit support: prospective assessment of predictors of mortality. J Gastroenterol. 1998;33:73-9.
15. Mackle IJ, Swann DG, Cook B. One year outcome of intensive care patients with decompensated alcoholic liver disease. Br J Anaesth. 2006;97:496-8.
16. Pan HC, Jenq CC, Tsai MH, Fan PC, Chang CH, Chang MY, Tian YC, Hung CC, Fang JT, Yang CW, Chen YCet al. Risk models and scoring systems for predicting the prognosis in critically ill cirrhotic patients with acute kidney injury: a prospective validation study. PLoS One.2012;7:e51094.
17. Kavli M, Strom T, Carlsson M, Dahler-Eriksen B, Toft P. The outcome of critical illness in decompensated alcoholic liver cirrhosis. Acta Anaesthesiol Scand.2012;56:987-94.
18. Rossetti AO, Oddo M, Logroscino G, Kaplan PW. Prognostication after cardiac arrest and hypothermia: a prospective study. Ann Neurol. 2010;67:301-7.

Using Softcast to Treat Torus Fractures in a Paediatric Emergency Department

O Callender, S Koe
AMNCH, Tallaght, Dublin 24

Abstract
Wrist torus fractures in children are a frequent reason for Emergency Department (ED) visits. Torus fractures traditionally were treated with a backslab cast in the Children's ED and then referred to the Fracture Clinic. Guidelines were developed in order to standardise the care for children who attended the ED with a torus fracture. All patients who were seen & treated by the Advanced Nurse Practitioner (ANP) over a one year period with a diagnosis of a torus fracture were treated with immobilisation in a softcast. 119 patients met the criteria for inclusion. There were no adverse events recorded and no patient required subsequent visits to the Fracture Clinic. There was a cost savings of €18596 as compared with the normal referral pathway to the Fracture Clinic.

Introduction

Wrist torus fractures in children are a frequent reason for Emergency Department (ED) visits. Torus fractures most commonly occur at the distal radius[1] following a fall onto an outstretched hand or a hyperextension wrist injury[2] secondary to a sporting activity. Management for wrist torus fractures, varies greatly among several studies[3]. Torus fractures traditionally were treated with a backslab cast in the ED and then referred to the Fracture Clinic for review & application of a full cast. The objective was to develop a guideline in order to standardise the care and length of immobilisation for children who attended the ED with a torus fracture. Softcast is slightly different in composition to traditional materials that a cast may be made of[4]. It provides the unique combination of flexibility and resilience resulting in the maintenance of muscle tone, improved circulation and patient comfort. Increased circulation has an important role in the complex process of fracture healing and in the maintenance of function[5]. There is an improved psychological and physical effect since the patient is more comfortable and can return to normal life more quickly. A comfortable cast is a cast which combines pain relief by providing support where needed, with function where possible[6]. One of the main objectives of functional immobilisation in a softcast is the early rehabilitation of the patient as soon as possible.

Methods

Development of Guidelines for the treatment of torus fractures and a Patient information leaflet was discussed with the Orthopaedic Consultants. Over a 1 year period, the ANP followed the guideline in order to manage torus fractures with immobilisation in a softcast without orthopaedic referral. All patients were given both verbal & written instructions to return to ED for follow up if certain issues arose. All of the patients were instructed to avoid contact sports for two weeks following cast removal. A retrospective chart review was carried out for all patients who presented with torus fracture's following guideline introduction & implementation. All of the radiographs had been reviewed by a Paediatric Radiologist within 24 hours. The x rays of all cases not referred for orthopaedic opinion were reviewed independently by an ED Consultant to see if the management was appropriate.

Results

The impact of the guideline implementation was assessed. 119 patients met the criteria for inclusion & were treated with a softcast. There were no adverse events recorded and no patient required subsequent visits to the Fracture Clinic. There were no clinically significant complications that arose in any patient. None of the patients had a radiology report suggesting a more serious fracture. The ED Consultants did not identify any cases as requiring follow up.

Discussion

This review highlights that treatment in a softcast appears to be appropriate for a child with a torus fracture with specific written and verbal instructions. We analysed the cost of the treatment of each patient. We used standard costs provided by the hospital finance department. The cost of treatment of the 119 patients using softcast was €654.50. The cost of treatment of 119 patients before introducing softcast was €19,290.50. The cost of an Out Patient Fracture Clinic visit is €147 per patient and they also required application of a softcast in the OPD at €5.50 per person. The calculated saving of these 119 patients to the health service was calculated at €18,596 over a one year period. A simple treatment for this injury has being described, which has considerable economic implications. Money was found to be saved in terms of time & resource management for the health care system. Subsequent follow-up visits for review as well as follow-up for cast removal add to health care cost. It is also time consuming for the patient & family. Torus fractures in the radius may be safely treated in a softcast which is applied in the ED without adverse effects. This guideline has now been implemented in the ED.

Correspondence: O Callender
AMNCH, Tallaght, Dublin 24

References

1. Farbman KS, Vinci RJ, Cranley WR, Creevy WR, & Bauchner H, The role of serial radiographs in the management of pediatric torus fractures. Archives of Pediatric Adolescence Medicine. 1999: 153: 923–925.
2. Van Bosse, HJP, Patel, RJ, Thacker, M, Sala, DA. Minimalistic approach to treating wrist torus fractures Journal of Orthopaedics. 2005: 25: 495-500.
3. Firmin F. & Crouch R. "Splinting versus casting of "torus" fractures to the distal radius in the paediatric patient presenting at the emergency department (ED): a literature review". International Emergency Nursing. 2009: 17: 173–8.
4. Atkins LM, Cast changes: synthetic versus plaster. Paediatric Nursing. 1997 July-August; 12.
5. Uthoff HK, & Jaworski ZFG Bone loss in response to long term immobilization. The Journal of Bone & Joint Surgery. 1978: 60B: 420-429.
6. Hulth A, Fracture healing: a concept of competing healing factors. Acta Orthopaedica Scandinavian Journal. 1980: 51: 5-8.

Transition to Adult Care for Adolescents with Diabetes – A National Survey

JB Letshwiti[1], PC Scully[1], A Quinn[1], C O'Gorman[1,2]
[1]Department of Paediatrics, The Children's Ark, University Hospital, Dooradoyle, Limerick
[2]Department of Paediatrics, Graduate Entry Medical School, University of Limerick

Abstract
Currently, there are no national guidelines on transition from paediatric to adult services for children with Type 1 Diabetes Mellitus (T1DM) in Republic of Ireland. There are 19 hospitals in Republic of Ireland looking after children with T1DM. Seventeen have a designated clinic for children with T1DM. Ten have a transition clinic for adolescents with T1DM. Most centres transition after patients finish secondary education. Six centres hold transition information sessions and 6 have access to a psychologist. Fifteen centres describe a gradual transition process. There is little national consistency in transition and there is a need for a collaborative national framework on T1DM transition.

Introduction

The incidence of type 1 diabetes mellitus (T1DM) is increasing worldwide, most rapidly in children[1]. Transition to adult care occurs during a vulnerable time for those with chronic childhood diseases because of the psychological and physiological changes of adolescence[3]. Optimising glycaemic control reduces the risks of microvascular and macrovascular complications of T1DM[4] but glycaemic control often deteriorates during adolescence and transition[2]. Internationally, patterns of transition vary by location and health care delivery system, and are influenced by local practices and resources, by preferences of the patient and family, and by national policies[3,5,6]. Transition is a multidimensional, multidisciplinary process that addresses the medical, psychosocial, educational, and vocational needs of adolescents as they move from children's services to adult services[7]. Optimum transition requires sufficient resources to address these areas[7]. Currently, in Ireland, national guidelines or models of transition care for children with T1DM are lacking. The aim of this study was to evaluate the current practices of transition care for adolescents with T1DM in the Republic of Ireland (RoI).

Methods

This study was a cross-sectional, mixed-methods data collection study. A questionnaire was developed, trialled and revised locally, to gather information on the local principles of transition. Questionnaire data were supplemented by telephone consultation with a member of each of the 19 paediatric T1DM multidisciplinary teams (MDT) nationally. Follow-up interviews were conducted for additional data collection, as required. Summary statistics were applied to the data.

Results

All 19 units (100%) that provide care to children with T1DM in RoI responded to both the questionnaire and telephone interview. The number of children attending each service varied (range 31-520) with a combined total of 2,768 children attending all 19 units. The largest numbers of children were reported attending units in Dublin (range 300-520). Self-reported staffing levels (for doctors, diabetes nurses, dieticians, psychologists and social workers) for all units were lower than national guidelines[8]. The main issues relating to transition are summarised in Table 1. Screening practices prior to transition were very similar among all units. Transition age varied between 16 and 18 years, but most units transition children after completing secondary education. Self-reported barriers to optimising transition practices included lack of adequate MDT staffing levels and lack of transition guidelines.

Table 1 tSummary of transition details

	N=19	%
Designated diabetes clinics	17	89.5
Psychology services	6	31.6
Adult endocrinologists in the same hospital	15	78.9
Transition clinic	10	52.6
Screening pre transition	19	100
Individual transition	15	78.9
Template letter for transition	3	15.8
Gradual transition process	15	78.9
Continuity with the same diabetes nurse	13	68.4
Continuity with the same dietician	9	47.4
Continuity with the same eye service	17	89.5
Information sessions on transition	6	31.6
Group discussions on transition	3	15.8
Choice of transition service	15	78.9

Discussion

The transition period is increasingly recognised as an important part of paediatrics and adult medicine, but one which requires resource investment. When transition is poorly organised, the results include poor attendance at adult clinics and increased risks of short-term and long-term complications[3,4]. The short-term complications of T1DM, such as diabetic ketoacidosis, are the leading cause of hospitalizations and death among children with T1DM[9]. The respondents in our study cited lack of resources and lack of national guidelines as barriers to optimising transition in their own units. Many units could not provide data on adolescents following transition. There appears to be disconnect between paediatrics and adult T1DM MDT services, which could be improved with more resources and with a national database. In this study, it was not possible to reliably evaluate the short term complications experienced by adolescents with T1DM following transition. The majority of respondents from units with transition clinics were not aware of the transition practices in other units. Some units were trying to establish a transition clinic at the time of the survey. Of importance, 5/16 units with some post-transition data collection described that post-transition, some patients do not attend adult clinics. It is impossible to estimate based on currently available data, how many patients disengage from adult services following transition, but this is an important area for further research and quality improvement. Our study has limitations. The information provided by participants is subject to recall bias and double-counting of patients attending more than centre is likely. One strength of tour study is that all 19 units nationally freely contributed information; this belies the importance of this topic to the T1DM MDTs nationally. In summary, transition care for children with T1DM in RoI demonstrates an opportunity for a national quality improvement initiative, aiming for equity of access and care nationally. A national framework for transition would facilitate T1DM care teams who are in the process of setting up or revising their own transition clinic.

Correspondence: C O'Gorman
Department of Paediatrics, The Children's Ark, University Hospital, Dooradoyle, Limerick
Email: clodagh.ogorman@ul.ie

Acknowledgements
All those who took part in the study.

References

1. Daneman D. Type 1 diabetes. Lancet 2006; 367:1-12
2. Lotstein DS, Seid M, Klingensmith G, Case D, Lawrence JM, Pihoker C, Dabelea D, Mayer-Davis EJ, Gilliam LK, Corathers S, Imperatore G, Dolan L, Anderson A, Bell RA, Waitzfelder B, for the SEARCH for

Diabetes in Youth Study Group. Transition from pediatric to adult care for youth diagnosed with type 1 diabetes in adolescence. Paediatrics 2013;131:e1062-e1070
3. Nakhla M, Daneman D, To T, Paradis G, Guttmann A. Transition to adult care for youths with diabetes mellitus: Findings from a universal health care system. Pediatrics 2009; 124:e1134-e1141
4. The Diabetes Control and Complications Trial Research Group. The effect of intensive treatment of diabetes on the development and progression of long term complications of insulin dependent diabetes mellitus. N Engl J Med. 1993;329:977-986
5. Busse FP, Hiermann P, Galler A, Stumvoll M, Wiessner T, Kiess W, Kapellen TM. Evaluation of patients' opinion and metabolic control after transfer of young adults with type 1 diabetes from a pediatric diabetes clinic to adult care. Horm Res 2007;67:132-138
6. Pacaud D, Yale JF. Exploring a black hole: transition from paediatric to adult care services for youth with diabetes. Paediatr Child Health (Oxford) 2005;10:31-34
7. McDonagh JE, Viner RM. Lost in transition? Between paediatric and adult services. BMJ. 2006;332:435-6
8. Diabetes Expert Advisory Group First Report. Health Service Executive. November 2008. www.hse.ie
9. Edge JA, Ford-Adams ME, Dunger DB. Causes of death in children with insulin dependent diabetes 1990-96. Arch Dis Child 199;81:318-323.

Bird Fanciers Lung in Mushroom Workers

J Hayes, M Barrett
Cavan General Hospital, Cavan Town, Cavan

Abstract
Hypersensitivity pneumonitis has been described in mushrooms workers caused by exposure to mushroom or fungal spores in the compost used to grow mushrooms. We describe two mushroom workers who developed hypersensitivity pneumonitis due to exposure to avian proteins found in poultry manure which was used in producing mushroom compost. Both workers were employed in the compost production area. Both presented with typical features of HP. Both workers had negative serological and precipitin studies to Apergillus fumigatus, Saccarhopolyspora rectivirgula and thermophilic actinomycetes but had positive responses to poultry antibodies. Neither was exposed to mushroom spores. Both workers required initial therapy with corticosteroids. Relocation with avoidance of further exposure resulted in complete cure in one worker and change in work practice with the use of personal protections equipment resulted in the second workerclinical stabilisation. These are the first reported cases of bird fanciers lung in mushroom workers.

Introduction

Hypersensitivity pneumonitis (HP) is an immunologically mediated diffuse lung disease caused by repeated exposure to organic agents in sensitised individuals[1]. In mushroom workers HP has been described due to exposure to various types of mushrooms spores as well as bacterial and fungal spores such Saccarhopolyspora rectivirgula, Thermophilic actinomycetes and Aspergillus fumigatus.[2-4] Bird fancier's lung is induced by exposure to excreta and proteinaceous material from various poultry, resulting in a dried dust, finely dispersed throughout the manure[5]. We describe for the first time two mushroom workers who developed HP due to exposure to poultry excreta used in the production of mushroom compost

Case Report

A 37-year old non smoker female presented with persistent cough, shortness of breath and night sweats over 18 months. Her symptoms briefly improved with absence from work. There was no prior exposure to agricultural antigens. The patient worked as a scientist in a mushroom compost processing plant. There was no exposure to mushroom spores. Pulmonary function tests (showed normal spirometry but a reduced diffusion capacity (61% pred.). High resolution computed tomography thorax (HRCT) showed diffuse bilateral parenchymal micronodularity in a miliary distribution (Figure 1). Bronchoalveolar lavage (BAL) showed 74% alveolar macrophages, 13% lymphocytes and 1% neutrophils with no organisms, eosinophils or acid-fast bacilli seen. Transbronchial biopsy (TBB) of the right lower lobe revealed non-specific inflammatory change of the bronchioles.

MMcV, a 56-year old male non-smoker, presented with a long-standing cough productive of green sputum and dyspnoea despite multiple courses of antibiotics He worked as a farmer. He also worked as a contract cleaner in the compost area of the same mushroom processing plant. There was no exposure to mushroom spores CXR showed numerous bilateral alveolar opacities (Figure 2). Spirometry was normal but diffusion capacity was reduced (44% pred). HRCT showed bilateral diffuse ground glass opacification. BAL revealed lymphocyte count 53%, macrophages 45%, neutrophils 2% with no eosinophils, organisms or acid-fast bacilli seen. TBB of the right lower lobe showed a mild bronchiolitis with patchy focal fibrosis.

In both cases serology was negative for Aspergillus fumigatus,Thermoactinomyces vulgaris and Saccharopolyspora

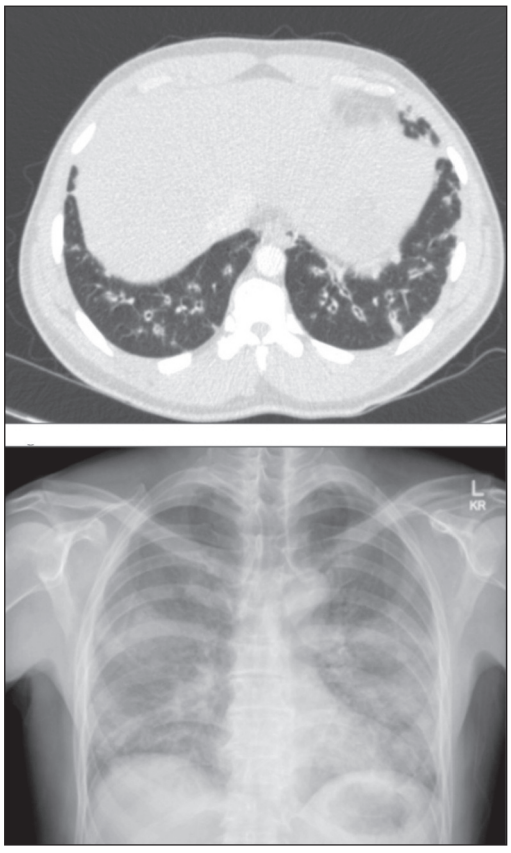


Figure 1

Figure 2

rectivirgula however avian precipitin studies were positive to chicken feathers, chicken droppings and pigeon droppings. Direct challenge was not carried out. SMcG was treated with 40mg prednisolone tapering over three months. She was removed from her working environment, Complete resolution of her symptoms occurred and subsequent HRCT and PFTs were normal. MMcV was also treated with prednisolone with the introduction of personal protective equipment and continues to be monitored in the outpatients with stable disease

Discussion

We describe two cases of bird-fancier's lung in mushroom workers working in a compost production area. Mushroom worker's lung has been attributed to exposure to mushroom spores or fungal spores in compost. In our two patients, there was no exposure to mushroom spores and precipitin studies were negative to bacteria and fungi. Both workers demonstrated significant precipitin-positive serology to avian proteins. Mushroom compost is produced from a combination of straw, horse manure, gypsum and inorganic nitrogen. A site visit found the compost production area was three miles from the mushroom-growing houses. Poultry manure was used in the production of compost due to local availability. Bird fancier's lung is induced by exposure to excreta and proteinaceous material from various poultry, resulting in a dried dust, finely dispersed throughout the manure. In summary, we present two cases of bird fancier's lung with a typical phenotype but unexpected exposure.

Correspondence: J Hayes
8 Berkeley Rd, Dublin 7
Email jhayes@occmed.gmail.com

References

1. Lacasse Y, Girard M, Cormier Y. Recent advances in hypersensitivity pneumonitis. Chest 2012;142:208-17
2. Bringhurst L S, Byrne R N, Gershon-Cohen J. Respiratory disease of mushroom workers – farmers lung J Amer Med Assoc 1959;171:101-115
3. Tanaka H, Saikai T, Sugawara H Three year follow up study of allergy in workers in a mushroom factory Respir Med 2001;95:943-948
4. The prevalence of respiratory symptoms in mushroom workers in Ireland. J P Hayes J Rooney Occup Med 2014;64:530-8
5. Chan A L, Juarez,M M, Leslie K O Ismail H A Alberston T E Bird facniers lung: a state of the art review. Clin Rev Allergy Immunol 2012:43:69-83.

Hodgkin Lymphoma in a Patient with Chronic Lymphocytic Leukaemia – A Rare Presentation of Richter's Transformation

P De La Harpe Golden, C Egan, M Leader, PT Murphy, J Quinn
Beaumont Hospital, Beaumont, Dublin 9

Abstract

Richter's transformation of chronic lymphocytic leukaemia (CLL) to high-grade B-cell Non-Hodgkin lymphoma occurs in < 5% of CLL cases. Transformation of CLL to Hodgkin Lymphoma is a much rarer event and here we describe a patient who developed Richter's transformation into a Hodgkin Lymphoma presenting as rapidly progressive hepatosplenomegaly.

Introduction

CLL is the most common haematological cancer affecting adults with an incidence of 4/100,000 in Europe[1]. The disease often remains indolent for many years with anti-CLL therapy only commenced when there is evidence of advanced/progressive disease. Mostly CLL is a low-grade disorder, however in <5% of cases the disease undergoes transformation to an aggressive high-grade lymphoma; so-called Richter's transformation (RT) with the majority of patients developing a high-grade B-cell Non-Hodgkin Lymphoma e.g. Diffuse Large B-Cell Lymphoma (DLBCL)[2]. In contrast, RT to Hodgkin Lymphoma (HL-variant RT) is a very rare occurrence.

Case Report

A 76 year old man presented with a short history of fever, weight loss, abdominal distension, and deranged liver function tests (Bilirubin 21 µmol/L, alkaline phosphatase 401 IU/L, gamma-glutamyl transferase 148 IU/L) with lactate dehydrogenase also elevated at 602 IU/L on admission. He had been diagnosed with CLL 5 years previously and his disease was known to carry the 17p deletion which is associated with an adverse outcome. Previous treatment had included corticosteroids and a 12-week course of the anti-CD52 monoclonal antibody alemtuzumab last administered 3 months previously. Computed Tomography (CT) scan showed massive hepatosplenomegaly with multiple low-attenuation foci. In light of his recent immunosuppressive treatment infection was suspected, however liver biopsy displayed features consistent with infiltration by Hodgkin lymphoma with characteristic positive staining for CD15 and CD30. Despite immediate treatment with high-dose methyl-prednisolone, he passed away just 25 days following admission.

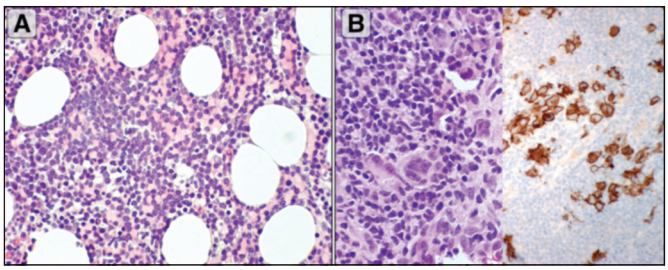


Figure 1 Histology and radiology of transformation. Bone marrow from 2007 (A) showed hypercellularity and an interstitial infiltrate of small lymphoid cells, in keeping with CLL. Liver biopsy in 2012 showed infiltration with B lymphocytes with an infiltrate of larger cells showing strong CD30 and CD15 expression consistent with HL (B).

Discussion

In this case we describe a patient with poor prognosis CLL who developed a HL-variant RT. Unlike de novo DLBCL, RT carries a very poor prognosis with median overall survival of approximately 8 months[3,4]. Although, it has been suggested that the rarer HL-variant RT may carry a better prognosis than the typical DLBCL transformation[5,6], the disease may follow a heterogeneous course with widely varying median survival reported, ranging from 9 months to 39.5 months[2-4]. HL is characterised by the presence of Reed-Sternberg (RS) cells and two variants of RS cell distribution have been described in HL-variant RT. The first consists of RS cells scattered on a background of CLL cells perhaps representing a 'true' transformation of the same clonally identical B cell as was previously present, whilst the latter shows RS cells separate to the CLL cells, in a polymorphous inflammatory background and may represent a 'de novo' HL arising in a patient

with CLL[6]. The majority of HL-variant RT are thought to consist of the de novo variant[6] unlike the more common variant of RT where approximately 20% of DLBCL lineages are clonally unrelated to the underlying CLL[7]. This differentiation in DLBCL-RT has significant clinical implications with one study of 86 cases showing a median survival of 62.5 months for clonally unrelated DLBCL versus just 14.2 months for clonally related DLBCL[7]. Although all HL histological subtypes have been described in reports of HL-variant RT[6], it is not known if prognosis varies according to subtype.

Overall, HL-variant RT is less well studied than the DLBCL variant, however, some studies suggests a more prominent role for Epstein Barr Virus (EBV) infection in the development of HL-variant of RT[3,6,8]. It has also been suggested that previous treatment with purine analogue chemotherapy (e.g. fludarabine) or alemtuzumab, may increase the risk of RT in patients with CLL[9-11]. However in a randomised trial of 521 patients receiving either fludarabine or chlorambucil as initial anti-CLL therapy, purine-analogue treatment was not found to increase the risk of RT[12]. Other authors have postulated that treatment with immunomodulatory agents may reactivate EBV infection, promoting neoplastic transformation[8,10,13]. In summary, HL-variant RT is a very rare entity that presents a major diagnostic and management challenge to treating physicians. As our knowledge of the biological basis of CLL continues to expand and new agents become available (e.g. Ibrutinib - Bruton's tyrosine kinase inhibitor), new opportunities to understand the development of RT and how to treat it are likely to present themselves.

Correspondence: P De La Harpe Golden
Beaumont Hospital, Beaumont, Dublin 9
Email: peter.delaharpe.golden@gmail.com

References

1. Sant M, Allemani C, Tereanu C, De Angelis R, Capocaccia R, Visser O, Marcos-Gragera R, Maynadié M, Simonetti A, Lutz JM, Berrino F; HAEMACARE Working Group. Incidence of hematologic malignancies in Europe by morphologic subtype: results of the HAEMACARE project. Blood. 2010 Nov 11;116:3724-34.
2. Tsimberidou AM, O'Brien S, Kantarjian HM, Koller C, Hagemeister FB, Fayad L, Lerner S, Bueso-Ramos CE, Keating MJ. Hodgkin transformation of chronic lymphocytic leukemia: the M. D. Anderson Cancer Center experience. Cancer. 2006 Sep 15;107:1294-302.
3. Tsimberidou AM, O'Brien S, Khouri I, Giles FJ, Kantarjian HM, Champlin R, Wen S, Do KA, Smith SC, Lerner S, Freireich EJ, Keating MJ. Clinical outcomes and prognostic factors in patients with Richter's syndrome treated with chemotherapy or chemoimmunotherapy with or without stem-cell transplantation. J Clin Oncol. 2006 May 20;24:2343-51.
4. Tadmor T, Shvidel L, Goldschmidt N, Ruchlemer R, Fineman R, Bairey O, Rahimi-Levene N, Herishanu Y, Yuklea M, Arad A, Aviv A, Polliack A. Hodgkin's variant of Richter transformation in chronic lymphocytic leukemia; a retrospective study from the Israeli CLL study group. Anticancer Res. 2014 Feb;34:785-90.
5. Brecher M, Banks PM. Hodgkin's disease variant of Richter's syndrome. Report of eight cases. Am J Clin Pathol. 1990 Mar;93:333-9.
6. Bockorny B, Codreanu I, Dasanu CA. Hodgkin lymphoma as Richter transformation in chronic lymphocytic leukaemia: a retrospective analysis of world literature. Br J Haematol. 2012 Jan;156:50-66.
7. Rossi D, Spina V, Deambrogi C, Rasi S, Laurenti L, Stamatopoulos K, Arcaini L,Lucioni M, Rocque GB, Xu-Monette ZY, Visco C, Chang J, Chigrinova E, Forconi F,Marasca R, Besson C, Papadaki T, Paulli M, Larocca LM, Pileri SA, Gattei V,Bertoni F, Foà R, Young KH, Gaidano G. The genetics of Richter syndrome reveals disease heterogeneity and predicts survival after transformation. Blood. 2011 Mar24;117:3391-401.
8. Zavdy O, Twig G, Kneller A, Yaniv G, Davidson T, Schiby G, Amital H. Richter syndrome: chronic lymphocytic leukemia transformation into Hodgkin's disease. Isr Med Assoc. J. 2013 Oct;15:650-1.
9. Rossi D. Richter syndrome and fludarabine: a controversial relationship. Leuk Lymphoma. 2013 Feb;54:213-4.
10. Thornton PD, Bellas C, Santon A, Shah G, Pocock C, Wotherspoon AC, Matutes E, Catovsky D. Richter's transformation of chronic lymphocytic leukemia. The possible role of fludarabine and the Epstein-Barr virus in its pathogenesis. Leuk Res. 2005 Apr;29:389-95.
11. Parikh SA, Rabe KG, Call TG, Zent CS, Habermann TM, Ding W, Leis JF, Schwager SM, Hanson CA, Macon WR, Kay NE, Slager SL, Shanafelt TD. Diffuse large B-cell lymphoma (Richter syndrome) in patients with chronic lymphocytic leukaemia (CLL): a cohort study of newly diagnosed patients. Br J Haematol. 2013 Sep;162:774-82.
12. Solh M, Rai KR, Peterson BL, Kolitz JE, Appelbaum FR, Tallman MS, Belch A, Larson RA, Morrison VA. The impact of initial fludarabine therapy on transformation to Richter syndrome or prolymphocytic leukemia in patients with chronic lymphocytic leukemia: analysis of an intergroup trial (CALGB 9011). Leuk Lymphoma. 2013 Feb;54:252-4.
13. Jamroziak K, Grzybowska-Izydorczyk O, Jesionek-Kupnicka D, Gora-Tybor J, Robak T. Poor prognosis of Hodgkin variant of Richter transformation in chronic lymphocytic leukemia treated with cladribine. Br J Haematol. 2012 Jul;158:286-8.

Paediatric Tonsillotomy – An Irish Perspective on Potential Evolving Indications

C Fitzgerald, JC Oosthuizen, M Colreavy
Department of Paediatric Otolaryngology, Head and Neck Surgery, Children's University Hospital, Temple St, Dublin 1

Abstract
Tonsillotomy is the preferred treatment of some otolaryngologists for younger patients (under 3 years) with low body weight (under 15kgs) and a history of obstructive sleep apnoea. The use of the technique in the same patient cohort for recurrent tonsillitis remains controversial. The aim of this study was to evaluate the indications and outcomes of paediatric patients undergoing tonsillotomy (with or without adenoidectomy) at a paediatric ENT centre in Ireland. Patients were identified from a prospectively maintained database and chart review was completed. A total of 23 patients were identified who underwent tonsillotomy. The commonest indication was Obstructive Sleep Apnoea (OSA) in 15 patients (65%). Outcomes following tonsillotomy compared favourably with traditional tonsillectomy. No intra-operative or post-operative complications were recorded (0%). No patients required readmission or later tonsillectomy (0%). At follow-up 19/23 patients with OSA (82.6%) had complete symptom resolution. Tonsillotomy appears to represent a safe, effective treatment option in the paediatric population, however, its role in recurrent tonsillitis remains controversial.

Introduction
Tonsillotomy, or subtotal tonsillectomy, has regained popularity as a concept since the early 1990's but remains a selectively-used technique in most specialist otolaryngology practices. Its role has been highlighted particularly in the treatment of children with obstructive sleep apnoea (OSA) who are of a low weight (<15kgs) or under 36 months of age[1]. The technique relies on the principle that utilising intracapsular dissection of the tonsil

reduces morbidity[2]. The risk of morbidity, in particular of haemorrhage causing hypovolaemia, is considered too high for traditional extracapsular tonsillectomy to be carried out in patients of this young age or low bodyweight. The role of tonsillotomy in the treatment of recurrent tonsillitis, however, remains controversial given the potential for further infection of residual tonsillar tissue. The aim of ourstudy was to review the indications and outcomes of tonsillotomy carried out at a tertiary paediatric otolaryngology centre between 2008 and 2014. This represents the first published data series relating to tonsillotomy in Ireland.

Methods

Patients who underwent tonsillotomy under a single surgeon (MC) at Children's University Hospital, Temple Street between 2008 and 2013 were identified from a prospectively maintained database of surgical procedures. Retrospective review of relevant patient data was completed. Data was collated and analysed. Intracapsular tonsillotomy (subtotal tonsillectomy) was completed under direct vision using a 12° microdebrider (Medtronic XO Inc.) in all cases. Tonsillar tissue was resected in a gradual, stepwise fashion, leaving the tonsillar capsule intact with a small rim of overlying residual tissue. Additional haemostasis was achieved using bipolar diathermy where required. Standard institutional pre-operative and post-operative protocols were followed. Additional outpatient follow-up was completed following tonsillotomy compared with patients undergoing tonsillectomy.

Results

In total, 23 tonsillotomies were performed between 2008 and 2014. Of these, 21 were carried out in combination with endoscopic adenoidectomy. 15 male and 8 female patients were included. Median age was 31 months (range 23 to 83 months). The median weight of patients included was 14.8kg (range 12 to 19.9kg). OSA represented the most common indication with 15 patients. 7 further patients had a history of OSA and tonsillitis (at least 1 episode prior to presentation). 1 child (age 2 years 6months, weight 14.7kg) presented with a history of severe recurrent tonsillitis complicated by complex febrile convulsions requiring repeat admission. Comorbidities recorded included genetic syndromes (n=3), cleft palate (n=2), asthma (n=2) and febrile convulsions (n=1).

The median operative time recorded was 15 minutes. No intra-operative complications were recorded. The median total estimated blood loss was <10mls. No post-operative complications (primary orsecondary haemorrhage, readmission with dehydration, increased analgesic requirements, delayed return to diet) were seen in any case. All patients were discharged at day 1 post-operation as standard. A follow-up review was arranged for all patients who underwent tonsillotomy. At follow-up, 82.6% (n=19/23) of patients with OSA symptoms on presentation had complete resolution of symptoms.The other 17.4% (n=4/23) had improved symptomatology, with no persistent apnoeic symptoms but some persistent snoring. No patients were reported to have any late complications. To date, no patients have proceeded to require complete extracapsular tonsillectomy (follow-up range 6 to 62 months).

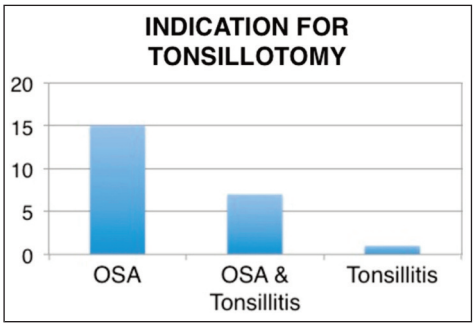


Figure 1

Indications for tonsillotomy – Obstructive Sleep Apnoea (OSA) (n=15), OSA & Tonsillitis (n=7) and Tonsillitis (n=1)

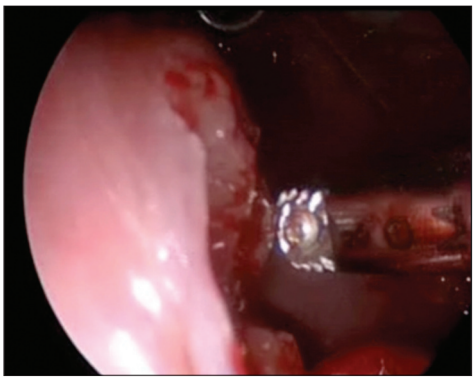


Figure 2

Intraoperative image from tonsillotomy showing microdebrider

Discussion

Throughout the 1800s, tonsillotomy by tonsillar guillotine represented the preferred treatment for recurrent tonsillitis due to the speed of the procedure and acceptably low bleeding risk. Concerns were later raised, however, that residual tonsillar tissue left in situ on the tonsillar capsule following tonsillotomy could increase risk of further infection (tonsillitis) post-operation[3]. With improvements in anaesthetic techniques and the introduction of halothane in the 1900s, otolaryngologists moved to using total extracapsular tonsillectomy as standard. Linder et al. and Hulcrantz et al. published the first papers describing what is now regarded as the 'modern tonsillotomy' in 1999 for children with OSA using carbon dioxide laser[4,7,5]. Since that time, a series of studies have examined the role of tonsillotomy in the treatment of OSA, with two major systematic reviews published in 2012[6,7]. Of particular interest is robust evidence highlighting tonsillotomy as a safe treatment technique in children with OSA who are less than 36 months of age and less than 15 kg bodyweight[1]. Total extracapsular tonsillectomy has previously been deemed to carry excessive risk of bleeding in this group and was rarely offered. Given the potential complications of untreated severe OSA in this age group, tonsillotomy represented a welcome potential solution in the management of this clinically challenging patient cohort. The principle behind tonsillotomy relies on leaving a rim of tonsillar tissue on the tonsillar capsule. As this technique leaves a theoretical potential for further infections, the majority of studies have excluded any patients with a history of tonsillitis and examined only OSA data[2]. In those studies published to date, tonsillar regrowth rates following tonsillotomy range from 3.2%to 16.7%[6]. Patients were shown to suffer tonsillitis following tonsillotomy in between 0.7% to 5.8% of cases[6]. These figures indicate potential low regrowth and recurrent tonsillitis rates following tonsillotomy, however, there is a lack of data relating to patients with recurrent tonsillitis as an indication for tonsillotomy to confirm rates in that group. Reduced rates of readmission due to dehydration, as well as reduced analgesic use post-operatively have been reported following tonsillotomy[6]. While primary bleeding rates remain approximately the same, secondary bleeding rates are significantly lower[7]. Our data appears to support these reported findings. In our group, we recorded no intra-operative and no post-operative complications. No patients required readmission post-operatively and to date no patients have undergone total extracapsular tonsillectomy.

In our series we note one patient under age 3 who underwent tonsillotomy for severe recurrent tonsillitis with associated complex febrile convulsions. Little data exists regarding the potential application of the modern tonsillotomy in this group. One large series examining tonsillotomy for recurrent tonsillitis in children (median age 7.8 years) described a rate of tonsillitis following surgery of 16.3% for tonsillotomy compared with 14.5% for extracapsular tonsillectomy[8]. Another study of adolescents and adults found 1.3% of patients later required formal extracapsular tonsillectomy following tonsillotomy[9]. This data appears to suggest similar risk of post-tonsillotomy infection and requirement for further surgery in tonsillotomy versus tonsillectomy patients. Both papers, however, focused onpatients over 3 years of age and 15kg bodyweight. Treating patients under age 3 with severe recurrent tonsillitis and associated comorbidities remains a

challenge for the paediatric otolaryngologist, and indeed the primary care physician. Excessive morbidity in the form of bleeding and risk of hypovolaemic shock and death continues to preclude total extracapsular tonsillectomy. In the setting of severe recurrent infections requiring antibiotic treatment and hospital admission, however, improved treatment solutions are being sought inthe management of this patient group. Further research is required to establish whether tonsillotomy may represent a safe future alternative in the paediatric population under age 3.

In conclusion, tonsillotomy represents a safe, effective treatment method in the setting of OSA in children, even when under 3 years of age and less than 15kg. Low rates of post-operative tonsillitis and tonsillar regrowth in literature published to date suggests that a role may exist for this technique to be applied selectively in the setting of severe recurrent tonsillitis in children under 3 years and less than 15kg.

Correspondence: C Fitzgerald
Department of Paediatric Otolaryngology, Head and Neck Surgery, Children's University Hospital, Temple St, Dublin 1
Email: cfitzcontact@gmail.com

References

1. Bent JP, April MM, Ward RF, Sorin A, Reilly B, Weiss G. Ambulatory powered intracapsular tonsillectomy and adenoidectomy in children younger than 3 years. Arch Otolaryngol Head Neck Surg. 2004;130:1197-200.
2. Windfuhr JP, Werner JA. Tonsillotomy: it's time to clarify the facts. European Arch Otorhinolaryngol. 2013 Aug 22 [epub].
3. Loeb H. The susceptibility to infection manifested by the remains of incompletely removed tonsils. Trans Am Laryngol Assn. 1917:88-101.
4. Linder A, Markstrom A, Hultcrantz E. Using the carbon dioxide laser for tonsillotomy in children. International J Pediatr Otorhinol.1999;50:31-6.
5. Hultcrantz E, Linder A, Markstrom A. Tonsillectomy or tonsillotomy?-A randomized study comparing postoperative pain and long-termeffects. International J Pediatr Otorhinol. 1999;51:171-6.
6. Acevedo JL, Shah RK, Brietzke SE. Systematic review of complications of tonsillotomy versus tonsillectomy. Otolaryngol Head Neck Surgery. 2012;146:871-9.
7. Walton J, Ebner Y, Stewart MG, April MM. Systematic review of randomized controlled trials comparing intracapsular tonsillectomy with total tonsillectomy in a pediatric population. Arch Otolaryngol Head Neck Surg.2012;138:243-9.
8. Schmidt R, Herzog A, Cook S, O'Reilly R, Deutsch E,Reilly J. Powered intracapsular tonsillectomy in the management of recurrent tonsillitis. Otolaryngol Head Neck Surgery. 2007;137:338-40.
9. Johnston DR, Gaslin M, Boon M, Pribitkin E, Rosen D. Postoperative complications of powered intracapsular tonsillectomy and monopolar electrocautery tonsillectomy in teens versus adults. Ann Otol Rhino Laryngol. 2010;119:485-9.

The Initial Management of Epistaxis

R Tanner, MS Harney
Bon Secours Hospital, College Rd, Cork

Abstract
Epistaxis affects up to 60% of people. The basic first aid management of epistaxis is clearly stated in the literature and guidelines. Anecdotal evidence would suggest that these principles are not understood by patients and are not being conveyed to patients by their doctors. The aim was to assess current knowledge of epistaxis first aid management and identify the principle source of education in epistaxis control. This was a single centre cross-sectional study. The study population included those presenting to otolaryngology outpatients with epistaxis. 20 patients participated in this study over a 7 month period. Five (25%) patients did not use compression during an episode of epistaxis. Nine (60%) patients that used the compression technique failed to compress the lower one-third of the nose. Only two (10%) of patients identified their GP as having taught them first aid for epistaxis. Knowledge of epistaxis management is poor. Education regarding the basic principles of first aid for epistaxis may reduce morbidity and unnecessary consultations from health professionals.

Introduction

Epistaxis is defined as acute haemorrhage from the nostril, nasal cavity, or nasopharynx. In the majority of cases epistaxis is of anterior origin with the Kiesselbach plexus in Little's area being the culprit vessel in 90% of cases.[1] Posterior bleeds are less common, though may be more challenging to control.[2] The true prevalence of epistaxis is largely unknown as many cases do not require medical attention and thus go unreported. A frequently cited study conducted in 1975 estimated that up to 60% of people experience an episode of epistaxis in their life time, with 6% requiring medical attention.[3] There appears to be a bimodal distribution in the incidence of epistaxis with the majority of cases occurring in those aged 2-10 or those aged 45-65.[4] Epistaxis in those less than ten years of age is generally anterior in origin whereas those over 50 year of age are more likely to have a posterior bleed which is often more severe.[5] It should be noted that epistaxis before the age of two is rare, and may be associated with injury or serious illness.[6] Epistaxis is often minor and seldom requires hospital treatment in otherwise healthy children.[7] The key to managing haemodynamically stable patients with no airway compromise is compression of the nasal alae for 5-10 minutes.[5]

This provides tamponade for anterior septal vessels. The basic first aid management of epistaxis is clearly stated in the literature and guidelines. The clinical knowledge summary produced by the Nice Institute of Clinical Excellent (NICE) focuses on two main points. Firstly the patient should sit up and lean forward. Secondly the patient should compress the cartilaginous part of the nose for 10-15 minutes without releasing.[8] It is important that the lower 1/3 of the nose is included in the compression. Failure to compress this area will result in persistent bleeding from little's area. The addition of an ice pack to the dorsum of the nose is also recommended by some.[9] The basic management of epistaxis appears to be poorly taught.[9,10] An article published in the Journal of Laryngology and Otology noted that only one-sixth of emergency doctors had received training in the management of epistaxis. Anecdotal evidence would suggest that the basics of epistaxis management are not understood by patients and are not being conveyed to patients by their doctors. Based on clinical practise experience and literature there appears to be poor understanding of epistaxis first aid management. The primary aim of this study was to assess current knowledge of epistaxis first aid management and estimate the proportion of patients practising correct technique. The secondary aim of the study was to identify the principle source of education in epistaxis control.

Methods

This was a single centre cross-sectional study conducted between July 2013 and March 2014 at the Bon Secours Hospital Cork. The study population comprised of patients with a history of

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

epistaxis presenting to the otolaryngology outpatient department during this time period. Patients were eligible if they had a history of recurrent epistaxis and were capable themselves or with assistance of performing epistaxis control. There were no exclusion criteria with regard to age. An original data sheet was furnished to record the data. Section one focused on recording patient demographics, the duration since their epistaxis began and the frequency at which they occur. Section two examined the control technique and identified who taught that technique. The potential areas of nasal compression were divided into; lower third, middle third and upper third. Compression duration was defined as less than one minute or more than one minute. An open ended question regarding possible additional first aid techniques used completed section two. Ethical approval for this study was attained from the Cork Research Ethics Committee and the Bon Secours Ethics Committee.

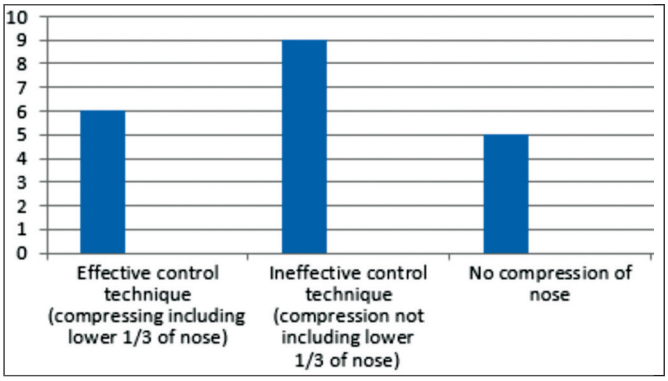


Figure 1 Control technique used during epistaxis

Results

20 patients participated in this study over a 7 month period. Those participants ranged from 18 months to 74 years of age. The duration since the first episode of epistaxis ranged from one month to 40 years and the frequency of epistaxis ranged from daily to two or three per year. Additional risk factors for epistaxis were also recorded. 20% of those surveyed were taking regular aspirin and 25% had a documented history of hypertension. Two patients had assistance in attempting to control their epistaxis due to age. Overall 75% (n=15) used compression during an episode of epistaxis. The section of the nose compressed is represented in Figure 1. 60% of patients that used the compression technique failed to compress the lower one-third of the nose. Of those who used compression 73% (n=11) held compression for over one minute regardless of position. 27% (n=4) of participants compressed the lower one-third and held that compression for over one minute. Additional techniques were used to control epistaxis; 25% (n=5) of participants inserted a tissue into their nose to aid haemostasis and 20% (n=4) used other techniques including; a wet cloth, ice packs and putting their head back. Self-taught epistaxis first aid was most common (n=6). Other sources of education regarding management included nurses, GP's and family members. Notably only 10% (n=2) identified their GP as a source of education. 75% (n=3) of those who compressed the upper 1/3 of their nose had not been taught by a health care professional how to correctly manage epistaxis.

Discussion

The management of epistaxis in a haemodynamically stable individual is clearly outlined in clinical guidelines. However there appears to be a poor knowledge base among patients. The fact that 25% of participants did not compress the nose to aid haemostasis suggests a poor knowledge of epistaxis management. Furthermore, this study suggests that many who use compression have been taught the technique incorrectly. Only 27% of those using compression applied pressure correctly to the lower one-third of the nose. A misconception amongst the public that compression of the nasal bones will stop bleeding has been noted in the literature.[10,11] The lack of consistency in technique for controlling epistaxis is supported by the various supplementary techniques used. 25% of participants placed a tissue in their nose during an episode of epistaxis. Furthermore one individual outlined how he 'put his head back' to aid bleeding cessation. Epistaxis education was received from various sources. Family members, GP's, nurses and self-education were all identified. There appears to be a paucity of input from health care professionals. Only 10% of participants received appropriate guidance from their General Practitioners. General Practitioners are often the primary health professional managing epistaxis. It would be reasonable for GPs to provide basic advice on the management of future epistaxis. The basic principles of compression, positioning and duration need to be clearly outlined when a patient makes first contact with a health professional.

The majority (73%) of patients that attend an ENT surgeon with an epistaxis are not using proper control technique. It may be that those patients that do not practise proper control technique end up having persistent uncontrolled bleeds and have to be referred to an ENT clinic. There is a strong erroneous belief in the community that compressing the nasal bones, or just below the nasal bones is the correct treatment for epistaxis. The first stage in GP management of epistaxis should be instruction on the correct compression technique; sustained compression should be applied to include the lower one-third of the nose.

Correspondence: R Tanner
Bon Secours Hospital, College Rd, Cork
Email: 107577656@umail.ucc.ie

References

1. Viehweg TL, Roberson JB, Hudson JW. Epistaxis: diagnosis and treatment. Journal of oral and maxillofacial surgery : official journal of the American Association of Oral and Maxillofacial Surgeons. 2006;64:511-8.
2. Petruson B. Epistaxis in childhood. Rhinology. 1979;17(2):83-90. Epub 1979/06/01.
3. Petruson B, Rudin R. The frequency of epistaxis in a male population sample. Rhinology. 1975;13:129-33..
4. Kucik CJ, Clenney T. Management of epistaxis. American family physician. 2005;71:305-11.
5. Bernius M, Perlin D. Pediatric ear, nose, and throat emergencies. Pediatric clinics of North America. 2006;53:195-214.
6. McIntosh N, Mok JY, Margerison A. Epidemiology of oronasal hemorrhage in the first 2 years of life: implications for child protection. Pediatrics. 2007;120:1074-8.
7. Brown NJ, Berkowitz RG. Epistaxis in healthy children requiring hospital admission. International journal of pediatric otorhinolaryngology. 2004;68:1181-4.
8. Excellence, NICE. Acute Epistaxis. 2010. http://cks.nice.org.uk/epistaxis
9. Leong SC, Roe RJ, Karkanevatos A. No frills management of epistaxis. Emergency medicine journal : EMJ. 2005;22:470-2.
10. Ho EC, Chan JY. Front-line epistaxis management: let's not forget the basics. The Journal of laryngology and otology. 2008;122:696-9.
11. Schlosser RJ. Clinical practice. Epistaxis. The New England journal of medicine. 2009;360:784-9.

Empathy and the Wounded Healer: A Mixed-Method Study of Patients and Doctors Views on Empathy

C Brady, RM Bambury, S O'Reilly
Oncology Department, Cork University Hospital, Wilton, Cork

Abstract
Empathy is increasingly being recognized as a crucial component for an effective doctor-patient relationship. Using a mixed method approach, we surveyed 125 patients and 361 medical practitioners (doctors and medical students) views of the doctor-patient relationship. We qualitatively assessed patients' views of what constituted a good doctor and qualitatively measured empathy using a validated scale in medical practitioners. Patients desire a doctor that is both clinically proficient 66 (55%) and caring 32 (27%). Doctors who have a personal experience of illness have a statistically higher empathy score. These doctors may be well placed to help develop and foster empathy in our profession.

Introduction

Empathy has been highlighted as a way to improve medical practice in modern society.[1] Debate continues as to how best to define and measure empathy and how it should be taught. Research is lacking on characteristics, which improve empathy. This study sought to explore both patients and doctors views on empathy in the Irish setting which hasn't been previously documented. We sought to compare physicians validated self-scored degree of empathy with those in other countries and to explore if past personal experience of medical illness enhances empathy scores.

Methods

Using a validated mixed methods approach, we surveyed 125 patients and 361 medical practitioners (doctors and medical students) in 2 teaching hospitals to explore patients' views on important traits in a doctor and doctors' views on empathy. Patients were recruited randomly at the outpatient clinics of oncology, cardiology, ophthalmology, general surgery and neurosurgery over a three-week period in 2 teaching hospitals. Patients received a qualitative questionnaire, which assessed patient views of what constituted a good/bad doctor. Medical students from 1st, 3rd year and 4th year were surveyed at the start of a one-hour lecture and completed surveys were collected at the end. Interns were surveyed during their induction presentation. Medical manpower provided a list of both non-consultant hospital doctors and consultants. NCHDs and Consultants received a written invitation requesting their participation in the study by completing the enclosed anonymous questionnaire. They were delivered via the internal post system of two teaching hospitals. For return of response, a self-addressed stamped envelope for the investigator was included and a follow up thank you/reminder letter was sent. The first author performed the data collection. Both patients and doctors questionnaires were performed concurrently.

Patients received a non-validated qualitative questionnaire aimed at exploring their views as to what makes a good and bad doctor. It involved seven open ended questions which explored characteristics of a "good" and "bad" doctor, what they required when they visited a doctor, and specific examples of what satisfied or dissatisfied them with medical encounters. Empathy was not referred to in the questionnaire or in the introduction to avoid leading. Doctors received a two-part questionnaire. The first part composed the quantitative Jefferson Scale Physician Empathy Questionnaire (JSPE).[2] The JSPE is a validated tool used to measure empathy in the context of medical education and patient care. It uses a Likert scoring system with a maximum score of 140. The non-validated qualitative questionnaire explored doctors' personal significant experiences of ill health and factors, which influence their demonstration of empathy.

Qualitative Data was transcribed for both groups. It was reviewed without coding to help identify emergent themes without losing the connections between concepts and their context.[3] An inductive approach using the grounded theory method[4] and constant comparison was used in which data was reviewed line by line and as a theme emerged a code was assigned.[5] Coding was finalised when no new themes emerged. Qualitative data was analysed with the use of SPSS.

Table 1 Definition of most popular themes for patients' requirements from the doctor encounter

Themes	Definition	Representative Quotations
Good Bedside Manner	The doctor is caring, compassionate, understanding and kind	"an approachable and likeable personality. a positive disposition and a caring attitude." "genuine desire to help and interest in work. To be able to empathise with patients – people can become just numbers."
Listening	The doctor is willing to listen	"a doctor who listens, and second understands" "I think it is very important to listen to what the patient is telling you."
Discussing/ Explaining	The doctor discusses the issues that arise and explain the problems in a way the patient understands and feels comfortable with	"a person that will listen fully. also explains what is wrong and what he intends to do to help." "answers patient's questions in layman terms."
Proficiency / expertise in clinical care	The doctor has good clinical experience, is thorough and has excellent clinical evidence based expertise	"up to date knowledge, continual learning and training. use of technology when necessary"
Patience	The doctor is patient and gives adequate time when dealing with patient	"unhurried and patient person" "not pushing you out the door"
Reassurance	The doctor provides reassurance	"give you reassurance that all will be ok"
Honesty	The doctor is frank and honest	"to be told things I should be told"

Results

Patient Results: Qualitative Questionnaire

125 patients took part of which 54% female and 90% of whom were over the age of forty. An average of 2 themes were identified with each patient question. Three broad categories were identified, patient-centered medicine, clinical care and medical structure, with a total of 19 sub-categories. The top 5 attributes of a good doctor according to patients are: (responses to the open ended question "What makes a good doctor" and subsequently coded) were: having a good bedside manner (58%), listening (40%), discussing/explaining (28%), proficiency/expertise in clinical care (28%), and patience (20.8%) (Table 1).

Patients' Requirements from the medical consultation

However patients place a different emphasis on what they want when they visit a doctor. Patients' requirements from the consultation are: clinical care/proficiency (55%), good bedside manner (26.66%), discussing/explaining (20%), reassurance (15.83%) and honesty (10%). (Table 1)

Patients Satisfaction

65% of patients reported being very or extremely satisfied with their doctor over the last 5 years. The top coded theme for patients' recollection of dissatisfying encounters with doctors was

doctors' bedside manner (34.25 %), "I have felt afraid by the lack of humanity doctors have used in explaining my possible outcomes." This was followed by the clinical care they received (21.92%) and their ability to discuss/explain (13.7%). 20.55% have no recollection of a dissatisfying encounter.

Table 2 Summary of Jefferson Scale Physician Empathy Results

	Mean Score on JSPE*	2 tailed test for statistical significance
All practitioners	108	N/A
Gender	Male: 107 Female: 109	P = 0.13
Seniority	Consultant: 108 Registrar: 109 Senior House Officer: 101 Intern: 103 Medical Student: 109	P = 0.76
Specialty	Physician: 109 Surgeon: 107	P = 0.139
Personal experience of illness	Yes: 111 No: 107	P = 0.007

Doctors Results

361 medics (consultants, non-consultant hospital doctors (NCHDs), and medical students) participated in the study. For the postal questionnaire there was a response rate of 54.4%. 41.6% were male, 45.7% were female, with 12.7% being unknown. Representing different levels of medical seniority were consultants (31%), NCHDs (23%), medical students (1st year, 4th year) (36.6%) and incoming interns (9.4%).

Doctors Quantitative Empathy Score Results

The average total empathy score achieved by our medical practitioners was 108 indicating a good degree of empathy. There was no significant difference in JSPE score when analysed by gender, specialty or seniority (Table 2). Medical practitioners with a personal experience of illness (in themselves or a relative) had a statistically significant higher average score of 111 (p value= 0.01) (Table 2). 20% of medical practitioners had a personal history of illness, of which 82% reported that this had a positive impact on how they interact with their patients. When cellulitis "confined" one individual in hospital for a week, it helped them "to see what it is like for a patient to be on a hospital ward, unable to control my own destiny"

Only 9% of doctors reported that their training/mentoring has helped their ability to show empathy, but more than double that at 21.34% feel that their training/mentors hinders their ability to show empathy. "I think most people begin idealistically with full intentions of being empathetic but as they go through the system, the way we're taught makes us more removed & less empathetic".

Discussion

Irish patients rank empathy as a core attribute of what constitutes a good doctor. They desire a doctor that is both clinically proficient and displays a good bedside manner. Irish medics showed a good interest and willingness to participate in the study. They have a good level of self -measured empathy in comparison to other countries. There was no statistical difference in empathy scores between gender, seniority or specialties. There was a statistically higher empathy score in those medics that had a personal experience of illness. To our knowledge this is the first report to quantitatively show that empathy is enhanced in health professionals with a personal experience of illness. However, this concept of "the wounded healer" dates back to antiquity. The archetype of "the wounded healer" arose from the mythological Greek centaur Chiron who suffered an incurable wound after dropping one of Hercules arrows on himself. In the subsequent search for his own cure he discovered how to heal others and became a teacher of the healing arts.[6] It is concerning that medics find their medical education to be of little benefit in fostering the development of empathy and even more troubling that medical education can negatively impact doctors ability to demonstrate empathy. These findings have been mirrored in other reports.[7]

This is an exploratory study looking at the role of empathy from both the patients and doctors perspective. Empathy is a complex socio-emotional characteristic that renders to fragmentation in research. This study explores the views of patients and doctors separately and does not attempt to cross-link them with each other. A more powerful research would require more formal analyses of both patients and doctors views on the same clinical encounter. In conclusion, Irish patients are generally satisfied with the doctor-patient encounter, however there remains significant room for improvements, specifically regarding bedside manner. Like our findings, reports[8], which demonstrate that empathy is not improved with contemporary medical education, are noteworthy and troubling. Doctors with previous experience of personal illness may be well placed to improve our understanding of empathy and to suggest ways in which it may be instilled into future doctors.

Correspondence: C Brady
Oncology Department, Cork University Hospital, Wilton, Cork
Email: clairebradycb@gmail.com

References

1. Wen LS, Greysen SR, Keszthelyi D, Bracero J, de Roos PDG. Social accountability in health professionals' training. Lancet 2011; 378: e12-e13.
2. Hojat M. Empathy in Patient Care. Antecedents, Development, Measurement, and Outcomes. New York, NY: Springer; 2007. Chapter 7.
3. Bradley E, Curry L, Devers K. Qualitative Data Analysis for Health Services Research: Developing Taxonomy, themes and Theory. Health Services Research. 2007:42:175.
4. Heath H, Crowley S. Developing a Grounded Theory Approach: A Comparison of Glaser and Strauss. International Journal of Nursing Studies. 2004;41:141.
5. Li S, Seale C. Learning to Do Qualitative Data Analysis: An Observational Study of Doctoral Work. Qualitative Health Research. 2007:17:1442.
6. Laskowski C, Pellicore K. The wounded healer archetype: applications to palliative care practice. American Journal of Hospice and Palliat ive Care. 2002 Nov-Dec;19:403.
7. Newton B, Barber L, Clardy J, Cleveland E, O'Sullivan P. Is There Hardening of the Heart During Medical School? Academic Medicine Med. 2008;83:244.
8. Neumann M, Edelhäuser F, Tauschel D, Fischer MR, Wirtz M, Woopen C, Haramati A, Scheffer C. Empathy decline and its reasons: a systematic review of studies with medical students and residents. Academic Medicne. 2011;86:996.

Continuing Professional Development

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

Does Participation in CME SLG (Small Group Learning) Influence Medical Practice? The Experience of General Practitioners Attending CME SLG after the Introduction of the Medical Practitioners Act

S Dowling, H Finnegan, C Collins. Ir Med J. 2015; 108: 109-11.

Question 1
The number of tutors involved in the CME learning sessions was

a) 31
b) 33
c) 35
d) 37
e) 39

Question 2
The number of times that the learning groups meet annually is

a) 6
b) 8
c) 10
d) 12
e) 14

Question 3
The number of GPs who completed the questionnaire was

a) 1336
b) 1346
c) 1356
d) 1366
e) 1376

Question 4
The number of GPs who felt that CME had helped to improve their clinical practice was

a) 1123
b) 1133
c) 1143
d) 1153
e) 1163

Question 5
The proportion of GPs who were female was

a) 41.8%
b) 42.8%
c) 43.8%
d) 44.8%
e) 45.8%

Fitness to Drive in Cognitive Impairment – A Quantitative Study of GPs' Experience

U Doherty, AL Hawke, J Kearns, M Kelly. Ir Med J. 2015; 108: 112-4.

Question 1
The response to the questionnaire was

a) 60.5%
b) 61.5%
c) 62.5%
d) 63.5%
e) 64.5%

Question 2
The proportion of GPs who use guidelines when assessing fitness to drive is

a) 62.8%
b) 64.8%
c) 66.8%
d) 68.8%
e) 70.8%

Question 3
The proportion of male GPs participating in the study was

a) 65%
b) 67%
c) 69%
d) 71%
e) 73%

Question 4
The proportion of GPs in practice >20 years was

a) 51.6%
b) 53.6%
c) 55.6%
d) 57.6%
e) 59.6%

Question 5
The proportion of GPs who felt confident in assessing fitness to drive was

a) 81.6%
b) 82.6%
c) 83.6%
d) 84.6%
e) 85.6%

The Initial Management of Epistaxis

R Tanner, MS Harney. Ir Med J. 2015; 108: 123-4.

Question 1
The proportion of the public affected by epistaxis is

a) 52%
b) 54%
c) 56%
d) 58%
e) 60%

Question 2
The number of patients who participated in the study was

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

Question 3
The proportion of patients with documented hypertension was

a) 19%
b) 21%
c) 23%
d) 25%
e) 27%

Question 4
The proportion of patients who were taking regular aspirin was

a) 18%
b) 20%
c) 22%
d) 24%
e) 26%

Question 5
The proportion of patients who did not use compression during an epistaxis was

a) 23%
b) 25%
c) 27%
d) 29%
e) 31%

Protect your GMS pension contributions

in the event of a long-term illness or disablement

The IMO's unique Waiver of Premium Scheme is now open to all GPs.

In the event of you suffering a long-term illness or disablement, no further contributions will be made to your GMS Superannuation Fund.

This is where the IMO's Waiver of Premium cover will kick in.

It is a bespoke insurance product designed to protect the GMS pension for GPs and only available through the IMO.

It protects your GMS pension expectations at retirement if you suffer a long-term illness or disablement that prevents you from working.

Who can join?

Any GP in receipt of GMS income and who is under 60 years of age. Cover is subject to insurance underwriting by Zurich Life.

Deferred period

The benefit becomes payable after you have been incapacitated for a minimum of 52 weeks.

Benefit & Cost

The cost is 3.03% of the monthly GMS Superannuation contribution. The policy pays out an annual benefit equivalent to the total pension contribution at the time of being disabled or suffering long-term illness.

You may be eligible for tax relief on the premium.

IMO
FINANCIAL SERVICES

For further information on the terms and conditions of the product and personal advice, please contact **imofs@imo.ie** or call on **01 6618299**