



Annals of Delirium July 2011 Editorial

In June the European Delirium Association was honoured to be presented with the Delirium Champion Award 2011 from the newly formed American Delirium Society. The award was in recognition of our “advocacy, leadership and numerous contributions to the advancement of delirium science and care”. Professor Alasdair MacLulich received the award on behalf of the EDA and those of us who were there felt extremely proud but maybe a bit nervous at the level of responsibility that comes along with such an accolade.

While, however, sometimes our “lacunae of knowledge” in this, our chosen area of interest, appear insurmountably wide and the number of experts working on advancement relatively small (as compared with say cancer or even dementia) the opportunities are consequently large. Young researchers can take their pick of where to concentrate their efforts – tools for detection, cognitive impairment, drugs to treat. Front line staff can implement changes, maybe routinely ask relatives/friends “do you think they are acting normally?” and see if it helps (or not!) And if there is going to be a difference the clinician or carer will know. Past patients and relatives can tell their stories so that other victims of delirium can make sense of their experiences. **You** could become an expert. And if that is not something you aspire to you can at least throw light on the dark face of delirium by just talking about it.

The next Annals will be timed to coincide with our 6th International Annual Congress being held this year in Umeå in Sweden. We are looking forward to seeing your abstracts (see the news section for details of sending them in)! Apart from a review of delirium in the ICU and summaries of relevant presentations from the American Association for Geriatric Society, this Annals has a contribution from a director of ICUsteps a UK charity for ICU survivors. Peter Gibb describes his experience to show how just how pervasive and persuasive delirium can be. Jouko Laurila has contributed a commentary on a

recently published study the subject of which is dear to his heart. We have an interesting article on Delirium Knowledge Transfer which sounds like a solution to a fundamental problem to us all.

I hope you will look into travelling to Umeå in November; it will be a great experience for all who make the effort. As always your contributions to the next Annals will be very welcome.

Valerie Page

Valerie.page@whht.nhs.uk



The American Delirium Society's Delirium Champion Award presented to the European Delirium Association in June 2011.

Patient experience – Escape on the mind

Peter Gibb is a founder member of icusteps, a patient group with the aim to improve patient support and highlight that recovery from critical illness continues after discharge. Here he describes his own experience of delirium.

The last thing I remember from before my accident was being at a Placebo gig at Brixton Academy the night before and advising my friend to buy a concert t-shirt because he'd never have the chance again. That was the last memory I had.

I'm told I went to work the following day, put in a full day at the office and then left to go mountain biking with Mike, a guy I worked with to the woods just outside Milton Keynes as usual. We were due to be going to the French Alps in a couple of months time for a week's riding holiday with some other friends and were in training to tackle the Freeraid Classic; a forty mile Alpine bike ride we'd signed up for.

We reached the point on the ride where there was a fast downhill with a jump on it which I'd done numerous times before, each time taking it a little faster and being airborne for a little further. I don't know what happened on this particular occasion but something went wrong and soon after I'd left the ground, the bike and I parted company. After flying some way through the air, I landed head first at speed. The helmet I was wearing shattered taking the brunt of the impact. Even with this, I was left with a brain haemorrhage, a broken rib that had punctured my left lung, a fractured vertebra in my neck and two broken vertebrae in my back. I was struggling to breathe, unable to move but still conscious, so I'm told.

Mike couldn't get a signal on his mobile phone so he rode quickly to the edge of the woods where he'd stand a better chance of summoning help. After a ground ambulance had been unable to reach me, the air ambulance was called in.

Thanks to the diary my wife Mandy kept, I know she arrived home from her job late in the evening to find Mike and another colleague waiting outside the house. How she felt, I can't possibly imagine.

From the stories I've since heard from my family I have an idea as to the things that happened during my stay in intensive care but I don't actually remember them. I remember the controls for raising and lowering the bed, that I had to remember one of the nurses was called Arnell, not Anselmo as I wanted to call him. I remember trying to write a letter to a band I was due to see in concert but not being able to hold the pen. Aside from a couple of specific vivid dreams that I had, the first real memory that I had that things weren't right was the large pad of wadding over my throat where I'd had a tracheostomy. I'd been raised from sedation many days before this, had conversations with staff and family but I only know these things from other people telling me about them. I have no recollection of it myself. To my perception, I went to bed one night and when I woke up nearly three weeks were missing and my life had been turned on its head.

Between the medication and the head injury my memory is patchy for several months after this though I remember some moments and feelings quite clearly. I don't remember the mood swings and depressions I'd sink into that I've been told about but I do remember the need to be able to see a clock from wherever I was. I wasn't convinced by the stories that were told to me, about my treatment, my injuries, how I'd ended up where I was. I tried to make sense of everything around me and the slightest inconsistency drew my attention, convincing me that this reality that I now found myself in was no more real than any other dream. Even something as small as a word could provide a clue as to this false reality around me. People were talking about a 'tracheostomy' but I 'knew' that to be wrong. In all the television programmes I'd ever seen it was tracheotomy, no 's'. Everyone seemed to accept this word without question but I was the only one who spotted that it was wrong.

I had no real perception of how seriously injured I'd been or how serious my ongoing condition was. I still fully expected to be going on my mountain biking holiday in a few months time. It was two weeks after my accident when it was found that I had unstable compression fractures of two of my vertebrae – a broken back – and there would most likely be spinal cord damage. I'd even been gotten out of bed and had begun physiotherapy. From being mobilised and getting better, I was now confined to my bed, not allowed to sit up, have my legs bent or even cross my ankles. I was supposed to lie flat on my back, completely still for three weeks. I was in intensive care for a little over three weeks before being discharged to a general orthopedic ward. When I got there, no one seemed to know what I'd been through or what was wrong with me.

As time went on I became increasingly convinced that there was a conspiracy to keep me in that place. The rollercoaster of the way my injuries were discovered to be worse and their treatment seemed to take a downturn after having gone well added weight to this belief. One of the things which I 'knew' was that broken bones take 6 weeks to heal and the spine would be no different. When six weeks were up, I would be out, so I thought.

I knew that I needed a spinal brace before I could begin physiotherapy and I knew I needed physiotherapy before I could go home. I remember when I was measured up for it that the technician said it would be ready in 'a few days'. To my mind, that meant three days. When three days elapsed and there was still no spinal brace, it reinforced by belief that they were trying to keep me there. This belief was deepened as reason after reason emerged as to why I needed to stay there longer. When my wife came in one Monday morning to try and find out from the registrar what was next in my treatment and was fobbed off with no answer, I was not surprised. I expected it as their reasons for keeping me were becoming more and more flimsy. I told my wife I wanted out and that I was leaving the hospital. I blackmailed her emotionally, telling her that if she did not help me, I would try to escape when she wasn't around

and that I'd probably end up dead in a ditch somewhere. It took all my powers of persuasion to force her to help me, but eventually I convinced her. I regret having made her do that, inflicting the guilt that would follow but to this day I'm grateful that she did and I always will be.

Some sort of cloth corset with metal rods in it had appeared at the foot of my bed a day or two previously. I took this to be the spinal brace I was waiting for but that they'd 'forgotten' to tell me it was there. In hindsight, I don't know what it was or how it had got there, but it wasn't the spinal brace. Getting up for the first time in over three weeks we strapped on the corset and grasping the zimmer frame that had been constantly by my bedside the previous three weeks I summoned reserves of strength I didn't know I had and began my escape. One condition Mandy had made me agree to was that I would tell them I was leaving. Naturally I agreed as this was an obstacle to my escaping. As we reached the nurse at the desk by the exit I told, her as I'd agreed to do, that I was leaving. I recall her seeming flustered, which made sense to me as I was not behaving as their plan would have me. She asked me to wait and speak to a doctor and I calmly agreed but with absolutely no intention of doing so. I'd not let them thwart my escape, not so close to getting out of their clutches. As soon as she went to get the doctor, I was off.

That's how I escaped Ward 11. A Herculean effort, with a stolen zimmer frame, in my pyjamas but I was home and I was glad.

Escaping hospital was only the start of the story. It took several months and the help from many other services to recover. I can't help wonder how much easier it would all have been for me and my family if my delirium had been identified and managed at an earlier stage and how much of the time and effort from the other resources who helped me after hospital would have been saved.

Patients who've been through critical illness are immensely grateful for the help they've received and often have a desire to repay that debt of gratitude. That's what led to the formation of ICUsteps. A desire to use our experience to help patients going through similar experiences and staff to better understand what they're going through. Peer support is a valuable step on the journey from being a patient back to being a person again. Recovery from critical illness is a long and difficult road, but it shouldn't be made any harder than it has to be.

To find out more or get in touch, visit us at www.icusteps.org

Can nothing really be done about established delirium?

Marcantonio and his colleagues conducted a cluster randomized controlled trial with a total of 457 enrolled subjects (Marcantonio ER, Bergmann MA, Kiely DK, Orav EJ, Jones RN. *Randomized trial of a delirium abatement program for postacute skilled nursing facilities. J Am Geriatr Soc* 2010;58:1019-1026).

This study was designed to determine whether a nurse led delirium abatement program (DAP) can shorten the duration of delirium in newly admitted post acute care facility patients. They believed that the typical length of hospital stay (five days in the United States) is too short to allow hospital based treatment to subjects with delirium, and most patients with delirium are discharged to post acute facilities still requiring delirium assessment and treatment.

The study was conducted in eight post acute facilities, matched in four pairs. In the intervention facilities DAP included five important delirium management processes: (1) Detection of delirium, (2) Documentation of delirium, (3) Evaluation and treatment of common reversible causes of delirium, (4)

Prevention and management of common complications of delirium, and (5) Restoration of function in patients with delirium.

As a result, detection of delirium was significantly improved. The rate in usual care was 12% and in the DAP 41% ($P < 0.001$). However, there was no impact on delirium. At two weeks it was present in 67.8 % in DAP group compared with 65.7 % in usual care group ($p = 0.57$). At one month the figures were 59.9 % and 50.7 % ($p = 0.20$), respectively.

In the discussion the paper included this somewhat discouraging statement: "currently there is no successful model that has shortened the duration of established delirium".

We challenged this opinion in the January issue of the journal (Pitkälä KH, Strandberg TE, Tilvis RS, Laurila JV. *Effective treatment of delirium is difficult but not impossible. J Am Geriatr Soc* 2011;59:167-168), and the authors responded in the same issue (pp. 168-169).

According to Marcantonio and colleagues, they were seeking "real world" relevance, and while coming to their conclusion they excluded studies performed in what they believed were specialized, high-quality facilities. In fact our own study ended up in such a category and was excluded (Pitkala KH, Laurila JV, Strandberg TE, Tilvis RS. *Multicomponent geriatric intervention for elderly inpatients with delirium: A randomized controlled trial. J Gerontol A Biol Sci Med Sci* 2006;61A:176-181). Our trial in Finland had shown that with comprehensive geriatric assessment and treatment the duration of delirium can be shortened.

Supposing that our delirium screening and intervention was performed by a research team, Marcantonio and colleagues argued that our study was rather an *efficacy* than *effectiveness* study. They commented that our mean length of hospital stay (25 days) was unlikely to be applicable in the United States. Finally, they hypothesized that the improvement in delirium symptoms shown using the

Memorial Delirium Assessment Scale (MDAS) might have been partly due to conversion of hyperactive to hypoactive delirium due to use of antipsychotics.

Contrary to Dr Marcantonio's statement, we believe that our study was, in fact, in several ways a pragmatic (effectiveness), and not an explanatory (efficacy) trial. Firstly, the exclusion criteria to recruit patients were kept to a minimum. Thus, our sample represented a full spectrum of delirious geriatric patients in acute care. Secondly, unlike Marcantonio and his colleagues stated, the effectiveness shown in our trial was achieved without a full multidisciplinary team. The treatment of delirium in our intervention group was performed mainly by the existing staff of seven different acute geriatric wards of a public hospital. Thirdly, whether the improvement in delirium symptoms detected by MDAS was due to antipsychotics or comprehensive management, is difficult to determine because of the multicomponent nature of our intervention. However, the improvement was not associated with worse prognosis (of hypoactive delirium or antipsychotics), indeed the opposite was found. We also showed that patients' cognition and quality of life can be improved – even without extra costs.

We agree that the average length of hospital stay of 25 days in our population is long. We believe, however, that this does not reflect longer hospitalization periods in Finland but rather the serious, life threatening acute medical condition that these patients suffer from meaning, that they simply cannot be treated within the average length of hospital stay. The significantly longer length of stay among patients with delirium is shown in numerous studies around the world, including the United States.

We believe that the major difference in designs of these two studies is, that in addition to skilled senior nurses, we also implemented a consulting geriatrician in our intervention team.

We strongly believe that part of the negative result of the Marcantonio study is explained by the absence of medical expertise in their intervention. Nurses have already shown their effectiveness in detecting delirium, but we think that nurses alone cannot be responsible for the evaluation and, especially, treatment of the multiple aetiologies of delirium. Effective evaluation and treatment of a complex syndrome with numerous predisposing and precipitating factors require a full geriatric assessment and medical expertise.

We share Dr Marcantonio's hope for more innovative studies to target the treatment of patients with delirium, but we do not, however, share the negative evaluation of the currently-available evidence of treatment effectiveness. *Annals of Delirium* would be a good forum to carry this discussion of the interesting topic a bit further: please send any comments to the Editor.

Jouko Laurila M.D., Ph.D.

Editor's note: Post acute care provides for the medical and emotional needs of people who are well enough to be out of a traditional hospital setting, but not well enough to return home. It can involve helping a patient to perform activities of daily living, monitoring vital signs, physical or occupational therapy.

Featured presentations:

American Association for Geriatric Psychiatry's annual conference March, 2011.

Delirium until proven otherwise: Delirium among elderly patients admitted to inpatient psychiatry units

Yesne Alici, M.D Attending Psychiatrist Inpatient Geriatric Psychiatric Unit, Central Regional Hospital, Butner, North Carolina

Delirium is a medical emergency associated with significant morbidity and mortality among elderly patients, necessitating judicious assessment and treatment of underlying aetiologies. Delirium continues to be under recognised and undertreated despite its high prevalence and incidence among hospitalised older patients. Under recognition of delirium in emergency rooms, and misattribution of "confusion", "agitation" and other terms to dementia-related behavioural disturbances in the elderly commonly result in inappropriate admissions to inpatient psychiatry units, delaying assessment and treatment of reversible medical aetiologies (e.g. infections, electrolyte disturbances, dehydration, polypharmacy, etc.).

Studies from the U.S. and around the world have shown a delirium frequency ranging between 2 to 20% in inpatient psychiatry units, with higher rates among older patients and early in hospitalisation. Among patients admitted to psychiatric units with a missed diagnosis of delirium, the most commonly overlooked underlying aetiologies were urinary tract infections, electrolyte imbalances, and medications. Those patients were more likely to have inadequate medical histories, physical examinations, laboratory studies, and assessments of cognitive functioning. When compared to patients with delirium who were medically admitted, history of mental illness was more common among delirium patients admitted to

psychiatry units. In our retrospective review of 116 patients admitted to a state hospital geriatric psychiatry unit 22 (18.9%) patients were found to have been diagnosed with delirium within 7 days of admission, predominantly of the hyperactive psychomotor subtype. About half of the patients were referred from inpatient medical units mostly with a referral diagnosis of dementia. Most common underlying aetiologies were urinary tract infections, medications, and increased blood urea nitrogen (BUN) creatinine ratio.

Hypoactive subtype of delirium, intact orientation on cognitive assessment, and history of past psychiatric history have been found to be the most common contributing factors for under recognition of delirium in emergency room settings and among medically hospitalised patients. In psychiatry units it is also possible that prodromal symptoms of delirium or a protracted delirium course contribute to misdiagnosis due to attribution of confusional states, increased agitation, or other behavioural disturbances to an underlying diagnosis of dementia. It is important for clinicians to rule out a diagnosis of delirium on all dementia patients admitted to psychiatry units to avert delirium-related poor outcomes in this vulnerable patient population.

Education of staff in psychiatry units is important not only for early recognition of delirium but also to minimize use of physical restraints and to implement nonpharmacologic interventions into routine nursing care.

Strategies for improving delirium care in hospital settings

David Loreck, M.D, Consulting Psychiatrist Baltimore Veterans Administration Hospital, Baltimore.

Delirium is a common problem in the hospitalized elderly and results in increased morbidity and mortality, yet few hospitals have developed pathways to improve delirium care. A core program to improve delirium care is summarised here.

Step 1: *Target one unit* where there is high interest and motivation to improve delirium care, where you can pilot a treatment plan and demonstrate efficacy. This is more likely to be successful than immediately aiming for wholesale institutional changes.

Step 2: *Identify either unit leadership* (physician, nursing, social work) or a specific consult service (psychiatry, geriatrics, neurology) to lead the delirium care initiative. If a consultation service is leading the initiative, however, you will still need unit leadership to ensure that consults are submitted.

Step 3: *Begin regular in-services to unit staff* regarding risks of delirium, delirium identification, and management strategies.

Step 4: *Utilise existing unit assessment protocols* whenever possible (e.g., restraint reduction) to avoid re-inventing the wheel and alienating unit staff by asking for “too much too soon.” Bring in additional assessment and treatment materials as needed once the program is established.

Step 5: *Develop universal precautions/procedures*: At minimum, orient patient to staff at every encounter and try to minimise staff rotation, update orientation board every shift, improve night-time environment to encourage sleep (noise reduction), assess daily for delirium, review the

overall environment to enhance proper activity and stimulation, encourage family visits and supportive listening to patients’ distress, and reduce confusing/loud stimulation in the environment.

Step 6: *Screen for and modify common risk factors*: including review of medications, clarification of existence of pain, identification of (and find remedies for) impaired vision/hearing, enhancing hydration and nutrition initiating bowel/bladder/ambulation regimens, and maximising/regularising sleep.

Step 7: *Develop a standardised treatment plan that avoids confusing or conflicting strategies, including*: sitter training program, standardised orders for laboratories and medications, pharmacy consultations for medication reviews, physical and occupational therapy to improve mobility, and standardised supplies to help the sitter/nursing staff to optimise care (e.g. a Delirium Toolbox).

Conclusions: Many low cost interventions can be utilized on a unit receptive to improving delirium care. Although a comprehensive plan including universal precautions, improved delirium identification/risk modification, and standardised education and treatment protocols is optimal, starting with any aspect of improving delirium care is preferred to not addressing delirium care at all.

The Messiness of Delirium Knowledge Transfer

Paul Wishart, PhD, MA

**Adjunct Assistant Professor, Department of Surgery,
Faculty of Medicine, University of Calgary**

I have been invited to share a bit about my work on Delirium and Knowledge Transfer in the EDA newsletter. I'd like to start with a story that emerged from our research. It is a variation on the theme of "life happens when you're trying to do something else."

I was involved in a research project validating a nursing delirium assessment in elderly patients having elective surgery (Madan, Patten, & Sivakumar, 2006). My job was to recruit participants from the Pre-Admission Clinic (PAC) to the study. I focused on recruiting enough patients to achieve "statistical significance".

I worked very closely with the nursing staff in the PAC to connect me with patients coming to who fit the inclusion/exclusion criteria. I was invited to share these inclusion/exclusion criteria with the staff. I also contributed to staff meetings and educational sessions with new nursing staff on delirium. I was pleased to accept any invitation that presented itself to speak on delirium.

After a while, the nursing staff in the PAC would refer patients for me to contact who fit the criteria for the study. One day it hit me; they were actively transferring knowledge into practice in terms of referring patients for me to contact for the study. Transferring knowledge on the inclusion/exclusion criteria for the project leading to assisting with possible participants in the study was an important complement to the statistical significance aspect of the research and recruiting patients. An important aspect of this research was taking place through connecting with the staff.

Another piece of the story is that I have a passion for looking at things from a Grounded Theory perspective. A Grounded Theory perspective means that I

am curious as to what is actually going on. In this case, what is going on in transferring research and theory on delirium into practice in health care, particularly in the context of surgery?

I became aware of the significance of this shift from focusing on the statistics of recruitment to addressing the factors that influence the transfer of knowledge into practice. And I began to wonder what was going on in the PAC with regard to delirium in particular, but also with the health care Knowledge Transfer stream in general (see Figure 1, below, Wishart et al., 2009; Wishart, 2010). I started analyzing the data I had been accumulating during the course of the research, through observations, memos, conversations, and literature on the subject of delirium.

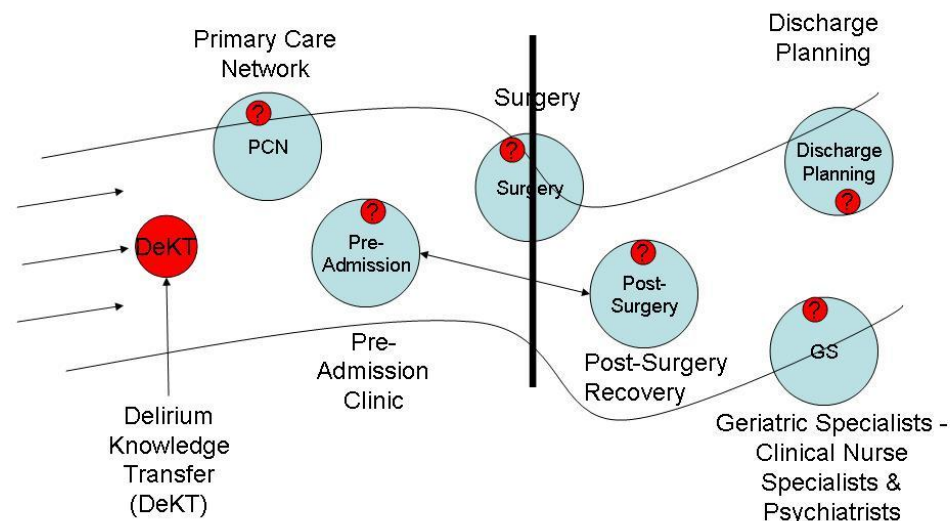


Figure 1: The Knowledge Transfer stream in Health Care

A number of interesting and relevant concepts emerged. One of the greatest surprises was what a great teaching metaphor delirium is for knowledge transfer. This is reflected in the observation that I made from the feedback I received in delirium education workshops. A lot of people have joked with me that I had better not assess them or I might find that they are delirious. I have wondered that about myself. Perhaps there are aspects of transferring knowledge along the health care stream (see Figure 1) that might actually inadvertently increase delirium rather than resolve it.

Knowledge Transfer (KT) isn't a magic pill. Dealing with the messiness of KT, or learning in general, is difficult in a health care setting. We often know, but knowing does not necessarily mean doing. Just knowing something, theoretically, doesn't necessarily correlate with implementing it or effectively evaluating this knowledge. KT is best done collaboratively. Looking at delirium as a process is the surprising contribution that delirium has to make to KT. We need to focus on how we can demonstrate to our audience that our proposed changes to practice will make a difference for front line practitioners, their patients, and for the researcher. How do we help resolve the confusion (delirium), rather than inadvertently add to it. In the case of delirium, how do we demonstrate that what we propose will improve some important aspect of dealing with delirium, recognizing, it, treating it, and preventing it?

How do we make a difference of improved care of the elderly post-surgery? How do we improve our ability to deal with delirium, improving our chances of reaching our goal; better recognition, treatment, and prevention of delirium? Separating the main concern and its resolution can reinforce the concern without resolving it, or provide a solution without an appreciation for the main concern of stakeholders. Grounded Theory couples the main concern (of dealing with the messiness of KT) and how we resolve it. This increases the chances of success. We are connected with the front line concern and how it is being resolved.

The metaphor of delirium, and making a difference, can be applied to sensitize us and improve the process of transferring knowledge into practice, and its evaluation. Two examples highlight this. The editorial by Page (2011) gives us one. Developing and presenting PowerPoint presentations is another. This process of doing more and getting less is illustrated in the editorial to the previous EDA newsletter by Page. We try to ensure patient comfort and stability and inadvertently worsen the patients' chances of survival (Page, 2011). We are not getting the outcome we desire. Sometimes doing less helps to improve our sensitivity and our timing of when to push and when to pull back, and perhaps when to pause and shift into natural. With PowerPoint, we (I) often try too hard, presenting too much information to get our point across. And confusion is often an outcome (in KT) which inadvertently reinforces a delirium trajectory.

Through this research on delirium and knowledge transfer I feel a profound appreciation for the importance of stories and story; how they start off, how they continue, and how they end ... and begin again. When I would meet with patients and their families to invite their participation in our research study, invariably they would ask me the question, "What is delirium?" I studied my responses until I found that I was able to establish a rapport with the patients and their families who had accompanied them. My response became, "It's like when you're loopy. Say from a fever. You might not know what time of day it is or where you are." In their responses to this definition of delirium, I came to appreciate the stories that then emerged. There would be a connection with past surgeries, family members who had delirium for a long time after surgery and discharge, concerns about any connection between delirium and dementia, of how the hospital might not always be the best place for them to recover. And it seemed we were left with an appreciation of delirium we didn't have before through the stories that we shared.

I also appreciated the conversations and stories the staff shared with me about the difficulties of dealing with delirium and how collaboration can work so well when there is space for listening and sharing stories. The concept of "making a difference" can apply to just me to just you, or to us. I have developed an appreciation of the importance of making a collective

difference, to the stakeholders in the research, to the patients, to the families and to the staff, both clinical and administrative.

I am closing with an invitation. I am exploring the knowledge transfer stream, where it connects with delirium and practice, and more generally, in health care. Delirium continues to inform my research as a metaphor through the difficulties there are in dealing with delirium clinically, as well as through the contribution it has made to communicating knowledge into practice and evaluating the process. I want to extend the KT stream, to include any who are interested in collaborating on this topic. This includes the story aspect of delirium as well as clinical practice, research, administration and policy. Thank-you for the invitation to contribute to this newsletter. I hope opportunities will present themselves to share further in developing the “delirium” story collaboratively.

Contact Info

Phone: (403) 208-3431

Email: pmwishart@shaw.ca

Mail: 24 Edgebrook Rd, NW
Calgary, AB, Canada
Canada T3A 4M1

Delirium in the Intensive Care Unit

George Bostock BSc(Hons) MB BS FRCA, Marcela P. Vizcaychipi MD, FRCA, EDICM, FFICM

Magill Department of Anaesthesia, Intensive Care Unit, Chelsea and Westminster NHS Foundation Trust, London, UK

Definition

Delirium is well recognized in the Intensive Care Unit (ICU) setting as a significant cause of morbidity and mortality. Historically, the signs and symptoms of delirium in ICU have been variously labelled as acute encephalopathy, septic encephalopathy, ICU psychosis and acute confusional state [1]. Recently, the critical care literature has reached consensus to conform to the American Psychiatric Association’s Diagnostic and Statistical Manual of Mental Disorders, fourth edition (DSM-IV), definition of delirium [2]: a disturbance of consciousness with inattention accompanied by a change in cognition or perceptual disturbance that develops over a short period of time (hours to days) and fluctuates over time.

Detection

Despite the agreed definition of what constitutes delirium, detection remains problematic in critically ill patients. Delirium may go unrecognized by clinicians who are not trained in psychiatry. In addition, mechanically ventilated patients are unable to communicate verbally and so other methods must be used to reach a diagnosis.

One such method is the Intensive Care Delirium Screening Checklist (ICDSC) [3] which utilises the DSM-IV criteria. Depending on the presence or absence of symptoms, patients score 1 or 0 respectively in each of the following categories: altered level of consciousness, inattention, disorientation, hallucination or delusion, psychomotor agitation or retardation, inappropriate mood, sleep/wake cycle disturbance and symptom fluctuation. A cumulative score greater than or equal to 4 is highly sensitive for detecting delirium. The ICDSC is quick and simple to complete and can be used to assess medical and surgical patients who are unable to communicate verbally.

An alternative validated tool is the Confusion Assessment Method for ICU (CAM-ICU). This can also be used to rapidly and reliably detect delirium, with a high degree of sensitivity and specificity [4]. It is based on the Confusion Assessment Method (CAM), which has been used in other clinical settings to enable clinicians without psychiatry training to detect delirium. The modifications for the ICU setting allow it to be used in non-verbal as well as verbally enabled patients. Although the CAM-ICU is recommended for ICU patients because of its brevity and ease of use, the standard CAM method may detect more subtle cases of delirium in non-intubated, verbalising ICU patients [5].

Incidence

Approximately 30% of ICU patients are diagnosed with delirium when the ICDSC tool is applied [6]. However, the incidence is affected if other diagnostic criteria are used and by the severity of the underlying illness. Therefore, the true incidence of delirium in ICU has been estimated at between 20-80% of patients. It has been suggested that the likelihood of developing delirium in ICU increases in older patients, particularly those with pre-existing cognitive dysfunction. In a study of patients over 65 who were

admitted to ICU, 70% developed delirium at some point during hospitalisation [7]. With an aging population, the incidence of ICU delirium can therefore realistically be expected to rise.

Risk factors

In addition to age, there are a number of other potential risk factors that increase the likelihood of patients developing delirium in ICU [8]. These include the use of drugs (particularly opioids, benzodiazepines and anti-cholinergics), biochemical abnormalities (such as hyponatraemia, hypocalcaemia and hypomagnesaemia), sepsis, hypoaxaemia, hypercapnia and sleep deprivation. Ensuring patients receive adequate REM sleep by undertaking measures to maintain normal circadian rhythm can prevent ICU delirium. Environmental factors, such as the presence of natural light during the day have been identified as protective against the development of delirium, although the effect of ambient noise is less significant [9].

The risk factors for delirium in ICU can be summarised by the mnemonic ICU DELIRIUM(S) (Table 1).

Table 1. Risk factors for delirium in ICU

Icudelirium.org *Terminology and mnemonics*. Available: <http://www.mc.vanderbilt.edu/icudelirium/terminology.html>. Last accessed 29th Jun 2011.

	Category	Examples
I	Iatrogenic	
C	Cognitive	Pre-existing cognitive dysfunction
U	Use of restraints and catheters	
D	Drugs	Benzodiazepines, opioids
E	Elderly	Particularly patients over 65
L	Laboratory	Hyponatraemia, hypocalcaemia
I	Infection	Sepsis
R	Respiratory	Hypoxaemia, hypercarbia
I	Intracranial	Haemorrhage, stroke, tumour
U	Urinary / faecal retention	
M	Myocardial	Infarction, arrhythmia, failure
S	Sleep / sensory deprivation	Sleep cycle, spectacles, hearing aids

Although these risk factors have been identified, the pathophysiology which underlies delirium in ICU is poorly understood in humans. Possible mechanisms in basic science include neurotransmitter imbalance (particularly increased dopamine and decreased acetylcholine levels), impaired oxidative metabolism and alterations in the availability of amino acid precursors [2].

There is robust evidence that the release of cytokines and endotoxins as part of the inflammatory response has a role in cognitive dysfunction. For example, an association between interleukin-1 and cognitive dysfunction has been demonstrated [10], although it is not possible to extrapolate data to the ICU setting.

Management

The management of delirium in ICU should begin with prevention and modification of any reversible risk factors for delirium. The use of anti-psychotics, especially in the agitated subtype of delirium, is broadly accepted and haloperidol is the drug of choice. However, the use of haloperidol is not without side effects and olanzapine has been investigated as an alternative [11].

Consequences

It has been shown that delirium is associated with poor clinical outcomes in critically ill patients[12]. The potential short-term consequences include the increased likelihood of adverse clinical events. For example, patients with the agitated subtype of delirium may pose a risk to themselves and others, as there is an increased incidence of events such as self-extubation. Clearly, this

can have profound and dramatic consequences for the patient in the short term, but the effects of delirium extend beyond the acute phase. Even once a patient has left ICU, and controlling for other variables, there is a threefold increase in mortality over a six-month period. [12].

It is unclear whether delirium itself is a cause of increased morbidity and mortality, or whether it is a marker of poor health, iatrogenic complication or a presently unidentified variable. However, it has been suggested that delirium is the strongest independent determinate of total length of hospital stay and is independently associated with higher ICU financial costs [13].

It is therefore strongly recommended that validated monitoring and assessment methods are used routinely in ICU to detect and treat delirium in order to minimise the associated morbidity and mortality [14]. In summary, the goals of managing ICU delirium are; prevention, early detection and prompt treatment.

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Meetings and News

Annual Delirium Meeting

European Delirium Association 6th Scientific Congress

The 2011 Annual Delirium Congress will be held 17th to 18th November in Umeå, Sweden – that's about 700 km north of Stockholm. Keynote speakers include Drs Edvard Marcantonio and Yoanna Skrobik. The call for oral and paper abstracts is now open, send to birgitta.olofsson@nurs.umu.se by 15th September or see www.europeandeliriumassociation.com for further details.

Restraint? UK meetings

STICUMUP (South Thames Intensive Care Unit Managers Group) are hosting a day dedicated to "Fighting for Better Patient Care" on 14th October in Crawley, see <http://www.sticumup.org.uk/> for further details.

The Norfolk, Suffolk and Cambridgeshire Critical Care Network have provisionally organised a day conference on Delirium and Restraints for Monday September 12th to be held in Cambridge. More details from Kimberly Giraud, Clinical Trial Co-ordinator at the Papworth Hospital - kimberly.giraud@nhs.net.

Facebook page

European Delirium Association now has a Facebook page thanks to Daniel Davis– log on today and let us know what's going on where you are, your questions, your opinions!

<http://www.facebook.com/EDA.delirium>

Jobs

12 month ICU research fellow post at Watford General Hospital working with Dr Valerie Page primarily on Hope-ICU – haloperidol clinical effectiveness trial ISCTRN 83567338. Further details from valerie.page@whht.nhs.uk. Details and application via the NHS jobs website, reference 360-338.

European Delirium Association wins award

The prestigious Delirium Champion Award from the American Delirium Society has been awarded this year to the European Delirium Association. Professor Alasdair MacLulich, a founder member of the EDA, was proud to accept this on behalf of the European Delirium Society at the recent inaugural conference of the ADS. It recognises the EDA "for their advocacy, leadership and numerous contributions to the advancement of delirium science and care".

(It is interesting to note that the EDA was actually born in the States, out of a late night discussion between like-minded Europeans committed to making a real difference for patients.)

Congratulations to us!

More news available on www.icudelirium.co.uk – updated monthly.