Editorial

This editorial starts with a true story. Once upon a time (actually 1716) James Lind was born in Edinburgh. After training as a surgeon, he took a job working with a Ship’s doctor and he became concerned about the dangers of scurvy. In 1747 he undertook a randomized controlled trial. Taking twelve sailors, he allocated two men to one of six daily treatments for up to fourteen days: cider, elixir vitriol (dilute sulphuric acid), vinegar, seawater, two oranges and one lemon (until the supply was exhausted) or a medical paste made with garlic, mustard, radish and gum myrrh. The two sailors on citrus fruit recovered well, in fact one returned to working and the other was appointed nurse to the rest of the sick. James Lind’s work led to the conquest of scurvy.

The James Lind Alliance is a UK non-profit making initiative established in 2004. It brings patients, carers and clinicians together to identify and prioritise the top 10 unanswered questions for different clinical conditions and treatments. The Intensive Care Foundation (research arm of UK Intensive Care Society) joined with the James Lind Alliance and undertook work to identify the priorities for future UK intensive care research. Questions that are important to critically ill patients, families and the health care professionals who care for them. The initial survey and review of the literature in March 2013 generated over 1300 suggestions. After nearly two years of work, the identification of delirium and how to monitor and manage its effects emerged as one of the top three priorities for research in intensive care.

This is great news for all clinicians who recognize the importance of delirium, our patients and their families. The impact will extend well beyond critical care, at the very least assisting the funders in their decisions regarding the allocation of research money. It is recognition of the importance of delirium to patients, carers and clinicians. It may be too much to hope that together we can conquer delirium, or maybe not!

This edition of the Annals is a reflection of how work in the area of delirium is going from strength to strength, another excellent issue. It is an eclectic mix with articles from clinicians “in the field”, including critical care and an update on training medical students.

Please note the American Delirium Society meeting, Baltimore June 1st and 2nd (next year Nashville!) and the 10th EDA Scientific Congress is in London this 3rd and 4th September. There will be more news about the exciting programme being brought together in our next edition of the Annals of Delirium.

Finally, contributions to the Annals from patients, carers or health care professionals are all welcome for consideration.

Valerie Page

Reference

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Delirium – contemporary cultural references:
A truth stranger than fiction?

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Introduction

Delirium, as an acute neuropsychiatric syndrome, necessitates discussion with concerned relatives as well as vulnerable patients. Proactive care may also involve discussing, prior to surgery, the risk of postoperative delirium.

Understanding of delirium varies across healthcare professionals with various terms and explanations utilised. Perceptions of information received, by patients and carers, often differ from that of the information delivered by healthcare professionals. There is thus potential for ambiguity when delirium is being explained in these situations. Patients and carers may have preconceptions of what the term delirium means. Delirium has long been part of both medical and lay lexicons, featuring through the centuries in the arts and literature. Here we set out to examine contemporary cultural references to delirium in an effort to better understand those influences on lay, and perhaps our own, preconceptions.

A search of www.google.co.uk using the term 'delirium' (8/1/15) yields more than 21,000,000 results. Reassuringly the top hits are medical (see Table 1), however number 9, just ahead of the European Delirium
Association (EDA), is the first book of Lauren Oliver’s trilogy describing a world where love is viewed as an illness (amor deliria nervosa) for which humans must undergo a curative procedure at 18.

| Table 1. Top 10 results from google.co.uk search 'delirium' 08/01/15. |
|---|---|
| 1 | www.patient.co.uk/doctor/delirium |
| 2 | www.wikipedia.org/wiki/Delirium |
| 3 | https://www.nice.org.uk/guidance/cg103 |
| 4 | www.rcpsych.ac.uk/healthadvice/problemsdisorders/delirium.aspx |
| 5 | www.nlm.nih.gov/medlineplus/ency/article/000740.htm |
| 6 | www.mentalhealth.org.uk/help-information/mental...,a...,/delirium |
| 7 | www.mayoclinic.org/diseases-conditions/delirium...,/con-20033982 |
| 9 | www.amazon.co.uk/Delirium-1-3-Trilogy/dp/0340980931 |
| 10 | www.europeandeliriumassociation.com |

**Table 2. Top 14 (ranked 1-10) results from Amazon search 'delirium' 08/01/15.**

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5 (1)</td>
<td>Delirium trilogy, books, by Lauren Oliver (2011)</td>
</tr>
<tr>
<td>6 (2)</td>
<td>Delirium, film, by Renato Polselli (1972)</td>
</tr>
<tr>
<td>8 (4)</td>
<td>Delirium Tremens Belgian Beer Gift Pack</td>
</tr>
</tbody>
</table>

Turning her back on her family, Tris ventures out, alone, determined to find out where she truly belongs (number 9). Another tells the story of Aguilar who ‘returns home after a four-day business trip to discover that his beloved wife has gone mad. Desperate to rescue Agustina from her sudden, devastating insanity, Aguilar delves back into her shadowy past (number 10).’

**Film**

There is one film listed within the top Amazon results (number 6) titled simply ‘Delirium’. It is touted as ‘wonderfully sick and demented! A shining example of outrageous psychosexual perversity’ (note the use of the term ‘demented’ as well, nicely demonstrating the key relationship between delirium and dementia). Elsewhere in the film world cinematic offerings seem well represented by a series entitled ‘Delirium: The International Guide to Weird and Wonderful films on DVD, Volumes 1 (2001) – 4 (2010)’, edited by Nathaniel Thompson. This offers ‘the world’s only A-to-Z guide specially designed for collectors of cult, horror,
exploitation, arthouse, erotic, thriller, action, foreign language, and just plain weird movies'.

Music and entertainment

In addition to the literary and cinematic references outlined above, the word delirium seems to have been most commonly (mis)appropriated by musical artists. Searches of iTunes and Spotify yield hundreds of results. At first glance dance music seems to predominate but on further examination the term is present across the spectrum of music genres. Delirium volumes 1 and 2 collections curated by Dave Pearce; the Canadian duo Delerium (sic) responsible for the 'sense of wonder' inspiring hit Silence; and a trance 'delirium' mix of a Moby song are complemented by classical Haydn, a Delirium Blues Project, folk act Christy Moore, with his popular Delirium Tremens single and Scottish folk group Capercaille with their 1991 album. Italian group, Delirium, and the lyrics of the well-known REM song 'Supernatural Superserious', describing teenage experimentation with the supernatural, reference delirium in the rock music arena.

Further examples from the world of entertainment include Eddie Murphy's 1983 comedy special ('Live on stage – Delirious!') and Cirque du Soleil’s dance performance.

The Media

Journalists have a fondness for the word too with sporting commentators of the Daily Telegraph, Daily Mail and Guardian all describing 'delirious' crowds supporting Andy Murray at the All England Club at various points (http://www.telegraph.co.uk/sport/tennis/andy-murray/8612065/Wimbledon-2011-Mania-to-misery-for-Andy-Murray-fans-on-the-Murray-Mound.html)

http://www.amazon.co.uk

Half of the top 10 results when searching for 'delirium' on the Daily Mail site are sporting stories, with the remainder including a tale of 'delirium on the set of Wheel Of Fortune when answers from contestants taking part in Best Friends Week prompted host Pat Sajak to give up walk away'.

Food and drink

There is a popular Belgium beer called Delirium Tremens, with its iconic image of a pink elephant, from the Huyghe brewery. The brewery also has the top rated restaurant in Brussels called Delirium café, purporting to sell over 2400 different beers. There is also a 'Delirium' in Warsaw selling Belgian beers.

Retail

Some of these themes are particularly curious. In keeping with aforementioned cinematic references, a high street clothing chain (Mango) have produced a toilery range called 'delirium' designed for 'women who want to explore their sexuality and express their power of seduction'. A 'nurse delirium' costume complete with 'our black fishnet tights' is available online for Hallowe'en from Smiffys. The term is also used to market cycle helmets (Bell) and ski boots (Garmont), presumably in an effort to attract adrenaline seekers. It is less clear what logic underlies the clothing line (Desigual), sandals (Ash), watch (Concord) and the currently available Delirium Toilet & Vanity Unit Pack (www.amazon.co.uk).

Discussion

How helpful are these references? Hyperactive delirium has been, arguably, insightfully described by some. Motion City Soundtrack sing 'all
the nurses are refusing to let me out of bed /And my eyes are pouring nightly / There's a crowd there's a crowd there's a crowd on my ward ... There's a buzz there's a buzz there's a buzzing of bugs / From flower beetles yellow jackets silverfishes to slugs / It's always raining caterpillars from the circular fan / And my heart is pounding brightly ... I dreamt a dream the other night I couldn't sleep a wink / The rats were tryin' to count the sheep and I was off the drink / There were footsteps in the parlour and voices on the stairs / I was climbin' up the walls and movin' round the chairs ... Suddenly it dawned at me I was getting the old D.T.s / When the Child o' Prague began to dance around the mantelpiece... Well I swore upon the bible I'd never touch a drop / My heart was palpitatin' I was sure 'twas going to stop'. Accounts of hypoactive delirium symptoms are less common, or perhaps less obvious, reflecting the reporting bias within the medical field.

The erotic references, in Polselli's 1972 film for example, are probably less helpful but it is worth remembering that they predate the adoption of the term by the Diagnostic and Statistical Manual of Mental Disorders, 3rd edition, in 1980. Whilst medical scholars have been writing about delirium for centuries it has simultaneously been subject to the onslaught of more popular cultural users and permeated further into common parlance than we may realise. Many of these uses of the term seem distasteful, which is even more reason for us to acknowledge their existence and counter them with more productive material. Increasing numbers of centres provide written information for patients and families. Lay information, including patient accounts of delirium, can also be found online (www.icudelirium.org).

Efforts to improve professional understanding of delirium are also supported by online resources, such as www.scottishdeliriumassociation.com and www.europeandeliriumassociation.com.

Given the various lay connotations of the term delirium are far removed from our clinical understanding, should we change the name? Given the huge effort to standardise the medical definition and diagnosis of delirium we feel this is probably not helpful. However it may be that as a group of medical professionals working with and championing delirium care the onus is on us to improve lay engagement to allow for a better public understating of delirium. Better lay understanding of delirium may lead to improved recognition of delirium, especially in community settings, and subsequent improved care.

**Conclusion**

We continue to further our knowledge of delirium, endeavour to provide consistent education on the subject of delirium to healthcare professionals, and communicate the risks and explanations of delirium to those affected. We must remember that ‘delirium’, in addition to being a medical term, is part of day-to-day speech, and may have already been encountered in all sorts of unusual places. This may make it more difficult for patients and carers to fully understand the term when used in a clinical context. We need to provide clear explanations and ensure understanding when we use the term delirium.
The Geriatric Emergency Department Guidelines Boot Camp: A Collaborative Onsite Educational Outreach Improve Older Adult ED Delirium Care

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As the Baby Boomer generation transforms into a “Silver Boom”, emergency departments (EDs) around the world will receive consistently increasing numbers of visits from older adults.¹ Aging adults present many challenges to the traditional ED, originally conceived for critically ill and injured populations, but less ideally designed and staffed to meet the needs of older patients.² For example, over two decades of ED research consistently demonstrates that 10% of ED patients over 65 meet criteria for delirium, but EDs identify only one-third of them.³⁴ Not recognizing a condition, which is rightly considered a neurological medical emergency in an ED, is clearly a deficiency of care. Furthermore, lack of recognition of cognitive impairment,⁵ multiple co-morbidities, poly-pharmacy,⁶ and diminished functional independence⁷ can lead to improper disposition and risk for further harm.⁸ Unfortunately, the relatively young specialty of emergency medicine is now beginning to define the attributes of the geriatric-friendly ED.⁹

In 2014 the American College of Emergency Physicians (ACEP), the Society of Academic Emergency Medicine (SAEM), the American Geriatric Society (AGS), and the Emergency Nurses Association published the first “Geriatric Emergency Department Guidelines” http://www.acep.org/geriEDguidelines /.¹⁰ However, publishing ideas alone are insufficient to increase knowledge or alter practice.¹¹ Thus was born the Geriatric Emergency Department (GED) Boot Camp, developed by the ACEP Geriatric section, in conjunction with AGS and SAEM’s Academy for Geriatric Emergency Medicine, and funded by the John A. Hartford Foundation. The GED Boot Camp aims to assist hospital systems interested in “geriatricizing” their community’s EDs, based on the GED Guidelines.

The guidelines suggest multiple approaches to make an ED more senior-friendly:

1. Supplementary education of all ED staff (medical and nursing) about key geriatric syndromes – including delirium,¹² falls,¹³ dementia,¹⁴ acute functional decline,¹⁵ polypharmacy, and end-of-life care;¹⁶

2. Strategies for altering staffing to better assess and manage older patients – including a geriatric-specific case manager to improve identification of delirium, dementia, and depression; to support optimal discharge planning from the ED; and addition of a multidisciplinary team to more comprehensively assess an older patient;²⁰

3. Geriatric-specific policies and procedures such as screening for high-risk conditions like delirium, functional decline risk, and elder abuse; strategies to reduce the likelihood of incident delirium and better manage the agitated symptoms of delirium – orientation, food, fluids, mobility, and decreased restraints;¹³

4. Alterations to the physical environment which, among other benefits, may decrease delirium – alterations like improved way-
finding and signage, diurnal lighting, noise reduction, and thick mattresses to improve comfort during long waits;\textsuperscript{21}

5. Process enhancement – prioritizing quality improvement and developing quality indicators that highlight the unique needs of older patients, especially those with cognitive impairment.\textsuperscript{13}

Some opportunities for continuing professional education about older ED patient exist – notably an accredited six-module online resource, created by one Boot Camp leader: http://geri-em.com. However, the authors of the GED Guidelines developed an additional approach to support institutions that want to implement them. The GED Boot Camp model, presented to hospital systems in Milwaukee and Pittsburgh, is:

- to encourage institutions to develop a cross-disciplinary team, interested in improving their system’s ED strategy to effectively, thoughtfully, and compassionately care for older people;
- to establish their local system’s needs through a pre-Boot Camp comprehensive needs assessment;
- to present the core elements of the Guidelines;
- for GED Boot Camp participants to develop a geriatric-focused quality improvement (QI) project and team;
- to provide continuing GED Boot Camp faculty expertise as the local teams implement their QI project.

This pioneering approach presents a number of advantages.

First, contemporary geriatric care mandates a multidisciplinary approach, especially in the ED. Traditionally, far-away off-site continuing medical education (CME) conferences are attended by only a fraction of one institution’s clinical team. CME expenses increasingly limit participants’ ability to travel. More importantly, these CME events often focus on one specialty and one set of health care providers: nurses or physician extenders or physicians. In contrast, the two-day GED Boot Camp brings the curriculum and expertise to the individual hospital system so that local nurses, technicians, physical therapists, case managers, hospital administrators, insurers, community organizations, patient advocacy groups, and physicians from multiple specialties have the opportunity to attend and participate without incurring travel expenses.

Second, the needs of each hospital to realistically “geriatricize” care must be identified by their leadership. Generic educational products like non-engaging, static online lectures are unlikely to be of significant interest for most hospitals. The GED Boot Camp pre-event planning includes a needs assessment survey of anticipated attendees. Each GED Boot Camp site self-identifies their curricular needs, opinion leaders,\textsuperscript{22} and short-term objectives based upon this survey. Each GED Boot Camp is distinctively designed to meet the requests and objectives of the participating site.

Third, since lectures alone are insufficient to change practice or advance the standard of care,\textsuperscript{23} each site identifies at least one (QI) project to incorporate one piece of the GED Guidelines for their institution. The specific project for each site requires access to meaningful patient- or system-level metrics, as well as engaged local opinion leaders\textsuperscript{24} and a process to measure adaptability of individual GED Guidelines. The QI project(s) identified by each site is supported and monitored by GED Boot Camp faculty for one year after the event to evaluate outcomes.

Fourth, a two-day workshop is unlikely to be attended by all key personnel from a site, even when the workshop is at the site. Knowledge acquisition often requires repeated exposures to concepts and data.\textsuperscript{14, 25} Some components of the GED Guidelines are more readily operationalized if they are linked to electronic medical records to simplify screening and referral. Therefore, the GED Boot Camp initiative is also building a website to archive key concepts, instruments, and calculators, while providing a gateway for Boot Camp attendees past, present, and future to connect, exchange geriatric QI ideas and resources, updates in the medical literature, and mentorship.

With support from Aurora Health Systems and UPMC Health Systems, the first two GED Boot Camps occurred in Milwaukee and Pittsburgh.
respectively, in December 2014 and January 2015. The Aurora Boot Camp was attended by 50 participants from 3 eastern Wisconsin hospitals — ED physicians, physician extenders, nurses, case managers, geriatricians, hospitalists, home care providers, and hospital administrators. All three Aurora hospitals selected QI projects focused on ED triage nurse risk-stratification and referral to community resources through home health, the Aging and Disability Resource Center, and other community resources. The Pittsburgh Boot Camp was attended by 35 wide-ranging participants from two western Pennsylvania hospitals. It ultimately selected a structured triage nurse-emergency physician delirium screen-intervene QI project.

UPMC recognized the challenges in diagnosing acute delirium in the geriatric population. Their delirium screen QI project was activated shortly before the GED Boot Camp in January 2015. It was one of the first sites to operationalize a specific recommendation from the GED Guidelines. In its early form, the project was an internal measure to increase ED-provider awareness and recognition of the disease. All patients presenting to the ED, age 65 and older, were required to undergo a two-part delirium screen by the triage nurse. Any positive screen was relayed to the ED provider who was tasked to use the “b-CAM” tool to diagnose or exclude acute delirium. Management of a positive diagnosis of acute delirium remained solely at the discretion of the treating physician.

Using this QI project to frame the GED Boot Camp, multiple disciplines convened to openly discuss the various opportunities each group could contribute to this project under the mentorship of Boot Camp facilitators and ED Geriatric experts. In its redeveloped form, the UPMC delirium screening QI project, entitled the Appropriate Management of the Elderly with New Delirium (AMEND) project, evolved to employ broader personnel and automatically activate resources beyond the confines of the ED. The GED Boot Camp model helped to redirect a single department QI project into a plan for the entire hospital system. With the guidance of the GED Boot Camp mentors, UPMC will be moving forward to develop this project with a newly formed team of individuals from multiple disciplines tasked with implementing the project within five months.

The GED Boot Camp provides a window into the pragmatic real-world challenges and measurable short-term gains associated with implementation of the new GED guidelines. The successes and failures of the GED Boot Camp will be formally evaluated in coming months. The hope and vision is that this responsive and adaptive educational approach can reduce some of the delays that limit the stream of ideas, research, or guidelines to bedside care, while providing a rapid two-way flow of information between guideline developers and end-users.

References

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Undiagnosed ICU Delirium – more common than we think?

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Abstract

Introduction: The aim of this study was to discover the incidence of delirium in our unit, the compare the identification of delirium with and without using a delirium assessment method and to assess the ability of the PRE-DELIRIC scoring system to identify delirious patients.

Methods: This was a prospective study conducted in a UK Intensive Care Unit. All patients in ICU/HDU were assessed daily using the ‘Confusion assessment method for ICU’ (CAM-ICU). The ‘Prediction of delirium in ICU patients’ (PRE-DELIRIC) score was calculated retrospectively for each patient.

Results: This study included 31 patients. Nine patients were CAM-ICU positive giving an incidence of 29%. The median number of delirium free days (DFDs) was 26 (range 22-27). The mean delirious days per patient was 1.88 (range 1-6). Two thirds of the delirious patients developed delirium within 2 days of admission to ICU. RASS scores in patients with delirium were significantly lower than those in patients without (-2 [-2 to -0.5] vs. 0 [0 to 0], P=0.013). Thirteen incidences of delirium were missed. Mean PRE-DELIRIC score for CAM-ICU positive patients was significantly higher than that of CAM-ICU negative patients (44±0.30 vs. 24±0.23, P<0.0001).

Discussion: We recommend including delirium screening as part of the daily nursing and medical assessment. We recommend the PRE-DELIRIC score is calculated on admission as a form of risk assessment. For the CAM-ICU positive patients, we recommend early multi-disciplinary treatment, and prompt review of medications and treatments.

Introduction

Dementia is a neuropsychiatric condition characterized by an acute and fluctuating change in mental status combined with inattention, and altered level of consciousness or disorganized thinking.

Depending on the delirium assessment method used, the incidence of delirium in intensive care units worldwide ranges from 31.8% using the Intensive Care Delirium Screening Checklist (ICDSC) to greater than 80% using the Confusion Assessment Method-ICU (CAM-ICU)3-6.

Risk factors for delirium include increasing age, coma, metabolic acidosis and infection. Further studies have identified intubation as a risk factor with the incidence of delirium in intubated patients being 60-80%, with the incidence of delirium in non-intubated patients being 20-50%.

Recognition of delirium is essential within intensive care units, as delirium has been shown to be associated with higher ICU and inpatient mortality, increased risk of re-intubation by 300% and increased hospital stay. Further, recent research has highlighted that patients who suffer from delirium may have an accelerated course to dementia in the future.

However it has also been shown that both medical and nursing staff are poor at recognising delirium despite acknowledging its detrimental potential. Hypoactive delirium, which is characterized by decreased responsiveness, apathy, lethargy and withdrawal, is particularly poorly identified.

The ‘Prediction of delirium in ICU patients’ (PRE-DELIRIC) score has been developed to help staff identify patients at high risk of developing delirium.
The aims of this study were threefold. Firstly to examine the incidence of delirium in a 13-bed Intensive Care and High Dependency unit in a central London Teaching Hospital. Secondly to compare the identification of delirium with and without using a delirium assessment method. Finally, the introduction of the PRE-DELIRIC scoring system was used to assess its ability to identify delirious patients in our unit.

Methods

This prospective study was carried out in a 13-bedded Intensive Care Unit in a central London teaching hospital. All patients in the unit were recruited during a 3-week period in October 2013.

The study was conducted in accordance with the UK GCP code (Clinical Governance Reference Number CAPP 922).

Three resident doctors in the Intensive Care Unit, all trained in using the CAM-ICU scoring system, were responsible for collecting the data on a daily basis. By using 3 investigators who worked different shifts, we ensured that patients were assessed for delirium on each day in the study period.

Patients in the unit were assessed for delirium using the CAM-ICU at noon each day. As most patients stayed in the unit for more than one day, they were assessed every day they were in ICU. The CAM-ICU is a validated non-verbal screening tool for delirium.

The nurse-in-charge of the unit was asked each day how many patients he/she believed to be delirious. This was based purely on observation and feedback from patient’s individual nurses rather than on a formal scoring system.

The Richmond Agitation Sedation Scale (RASS)17 was documented for each patient at the time of CAM-ICU scoring. The RASS score determines the level of consciousness of patients from +4 to -5. If a patient was scoring -4 or -5 in the RASS score then they could not be assessed for delirium and were re-checked later in the day.

The APACHE II score was calculated for all patients. This is a severity of illness score which provides an estimate of ICU mortality by using significant patient co-morbidites (if any), signs and biochemical values. The data is taken from the first 24 hours in ICU.

Finally, once the study period had ended all the patients who had been assessed with the CAM-ICU scores had individual PRE-DELIRIC scores calculated. The risk stratification boundaries produced by the PRE-DELIRIC are low risk (0-20%), moderate risk (20-40%), high risk (40-60%) and very high risk (>60%).

Statistical analysis was performed using Microsoft Excel. Categorical variables are reported as frequency and percentage whereas continuous variables are reported as mean ± standard deviation or median (interquartile range). Continuous variables were compared using an unpaired t-student’s test or a Mann Whitney U test as appropriate. Categorical variables were compared using a Fisher’s exact test. P values are two tailed.

Results

Our study included 31 patients within the 23-day study period (Table 1). The mean age for males was 60±18.3 (mean±SD) and 54±22.5 for females. The overall mean age for CAM-ICU positive patients was 65±20.5; mean male age was 60±17.3 for CAM-ICU positive males, mean female age was 68±23 for CAM-ICU positive females.

Eight male patients were ventilated on admission (four medical patients and four surgical) and four females were ventilated on admission (3 surgical patients, 1 medical patient). Two male patients and two female patients who were CAM-ICU positive were ventilated at some point during their admission.
Table 1. Demographics of all patients in study. All medical admission were emergencies, and all surgical admissions were elective.

SD – standard deviation, IQR – interquartile range

<table>
<thead>
<tr>
<th>Median (range)</th>
<th>CAM-ICU +</th>
<th>CAM-ICU -</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patients (M/F)</td>
<td>3 / 6</td>
<td>14 / 8</td>
<td>N/A</td>
</tr>
<tr>
<td>Age (M/F)</td>
<td>69 (40-71) / 61 (32-84) / 67.5 (34-94)</td>
<td>38.5 (16-67)</td>
<td>0.23 / 0.23</td>
</tr>
<tr>
<td>Diagnostic group (medical/surgical)</td>
<td>5 / 4</td>
<td>11 / 11</td>
<td>N/A</td>
</tr>
<tr>
<td>APACHE II (Mean ± SD)</td>
<td>18.55 ± 4.06</td>
<td>13.2 ± 5.53</td>
<td>0.01</td>
</tr>
<tr>
<td>RASS score (Median [IQR])</td>
<td>-2 (-2 to -0.5)</td>
<td>0 (0 – 0)</td>
<td>0.013</td>
</tr>
<tr>
<td>PRE-DELIRIC</td>
<td>44 ± 0.30</td>
<td>24 ± 0.23</td>
<td>&lt;0.0001</td>
</tr>
</tbody>
</table>

The mean APACHE II score for all patients was (mean±SD) 15±5.7 and median RASS score was -2 (range 3 to -3). There was a significant difference in the APACHE II scores between delirious and non-delirious patients; the mean APACHE II score (mean±SD) was 18.55±4.06 for delirious patients but 13.2±5.53 for non-delirious patients (p=0.01).

One hundred and one assessments were completed (Figure 1). A further 26 assessments were abandoned due to RASS scores of -4 or -5. The median number of assessments for all patients was 3. The range of assessments for CAM-ICU positive patients was 1-13. The range of assessments for CAM-ICU negative patients was 1-15.

Nine patients were CAM-ICU positive (9/31) giving an incidence of 29%. The median number of delirium free days (DFDs) was 26 (range 22-27).

There were 18 CAM-ICU positive assessments. The median RASS scores were significantly different for CAM-ICU positive patients, [median (25-75 IQ range)] -2 (-2 to -0.5), compared to CAM-ICU negative assessments 0 (0 to 0), p=0.013.

Of the 9 delirious patients, 3 were male (mean age 69[range 40-71]) and 6 were female (mean age 56[range 34-94]). Five were in ICU post-operatively and four for medical reasons.

Identification of delirium by ICU personnel was missed in 13/18 incidences (72% of the time). Two thirds of the missed incidences were in patients with RASS scores of -1/-2 who were exhibiting hypoactive delirium (Figure 2). On a further 5 days, ICU personnel incorrectly labelled patients as being delirious who were not CAM-ICU positive.

The median PRE-DELIRIC score was significantly different for patients who developed delirium (mean±SD) was 44 ± 0.30 compared to patients who never developed delirium was 24±0.23, p=0.0001.

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**Figure 1.** Flowchart illustrating the patients included in the study. 32 patients were enrolled in the study with 127 assessments completed over 23 days. On 26 incidences, patients had Richmond Agitation Sedation Scale (RASS) of -4/-5 and therefore the CAM-ICU assessment could not be completed. 101 assessments were completed, with 18 CAM-ICU positive assessments in 9 different patients.

**Figure 2.** Bar chart showing the RASS scores of patients with CAM-ICU positive assessments. This figure illustrates the RASS score in the x-axis and the number of patients with this RASS score in the y-axis.
Discussion

Our study aims were threefold. Firstly we wanted to calculate the incidence of delirium in our ICU unit. We found the overall incidence in our study be 28%. This correlates with the 29% delirium point prevalence found in Giraud and Vuylsteke’s study of 217 patients in nine East Anglia intensive care units17. Where Giraud and Vuylsteke used the CAM-ICU score, a further paper by Ouimet et al.2 in 2007 used the Intensive Care Delirium Screening Checklist (ICDSC) and produced a similar delirium incidence of 31.8%. However our incidence of delirium is lower than found in other studies using the CAM-ICU score6,6, although these studies were in ventilated patients.

We chose to use the CAM-ICU because it is efficient, reliable and quick. It has small inter-user variation with high sensitivity and specificity4. However the CAM-ICU has been criticized for missing delirium in non-intubated patients but in our study, only 4/18 CAM-ICU positive incidences were in ventilated patients. Further, it has been proposed that the CAM-ICU assessment can be positively biased toward sedated patients. Again we did not find this with only 4/18 positive assessments in patients receiving sedation.

The overall identification of delirium in intensive care remains low13,14. We wanted to assess the difference in identification of delirium between a formal score such as the CAM-ICU score and staff observation. We found that the sister-in-charge of the unit only correctly identified the number of patients with delirium (either over-estimating or under-estimating) on 5/23 days. Delirium was not identified by ICU staff in 13/18 CAM-ICU positive assessments, with 2/3 of these patients having hypoactive delirium. We found that the patients who developed delirium had significantly lower RASS scores than those who did not (P=0.013). Hypoactive delirium has a higher incidence than hyperactive delirium. It is also a predictor for risk of higher mortality. a higher mortality risk. Our results suggest the need to introduce regular screening tools for assessment of delirium in ICU. They also demonstrate that this is both feasible and potentially beneficial.

Thirdly we wanted to trial the use of the PRE-DELIRIC scoring in our department. We found that the mean PRE-DELIRIC score for the patients who ultimately went on to develop delirium was significantly higher than that of the non-delirious patients (44 vs. 24, P<0.001). A new study in which the score was recalibrated has shown that it remains a useful tool in predicting delirium in different countries18. However, the validation study had limitations, as patients with alcohol misuse and dementia, along with other risk factors for dementia, were excluded15.

Our study was limited by the patients only having CAM-ICU assessments carried out once daily. Delirium, and severity of illnesses leading to delirium, are known to vary throughout each 24 hour period so some incidences of delirium will have been missed. Further, we did not have clear information regarding sedative or analgesic use which may have impacted upon delirium.

From this study we recommend twice-daily delirium screen as part of the daily medical/nursing assessment for patients in ICU. We have started to use the PRE-DELIRIC score on admission in order to risk stratify patients for delirium, and as a way of heightening our alertness for delirium. We are now re-auditing the incidence of delirium after implementing these changes.

References


Think Delirium: An education intervention on acute wards in the University Hospital of North Tees, Stockton on Tees, UK

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Aim
The prevalence of delirium in people on hospital medical wards is 20% to 30% with a growing requirement of input within mental health liaison services. Even so the numbers of undetected cases remain at 30% to 67%. Research indicates that a focused and inexpensive educational program can decrease the prevalence of delirium among older inpatients. The aim of the study was to roll out an education program, 'Think Delirium', to hospital staff who lack confidence in knowledge of delirium recognition and management which leads to increased patient morbidity. The project has been awarded backing and funding by the Trust’s ‘Dragon Den’ business planning process. North Tees University Hospital has a mental health liaison service based on site, this team which also covers Hartlepool Hospital.

Method
We felt that recurrent brief educational sessions to improve awareness among the staff in acute hospital may be useful. The Project is being carried out in three stages across North Tees and Hartlepool:

- Initially wards were identified that produce a higher percentage of delirium referrals and an initial survey conducted to assess staff confidence in recognising and managing delirium.
- Secondly, 20 minute on-ward teaching sessions were held. These are interactive and encourage debate and reflection among health care staff. Multi-media teaching aids and posters promote delirium awareness on the wards. Following this intervention benefits were analysed via a follow up survey.

- Lastly refresher courses will be held 6 monthly to consolidate knowledge.

Results
Analysis of the teaching sessions are made following pre and post teaching survey relating to the confidence of ward staff in predicting, recognising and managing delirium. A Likert scale was used to identify confidence levels of staff ranging from unaware (1), not confident (2), somewhat confident (3) to highly confident (4). 32 staff took the pre-teaching survey across 6 hospital wards. 15% had attended previous teaching on delirium. 100% stated teaching on delirium would be of use. A total of 91 staff have attended the teaching sessions from 8 identified ‘at need’ wards. More teaching sessions across the acute trust are planned in the future. 75 staff responded to the follow up survey: 18 nurses, 2 specialist nurses, 10 student nurses, 13 junior doctors, 19 HCAs, 10 OT, and 3 physiotherapists took part in the educational intervention. The results indicate 84% staff found the teaching very useful, and demonstrated an increase in confidence in all domains.

NICE guidelines highlight promoting a culture of delirium prevention, awareness and recognition. This is not being acted upon in acute hospital wards. We have identified poor confidence surrounding delirium on the wards in turn leading to increased costs for patients, and both acute and mental health services. Ultimately more needs to be done in this area.
Staff Groups who attended the training sessions.

Pre Teaching evaluation of level of confidence in predicting delirium

Post Teaching evaluation of level of confidence in predicting delirium
We created a Buzz about the project. By way of presenting in local, regional events and this project had coverage from the local newspaper. We also shared the information via social media. The delirium card was retweeted and favorited by several professionals all over the world.
Undergraduate delirium education – a perspective

Claire Copeland

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The Royal College of Psychiatrists publication ‘Who Cares Wins’ highlights that older people occupy two thirds of NHS beds. Of this approximately 20% will experience delirium; occasionally as an isolated event but commonly this will occur on a background of known cognitive impairment or dementia.

Delirium is associated with poor outcomes including increased mortality, increased rates of institutional care and frequently has a long term negative impact on cognitive function. In essence delirium is a patient safety issue – as important as preventing hospital acquired infection or venous thromboembolism.

In the wake of Mid Staffs, the Francis report highlighted that patient safety should be a priority of medical training and education. In 2010 the GMC assumed statutory responsibility for all medical education, encompassing every stage from undergraduate medical school education to postgraduate specialty training, continuing professional development and revalidation. There are draft guidelines out for consultation to look at how cohesive and robust this process will be in the future.

One of the proposals included in the new guideline is that medical school curricula are developed in collaboration with medical students, doctors, employers, patients, carers and families.

In 2008 Adam Gordon et al looked at undergraduate teaching in geriatric medicine within UK medical schools. While topics such as delirium were included in the curriculum, there was no detail around the frequency or methods used to deliver this teaching. The assessment process was also criticised with questions raised regarding how the successful delivery of this section of the curriculum was evidenced. A new curriculum was proposed in 2013. While there was some improvement, medical schools were still noted to invest on average less than 2 weeks in total for the delivery and assessment of Geriatric medicine training.

James Fisher et al looked at the specific problem of delirium and tried to establish the content of what was being taught in medical schools and how this was delivered. In line with previous work, medical schools are including formal education regarding delirium but there was felt to be a lack of evaluation following teaching sessions as well as an underutilisation of patients and the public in the delivery of these sessions. The experience of delirium for patients and their loved ones is a powerful tool in learning about delirium.

Closer to home in Scotland teaching in geriatric medicine is somewhat disparate in its organisation and a lack of undergraduate exposure to delirium is common.

At a recent ‘Geriatrics for Juniors’ event held in Glasgow a session was dedicated to delirium. Over half those attending were medical students or Foundation Doctors from across Scotland. When asked how comfortable they were managing delirium 24% said they were which improved to 90% after the lecture. All of the responses stated they found the session ‘useful or very useful’ Comments received again highlight the lack of formal teaching at undergraduate level.

An interesting point raised by students was a lack of clarity surrounding the word ‘confusion’; particularly its use in relation to delirium and how this differs to that seen in dementia. This perhaps is a reflection on the varied number of specialties speaking on the subject of confusion with no cohesive learning objectives.

Local initiatives such as the G4J event may well go some way to filling the gaps not yet filled by the medical schools.

However in order to keep in align with the GMC educational aspirations undergraduate training has to be person centred and focused on patient...
safety from the outset. The delivery of it lends itself to some innovative ideas.

One such idea used a mixture of social media, text and voting pads. A series of cases were presented. Third year students were then able to either text questions anonymously or tweet them (with a live twitter feed happening simultaneously for those off site). At the end they voted using handheld voting pads. This approach was received very favourably by students and there is a plan to repeat it this year with more robust feedback.

An underutilised resource is patients and families/carers to help influence students attitudes towards delirium. The use of role playing and simulation using people who have firsthand experience of delirium could make the learning experience more authentic and person centred.

The ever evolving area of social media plays a pivotal role in medical education these days. The approaches used range from well established Facebook and Twitter (#FOAM) to podcasts (miniGem) and YouTube tutorials.

One initiative I explored locally was using Vine. These are 6 second videos that loop. I asked some of my Foundation trainees and medical students to take one aspect about delirium and turn it into a 6second video. The idea was to focus on one specific learning objective to consolidate the learning.

In summary undergraduate education in delirium is showing signs of improvement but much more work needs to be done.

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Report on the EDA Meeting in Cremona

Barbara Kamholz

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Beautiful, graceful Cremona was home to the EDA this year. It is now a UNESCO World Heritage Site! The meeting was the largest yet, with roughly 220 attendees, in fact it was oversubscribed. The meeting was marked by the fountain of new investigation in the field, and by the increasing stream of young clinicians and scientists who are using their ingenuity and energy to expand the borders of knowledge.

David Meagher, Professor of Psychiatry, University of Limerick gave the initial keynote speech, on delirium phenomenology and Sophia de Rooij, Professor of Medicine, University of Amsterdam gave the second keynote on the future of pharmacological treatment of delirium.

Future Treatments of Delirium: A Brief Summary of Sophia de Rooij’s keynote speech at EDA 2014

Thinking about the future treatment of delirium we first need to answer this question: What are we trying to accomplish? To prevent vulnerable older people from having to endure this terrible illness; to at least learn how to decrease its severity or duration; and to improve the outcomes of people who have suffered from it.

Over the last decade many articles have been written about prevention. More information is emerging about its epidemiology, and studies on biomarkers have revealed factors that improve our understanding ways that brain injury results from delirium, leading to dementia and premature mortality.

Our current treatments reflect how slow this progress has been. Since 1958 we have been using drugs like haloperidol, with an approach of “one size fits all”. Are we sure that these treatments contribute to the poor outcomes when used in the vulnerable brains that lower the threshold for delirium? We need to shift the focus of ‘drug in search of disease’ to ‘disease in search of a drug’.

Some helpful strategies should include:
1) Using expert opinion to guide the use of antipsychotics;
2) To use hypotheses that are based on the findings of our biomarker investigation and observations about the impact of certain drugs on delirium, such as statins;
3) To follow new routes based on our findings regarding inflammation and microglial activation; and
4) To become very creative in our thinking, branching off from treatments that have been successful elsewhere, such as in cancer therapy, or to use our developing knowledge about delirium to consider a possible role for nutritional agents.

Jim Rudolph, MD, (at the time of Harvard now Director of the VA Delirium Patient Safety Center of Inquiry) gave the third keynote on challenges and opportunities in changing clinical practice in delirium. Professor Pratik Pandharipande from Vanderbilt research group presented new data on post-traumatic stress and delirium in critically ill patients.

There were multiple additional workshop sessions, symposia, oral presentations and posters; this year there were over 90 abstracts submitted. Selections follow, emphasising new areas of investigation.

Workshop topics: Assisting investigators with doing research in delirium; evaluation of the results of the survey of delirium practitioners (global) on their assessment and management of delirium superimposed on dementia; implementing effective delirium management programs; assessment of delirium in pediatrics.

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**Symposia:** The uses of melatonin in delirium, impact of haloperidol on the QTc interval, medication management in delirium, and a broader look at the medical context in which delirium occurs, primarily addressing frailty.

**Oral Presentation Highlights:** A comparison of cognitive and neurocognitive profiles in patients with delirium, dementia, comorbid delirium/dementia and controls; the impact on delirium incidence of a trial of local anesthesia for hip fracture repair; an assessment of the frequency of subsyndromal delirium presentation in a general hospital; cognitive predictors of delirium; predictors of recurrent delirium; EEG monitoring for ICU delirium, with findings on functional connectivity and synchronization (award winner); biomarkers; alterations in systemic inflammatory markers; anticholinergic drugs; impact of frailty; and the mortality risk of Haldol in the elderly.

**Poster Highlights:** A critical care recovery center; impact of HPA axis abnormalities and serum markers of delirium on outcomes; a computerized version of the months backward test, and attempts to standardize results; whole brain and hippocampal atrophy as predictors of delirium; effective of postgraduate education in delirium; pilot prevalence of delirium in a low resource African setting (award winner); inter-relationship and overlap of delirium and depression in the elderly; rapid screens such as 4AT and Short CAM; community-wide, interprofessional delirium education, management and prevention; behavioral predictors of incident delirium; a PLS path model to study the relationship among delirium, dementia, and depression; and the development of a software to detect and monitor delirium.

As you can see, the boundaries of investigation in the field broaden each year! The field is in a phase of hypergrowth, which leaves many avenues open to get involved clinically and scientifically. The large audience reflects the rapidly growing interest in the field.

**EDA 2015**

**10th Scientific Conference**

**Dates:** 2nd – 4th September 2015

**Venue:** Guy’s Campus of King’s College London

With just under six months to go, preparations are well underway for our 10th scientific conference. For the first time, it will be held in conjunction with the British Geriatrics Society (BGS) Dementia and related disorders Special Interest Group (SIG). We are fortunate that Dr Emma Vardy (Newcastle) from the BGS SIG is co-chairing the scientific organising committee. This will be a fantastic opportunity for the EDA to benefit from the experience and expertise of the BGS and in turn offer the best of the EDA to London health professionals.

The conference will be held at Guy’s Campus, Kings College London, the local hosts being King’s Health Partners (KHP). KHP is a world-leading academic health sciences partnership with particular strengths in psychiatry and services for older people. This combination is unique and we very much hope this will make for a highly successful event.

Building on previous successes, the main conference will be spread over two days with sessions on:

- The biological basis of delirium neuropsychiatry
- Critical care delirium
- Perioperative delirium
- Palliative care and nursing home delirium
- Experimental models for delirium research
- Objective measures of delirium
- Innovations in delirium education
- Setting up a delirium service

The conference will be preceded by a one-day Delirium Training Day. This will cover the essentials of delirium recognition and management and will assume no previous knowledge. Workshops for multi- and inter-
professional learning will be on offer, welcoming anyone keen to improve their care of delirium patients.

We are fortunate to have attracted a range of high-profile speakers. Our keynote speaker, Dr Colm Cunningham (Dublin), has offered a major advance to the field through his development of experimental models for delirium pathophysiology. We look forward to state-of-the-art talks from Alasdair MacLullich (Edinburgh), Kenneth Rockwood (Halifax), Arjen Slooter (Utrecht), James Rudolph (Boston) and Jose Maldonado (Palo Alto).

New for EDA conferences will be a dedicated session on public engagement. There will be a Special Round Table with eminent figures who have influenced public perceptions: David Aaronovitch (columnist, the Times), Martin Prince (Professor of Global Mental Health, King’s College London). This will be a critical chance for the scientific delirium community to understand how best to disseminate our work, for the benefit of patients and their carers.

Finally, a social event is in order, of appropriate scale for our tenth anniversary. Details are hotly guarded for now, but we can hint that it will involve food, drink, enthusiasm, and the river Thames.

Check the websites and Twitter for further announcements on registration and abstract submission.

www.europeandeliriumassociation.com
www.bgs.org.uk
www.kingshealthpartners.org
@EDA_delirium

Daniel Davis, Emma Vardy and Alasdair MacLullich, on behalf of the EDA London 2015 Scientific Organising Committee.

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Guidelines for authors

Annals of Delirium Care is a publication of the European Delirium Association which seeks to advance knowledge in the field of delirium. It is published three times a year (March, July, November). We especially welcome opinion pieces, reviews and research articles in the field.

Please send your ideas for contributions to the next Annals to valerie.page@whht.nhs.uk, andrew.teodorczuk@newcastle.ac.uk or m.dewes@web.de.

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