Merry Christmas and bon appétit!
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Merry Christmas to readers of the Neuropsychiatry Newsletter. But not too merry I trust, having avidly read our previous issue on Alcohol Related Brain Damage! We want all your neurones intact to fully enjoy this edition of the newsletter. This time we do not have a special topic but have instead given over much of the issue to the fabulous trainees who produced posters and presentations for September’s Section of Neuropsychiatry Conference at Robinson College in Cambridge. Dr Akshay Nair won the Trainee’s Prize with his talk on delirium, dementia and microglia. As his review paper ably demonstrates, he wowed the audience with his speculations on the mechanism behind the frequently observed deterioration that occurs when dementia patients experience a bout of delirium. He won, I suspect, because this is an example of the value a neuropsychiatric approach can bring to a common clinical scenario. Anyone who suspects that neuropsychiatry is a niche pursuit should read his article with interest.

We are also pleased to publish the three best posters, as judged by the Section’s executive branch and conference speakers, in their entirety. Dr Nicholas Meyer and colleagues won first place with their epidemiological study of deliberate self-harm in those diagnosed with epilepsy, which utilised the national Centre for Suicide Research database run by Professor Hawton. The runners up for the poster prize were Joanna Cox and AP Rajkumar and colleagues. The latter presented evidence for a genetic model of vulnerability to depression in mice. Imaginative and rather ghoulish procedures are employed to precipitate depression (or what we believe is depression) in the animals, which I initially found quite troubling. However, the poster demonstrates again the breadth of our speciality, the usefulness of the neuropsychiatric methodology and our reliance on basic research in animals to whom we owe a great deal. Joanna’s poster is on more familiar ground dealing as it does with the classic neurology/psychiatry interface condition, Gilles de la Tourette Syndrome. Irritability is shown to correlate with tics, particularly vocal tics, and is associated with co-morbid ADHD. This is important because irritability is thought to predict intermittent explosive disorder and serious aggression in these patients. Anyone who missed the excellent Cambridge conference in September will discover what else was missed in David Okai’s conference report. David did such a good job summing-up it’s almost as good as having been there, but not quite. So please block out the 4th and 5th of September 2014 in your diaries and I look forward to seeing you in Oxford.
As ever, Neuropsychiatry Newsletter is delighted to publish papers on new services and service developments for patients with neuropsychiatric disorders. Joanna Crossley and colleagues have provided case reports to demonstrate the benefit of the MDT approach for our complex and vulnerable patient group, who continue to receive patchy services showing the postcode lottery is alive and well in the UK. One group of patients who I know do receive an excellent neuropsychiatric service is the children in Tower Hamlets who benefit from the care and expertise of my colleague at the Royal London Hospital, Birgit Westphal. Paediatric neuropsychiatry is in its infancy (ho ho) but I am aware of a growing body of child psychiatrists specialising in this area. Read Birgit’s paper to learn of the diagnostic complexity they face.

The papers in this issue demonstrate the breadth and depth of our fascinating speciality but once again we must acknowledge that services are underprovided. Some areas receive excellent and comprehensive services while others do not. Thankfully, there is something you can do. In the AoB section you will find nomination forms to join the Section of Neuropsychiatry Executive, where seven (yes seven!) places are waiting to be filled. But you only have until 13th January 2014 to submit your nomination form. So don’t spend too long mulling it over during the festive break.

My interview with Professor Mary Robertson sketches a life lived in neuropsychiatry. And much more besides. It was a great pleasure visiting Professor Robertson earlier this year to complete the interview. The resultant piece you find here is merely a snippet of the conversation, which literally went on for hours and covered a wide range of subjects and experiences. As you tuck into your Christmas turkey (or goose, or nut roast) just imagine how Professor Robertson must have felt as she woke up in the head-hunters village to find traces of human hair in her room and wondered whether it was she who might be for dinner. They would have enjoyed one of the finest brains in neuropsychiatry. Bon appétit.
Creative access to community neuropsychiatry: Outcomes of a pilot joint acquired brain injury clinic with neuropsychology and neurorehabilitation colleagues.

Joanne Crossley, Gavin Newby, Mahesh Odiyoor, Colin Pinder

Background

A significant number of people with an acquired brain injury (ABI) present to services with complex/dual psychiatric and ABI problems. Having either an ABI or significant mental health problem has serious implications for the individual, their family and often requires the delivery of complex services in their own right. When they occur in the same person, this presents a unique challenge to clients, families and services.

In common with many other parts of the UK, in our local area of Cheshire and Wirral, access to neuropsychiatry and neuropsychology is variable, ranging from virtually non-existent to hard to access (Agrawal et al, 2008). Whilst we have developed good inter-service relationships in our area on a case-by-case basis, we have found this to be both time-consuming and inconsistent across services. We concluded that there was a real need for co-ordinated inter-service protocol to ensure that clients receive both a seamless and comprehensive service that caters for both brain-injured people and their mental health needs.
Therefore, we decided to pilot a joint neuropsychology and neuropsychiatry-based integrated advice and consultation clinic.

By pooling the expertise of three consultants in Neuropsychology, Learning Disabilities with training in Neuropsychiatry and Neurological Rehabilitation, we wanted to create a more holistic, speedier service as well as reducing the number of services involved with these complex patients.

**The joint clinic**

The pilot clinic ran for six months (October 2012–March 2013), providing 20 clinical contacts for 12 clients over the six month pilot phase. Each clinic saw between 3–4 clients. The clinic was mainly provided on an outpatient basis but had the facility to see inpatients. Consultations were either held face to face, over the telephone or consultancy with other professionals. The clinic was flexible and if clients did not attend, their case was either formulated in their absence or attempts were made to contact them by telephone and discuss jointly on speaker phone, if possible.

The majority of referrals were either known to the Consultant in Neurological Rehabilitation, the ABI Service or to the Adult Mental Health services on the Wirral. At initial assessment, information was obtained on the brain injury, presenting complaints, background history, physical health and mental/neuropsychological health. An assessment, which included current functional abilities, mental state examination, and risk screening was completed. A psychiatric diagnosis if appropriate was identified following the assessment.

Outcome measures were also completed: Health of the Nation Outcome Scale–ABI (HoNOS–ABI) (developed by the UK Brain Injury Psychiatrists Group in conjunction with the Royal College of Psychiatrists’s Research group in 1999), Glasgow Outcome Scale–Extended (GOSE–E) (Jennett et al, 1981; Wilson et al, 1998), Hospital Anxiety and Depression Scale (HADS) (Zigmond & Snaith, 1983) or the Visual Analogue Self–Esteem Scale (VASES) (Brumfitt & Sheeran, 1999) for those with expressive language difficulties, a Service Complexity Score, and Service Psychotherapeutic Complexity Score. The clients seen in clinic were a significantly disabled group with nine of the twelve clients being rated lower severe to lower moderate disabled on the GOS–E and all were rated as highly complex (Tier 3) using the Service Complexity rating. Clients presented mainly with co-morbid alcohol and substance misuse difficulties along with depression. Referrals were mainly for multi-disciplinary formulation, medication and behavioural advice. Actions undertaken during the clinic included medication advice, formulation, specialist assessment and review of scans, onward referrals and liaison with other services.

Two case studies illustrate the nature of the clinic and how an integrative joint approach was used to support the needs of two clients. Consent has been obtained from both clients.

**Case study 1**

David is a 56 year old male who was admitted with an encephalopathy, of unknown cause, in 1997, when he was aged 41yrs. He has also had periodic depressive episodes since 1995 and possible sleep apnoea. He was referred to the ABI Service by his GP for case management, capacity assessment and neuropsychological intervention. David previously worked as a mental health worker but since his last episode of encephalitis he finds acquiring new knowledge difficult; feels he is cognitively challenged with poor memory, and wanted assessment to see if there was anything that could help him in activities of daily living and help his job.

At the initial clinic assessment, David presented with episodic decompensation and gradual loss of work functioning resulting in dismissal from his job in August 2012. His premorbid background history included the death of his father when he was aged 13yrs. On leaving school, he worked in the police service. During this time, he developed a significant alcohol habit but maintained that it did not impair his ability to work, did not receive any formal alcohol service intervention and has remained abstinent from alcohol for 21 years. In 2005, he reported a depressive episode and a further episode in 2009 following a promotion at work to a managerial role. He immediately began experiencing reduced coping, difficulties completing paperwork and meeting performance management expectations.

At clinic assessment, all three professionals informed the biopsychosocial formulation and treatment plan. MO reviewed his medication and he was titrated off Trazadone (100mg), due to cognitive slowing, and he was started on Mirtazapine (15mg, which was increased to 30mg). His Venlafaxine 300 mg OD was maintained and David and his wife were advised to monitor for any signs of Serotonin Syndrome (of which there have been
Mike’s compliance had been poor with him ceasing use each time citing side effects. Despite this, he had managed his aggression by avoiding alcohol and illegal substances as well as severely curbing his socialising.

Prior to his referral he had separately been seen in Neurology, Rehabilitation Medicine, General Psychiatry and Neuropsychology clinics and General Practice with very variable degrees of engagement and attendance. Prior to attendance at clinic, Mike had become increasingly agitated about the issue of maintaining access to his daughter following the breakdown of his relationship. Additionally, he was worried about his freedom to spend money after being made subject to the Court of Protection and a financial Deputy to manage his prospective Criminal Injuries Compensation Authority settlement. At clinic assessment, Mike’s history suggested a strong possibility of untreated childhood ADHD with ongoing symptoms. This seems to have been further exacerbated by his head injury. We considered prescription of Methylphenidate (Ritalin) to manage his disorganisation and attention problems. There were initial, but also ongoing problems, prescribing for Mike as his GP did not feel able to prescribe. This necessitated Mike having to go some distance to CP’s clinic for prescription. Due to Mike’s disorganisation and problems accessing transport, this took some months to organise and, to date Mike has only trialled Methylphenidate for 28 days. In that time he became more organised, physically fitter, more motivated and less inclined to stop due to minor side effects. We are currently exploring the option of a shared care protocol through our trust for more local prescribing.

During the reporting period, his HoNOS-ABI score was initially 22 and had reduced to 14 with reductions in social disturbance, cognitive problems, anxiety and activities of daily living. On the HADS, his initial score was 14 for anxiety and 9 for depression. Again, Mike reports attending the clinic had helped him feel listened to and had led to a new avenue of treatment (via Ritalin). Previously, there have been issues with Mike not attending appointments regularly and giving inconsistent reports of his level of functioning and distress to health professionals involved in his care. Providing a consistent co-ordinated message was an important part of the approach. Interestingly, Mike attended each of his clinic appointments (although he was around 20 minutes late for each one) and suggested a significant degree of engagement that has not always been possible during his treatment with the service.

Case study 2
Mike is a 25 yr old male who suffered a severe TBI as result of assault and which caused an extradural haemorrhage requiring decompression in 2006 when he was 17yrs old. Following the assault and return home, Mike reported excessive anxiety, impulsivity, hypersexuality, poor planning and financial abilities and violence related to alcohol use. He had a complex premorbid background, which includes the loss of his father to cardiac problems when Mike was 13 and childhood conduct and attentional problems requiring him to attend a specialist school. Although medication such as carbamazepine and various antipsychotics had been trialled over the years to manage his aggression, restless legs at night for which medications were considered but was rejected by David due to potential disinhibiting side effects that might re-trigger alcohol use. CP reviewed MRI scans for distribution and degree of involutorial change and consideration of subclinical vascular pathology. He also requested potassium ion channel antibody blood tests to establish existence of limbic encephalitis Both the investigations were negative. David had a limited daily structure, which left him vulnerable to low mood and reduced self–esteem so GN worked with him on behavioural activation and simplified CBT strategies to help him identify negative thinking patterns. These were backed up with summary emails, using Clipart visual images to support his retention of written and/or verbal information. He also received psychotherapeutic input and cognitive assessment from the ABI Service.

His initial HONOS–ABI score was 12 and over a six–month period, this was reduced to 6. David initially completed the VASES, due to expressive language difficulties, and his score was 25 (23 anxiety, 2 depression). After the withdrawal of Trazadone and subsequent increase in his cognitive functioning, he was able to complete the HADS and scored 13 for depression and 11 for anxiety. His GOS–E has remained at 5; however, there has been an improvement in the area of family and relationships. David continues to be seen in clinic and appears to be doing well with significant improvements in his mood and activity levels. He has tolerated Mirtazapine well. However, he still has difficulty maintain sleep and onward referrals for overnight oxymetry or respiratory medicine for investigations to rule out sleep apnoea are being considered.
Discussion

The first and second case study illustrates the major benefit for clients of having a one-stop-shop to discuss difficulties and have a broader perspective taken on their cases. Having three professionals with expertise in neuropsychology, neuropsychiatry and physical health seated together in the same room, allowed for more comprehensive biopsychosocial formulations and access to a wider range of therapeutic actions. Whilst the initial assessment session were longer than many clinical contacts, the clinic offered a potential cost saving through one clinic attendance rather than three, thereby reducing the duplication of consultant time. This joint way of working allowed for a more integrated, timely service, which also had the effect of improving and deepening cross-agency relationships. It also gave clinicians the opportunity to share their expertise and formulations with other professionals and observe the expertise of other disciplines.

The second case study illustrates that the clinic was well accepted by clients, as this client had a long history of disengaging from services. The flexible ways of working meant that it was accessible with telephone or face-to-face consultations. By providing more coordinated, consistent care, we were able to stop the revolving door, which is faced by many of our clients.

As we have only seen a small number of clients, many of whom were seen once and then discharged, we have not been able to formally analyse outcome measures. We recognise and appreciate that only with an increased number of referrals, will we be able to confidently evaluate the clinical and cost effectiveness of this clinic. However, through our experiences, we feel this service innovation has allowed us to provide timely specialist good quality care to a group of highly complex and challenging individuals. We feel we have been able to support and improve the lives of people with an ABI and significant mental health problems. We would certainly recommend that other services/commissioners consider adopting this integrated way of working as a potential model for services to bridge the current provision gap.

References


Diagnostic Overshadowing in Children with Epilepsy – a case study

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Introduction
The current literature indicates that epilepsy and Autism Spectrum Disorder (ASD) are frequently co-morbid findings and the current estimated co-occurrence is as high as 20–25 % (Canitano Feb 2007). A study by Turk and colleagues (2009) found that children with epilepsy are typically more likely to receive a later diagnosis of childhood autism than children without epilepsy. One explanation for the above finding could be that epilepsy can have very prominent symptoms and is a treatable condition. On the other hand, an Autism Spectrum Disorder may be missed if the young person is on the high-functioning end of the spectrum as the symptoms can be subtle and challenging to diagnose.
We describe the case of a ten year old boy with complex epilepsy whose underlying ASD was not recognized until the symptoms of his epilepsy suddenly improved and previously unnoticed behaviours and symptoms surfaced. However, his symptoms were not immediately recognized as a feature of Autism Spectrum Disorder, owing to overlapping side-effects of his anti-epileptic medication and his known learning disability. Close collaborative working between paediatric neurology and neuropsychiatry in a multidisciplinary setting allowed the systematic narrowing down of differential diagnoses, resulting in the finding of childhood autism. It also allowed the design of a comprehensive management plan which will enable this young boy to reach his potential.

**Case Report**

Our patient, whom we shall name ‘Ali’ for reasons of confidentiality, is known to have “Hypomelanosis of Ito”, a genetic condition which is associated with epilepsy, learning disability, developmental delay and hypo-pigmentation. Epidemiological data on this syndrome are limited. Studies suggested that it is the third most common neurocutaneous disease after Neurofibromatosis and Tuberous Sclerosis. Ali was born following an uneventful pregnancy and achieved normal developmental milestones apart from speech and language delay. This was addressed with speech and language therapy from the age of three.

Ali had his first seizure at the age of three and a half years in the context of suspected encephalitis. He recovered from this episode and was seizure free for the next six months. His seizure recurred in association with a febrile illness and Ali was commenced on Carbamazepine. Thereafter he presented with seizure clusters due to similar febrile episodes. When he was six years old this pattern changed. He started to experience daily seizures with different manifestations, which proved difficult to control with medication. When Ali was around seven he required frequent admissions with seizure exacerbations. Combinations of different medications were used but produced little change. Eventually Ali was considered for neurosurgery at the age of nine years due to the refractory and focal nature of his epilepsy. At this time he was on Phenytoin, Levetiracetam (Keppra) and Clobazam. However, at his final pre-operative assessment Ali was “suddenly” (over a period of three months) found to be almost seizure free and the surgery was put on hold. Ali was no longer troubled by frequent seizures. Instead, he presented with a range of supposedly new symptoms including hyperactivity, restlessness and irritability. Ali was observed pacing up and down the corridor and exhibited challenging behaviour when stopped. He also spoke constantly, which was initially considered to be pressure of speech. Ali became increasingly difficult to manage and a psychiatric opinion was sought.

**Psychiatric, behavioural or neurodevelopmental disorder?**

There is an increased risk for mental health problems in children with epilepsy compared to the general population. An epidemiological study by Davies et al reported a prevalence rate of 37% of psychiatric disorders in children with epilepsy compared to 9% in the general population. The study also reported an increase in the prevalence rate (16%) of Pervasive Developmental Disorders (i.e. Autism Spectrum Disorders) in children with complicated epilepsy compared to children with uncomplicated epilepsy.

In Ali’s case, there was a huge symptom overlap and it was felt that the behaviour difficulties, irritability and feelings of hostility with which he presented could be a side-effect of Keppra. He was accordingly weaned off the Keppra. However, his difficulties still persisted. The possibility of organic psychosis and mania was considered and Ali was tried on antipsychotic medication. However, it did not improve his symptoms.

On further in-depth history-taking, it transpired that Ali had always had a marked impairment in his social and communication abilities. He had found the use of non-verbal behaviours like eye contact very challenging. He had an unusual stare and would get fascinated by certain aspects of people’s clothing, for example, shiny buttons. Ali had struggled to develop peer relationships since he had been at nursery and was reported to lack appropriate social reciprocity.

When specifically asked, his mother reported repetitive and stereotyped behaviours which were in keeping with the findings of Autism. On careful observation, it was noted that Ali watched certain scenes from cartoon movies repeatedly. It was also noticed that Ali displayed repetitive and idiosyncratic use of language. For example, he would repeat certain words and phrases that people around him used and he would imitate other people’s actions (echolalia and echopraxia).

Ali was referred to Child and Adolescent Mental Health Services for a formal assessment of Autism. Standardized interview instruments like the 3DI
Disorder has clinical implications as it delays access to appropriate support services including educational facilities. Our report highlights the importance of routine screening of Autism Spectrum Disorders and other psychiatric co-morbidities in children with epilepsy, especially if they also have other risk factors like learning disability.

References

Ali's symptoms presented as a diagnostic challenge owing to the multiple co–morbidities and overlapping symptom presentation. The repeated incoherent talking was echolalia and his sudden movements (e.g. lashing out) were echopraxia, rather than psychotic symptoms (i.e. responding to auditory and visual hallucinations). In hindsight it was clear that Ali displayed typical symptoms of Autism including display of distress and challenging behaviour in response to (for him) unexpected events and change of routine.

Progress since diagnosis
Ali's difficulties were seen in a different light once he was diagnosed with Autism. His treatment and management had a multidisciplinary approach where the Paediatric Neurologist, the local Community Child psychiatrist, the Paediatric Liaison Team and school where involved. Ali's medication for epilepsy was reviewed and he was managed with monotherapy on Carbamazepine with a good therapeutic effect. Carbamazepine has mood stabilising properties which are further helpful in managing mood and behaviour difficulties.

Ali's mother and school were offered psychoeducation which also included the use of management strategies to address challenging behaviour. Ali is now at a special school which is trained to manage children with autism and is making good progress.

Conclusion
The purpose of this case report is to highlight how diagnostic overshadowing, psychiatric and neurodevelopmental co–morbidities could all prove to be a diagnostic and management challenge in children with epilepsy. In Ali's case the focus of management initially was the epilepsy due to its complicated presentation and refractory nature. A delay in diagnosis of other co–morbidities like Autism Spectrum
Day One of the conference revealed the diversity of what is termed neuropsychiatry in the UK, with psychiatrists from tertiary referral neuropsychiatry centres, through to the community packed into the Robinson College amphitheatre. It is worth brief mention of the venue, which is the newest of the Cambridge colleges, and listed in the Telegraph (2008), as one of the 50 most inspiring buildings in Britain. The main entrance to the college is via a drawbridge–like ramp, surrounded by gardens and is within 10 minutes’ walk from the city centre.

The line–up of speakers reflected the diversity of those in attendance with a range of topics likely to be of interest, whatever discipline of psychiatry or neuropsychiatry one was involved in.

Dr Heather Angus–Leppan, a neurologist at Barnet and the Royal free Hospitals, kicked off the day with a half hour talk covering a neurologist’s view on headache and epilepsy. Topics ranged from information on what is typical for epilepsy, migraine, and syncope, through to an interesting discussion on, Lewis Carroll’s own migraine induced ‘Alice in Wonderland Syndrome’, a dysmetropsia, that inspired his famous novel. Additional interesting facts included detail on migraine madness (psychosis and reduplicative phenomena), alongside the high specificity of lateral tongue biting for true epileptiform attacks. Dr Angus–Leppan, runs a one–stop first seizure clinic, clear from the extremely systematic approach to assessment, which left the audience sufficiently empowered to volunteer answers to her concluding 5–key questions, clinical vignette ‘pop quiz’.

Dr Ally Rooney, Clinical Research Fellow, and ST5, University of Edinburgh, followed with a talk on the neuropsychiatry of brain tumours. There was discussion on the array of neuropsychiatric manifestations found in neuro–oncology, from cognitive deficits, fatigue, and adjustment to the often poor prognosis. Depression was used as a case in point to illustrate the heterogeneity of neuropsychiatric presentations found in this field, highlighting qualitative differences in the profile of the condition, (although thankfully, low mood, anergia, and anhedonia still ranked highly as a triad). The presentation discussed the mixed aetiology of many of the conditions with balanced coverage of the biological and psychosocial. Despite known challenges to research in this area, the talk ended with an expectant aim of redressing the balance of research methodology towards treatment trials, whilst hoping to preserve the observational research component.
Dr Hugh Selsick, chair of the sleep special interest group in the Neuropsychiatry Section, and consultant psychiatrist at the Royal London Hospital for Integrated Medicine Insomnia Clinic, then presented an extremely practical approach to assessment and management of sleep disturbance. The talk pointed out that recent years have seen a shift from the sleep hygiene approach to more focus on getting up at the same time each day, regardless of previous nights sleep, with subsequent attempt to work backwards towards establishing a regular night-time routine. The manner of treatment relied heavily on a psychoeducative format, in a fashion that is undoubtedly of reassurance to the sufferer but left open the option for medication where necessary.

All the morning talks were well received and were followed by lunch, allowing for poster viewings and a meeting of old and new acquaintances alike.

The afternoon session started with the trainee award ceremony, with three trainees given the opportunity to formally present the content of their abstracts, already judged to be of distinction. The runner-up talks by Dr Parashar Ramanuj and Dr Clodagh Commane were of a high calibre with the prize for best presentation, ultimately going to Dr Akshay Nair, NIHR ACF, Institute of Psychiatry, for his review of the role of microglial cells in delirium and dementia.

The day ended with an entertaining debate on the motion 'Neuropsychiatrists have no place in the management of psychiatric disease associated with common neurological disorder.' Dr Mayur Bodani acted for the motion and Dr Howard Ring against. Both speakers put their points across with eloquence and passion and whilst there was uniformity of agreement against the motion on initial vote count, there was a slight shift towards agreement of a need for prioritising and focus when thinly stretched on the second count. As any shift from a starting count of zero for the motion most bear some form of statistical significance, the debate was ultimately called a draw.

Several new faces were in attendance for Day Two. The morning sessions, were loosely based around a ‘cause and effect’ theme, and commenced with Dr Bird’s therefore appropriately titled talk “The Child is Father of the Man (and Woman)”, a reference to William Wordsworth’s poem on children, adults, and a higher power. The nature of the title was reflected in the admixture of philosophical consideration towards a justice system that can be concrete and dichotomous, with specific focus on civil litigation medico-legal report writing in neuropsychiatry. Particular areas of difficulty were reviewed such the topic of liability when there exists more than one possible cause towards neuropsychiatric disability (for instance causal events that may be successive or concurrent in nature), and how one best conveys the concept of a “more than 50% likelihood” towards causation. Several thought-provoking case histories were used, often with decisions that might seem counterintuitive to the psychiatrist. The consensus of discussion was an emphasis of the importance of robust assessment of prior vulnerability, and the complexities of explanation of vulnerabilities in a civil court setting.

Discussion of cause and effect was extended to the adolescent population with a combined talk by Dr Anjum Bashir (psychiatrist), and Dr Jenny Brooks (clinical psychologist) from St Andrews Neuropsychiatry Department, Northampton, who discussed their departmental experiences of behaviour and risk following childhood brain injury. The presentation began by highlighting the issues around the gap in service provision for child neuropsychiatry services as they commonly fall between child psychiatry, paediatrics and primary care services. The duo briefly mentioned concerns about the lack of an evidence base in the area, although one may have been surprised by such a claim, given the quality of the psychosocial provision offered in their residential rehabilitation service. There was exploration of the complex risks inherent in many of the clinical presentations given the marked social (frequently domestic) adversity that often causes the brain injury; reflection on underlying vulnerabilities as a result of family loading and discussion of the (rather impressive) online cognitive rehabilitation programmes offered on the unit. The subject matter relating to challenges at organisational and local level to the provision of care may have run the risk of giving the talk an overly bleak tone. In fact the speakers adeptly ended on a note of optimism with review of neuroplasticity and relocation of brain function leading to better overall prognosis than the adult population, and an emphasis on service opportunities within child neuropsychiatry as an unmet need.

Dr Faruqui’s continued the theme with an ambitious exploration of an alternative aetiology to the phenomenon of ‘shell shock’. Starting with Myer’s original texts he provocatively explored the evidence for physical versus psychological injury, deliberately
amplifying the potential overlap of symptoms consistent with mild brain injury and post-traumatic stress disorder. The talk seemed more to provoke thought and discussion, than a true attempt at reclassification given Dr Faruqui’s measured discussion for both sides of the argument.

The afternoon session was more ‘effect’ than ‘cause’. Dr Linehan, a psychiatric epidemiologist from Dublin, commenced her talk on the epidemiological impact of neuropsychiatric illnesses, with an unashamed admission that she had made no attempt to limit the scope of her topic. Specific focus was given to epilepsy to reference the work, which included consequences of variation in epilepsy diagnostic criteria over time and place; the diagnosis’ impact on lifestyle, life satisfaction, and stigma; and epidemiological trends in developing and developed countries. An average annual cost of epilepsy of €5,000 per person throughout Europe was contrasted with an estimated cost of $25 to support a person with epilepsy in a developing country. Despite her earlier warning about the ambitious nature of the scope of her work Dr Linehan successfully managed to cover the area in a comprehensive fashion leaving a duly appreciative audience.

Ms. Donna Malley, an occupational therapist from the Oliver Zangwill Centre, then gave a comprehensive review from a national and local perspective on the development of adult brain rehabilitation services. Akin to the talk on child neurorehabilitation, she discussed the systemic complexity of the range of patients seen and therefore how current service configuration may result in an unmet need. The presentation addressed how lack of availability of service provision at the beginning of care can potentially lead to subsequent burden on primary and mental health services, and increased length of stay in rehabilitation units in the longer term. Ms Malley ended with a list of pragmatic suggestions as to what can be done to improve care despite current financial restrictions including exploration of service delivery models e.g. Resource Facilitation (Trexler 2010), greater focus on integrated care, and emphasis on the need for standardised measures to facilitate access and evaluation of service provision.

The final talk by GP, Dr Greg Rogers, was fitting as closure to the two-day event with discussion of the common ground shared between neuropsychiatry specialist services, and primary care. The presentation covered the implications from a personal, local, and national level of the changing role of GPs as commissioners and the very real need for neuropsychiatrists to make themselves known locally. He stressed the importance of the personal touch (i.e. phone calls to discuss the patient at the point of discharge) as a way of building relationships and as a means to facilitate understanding the complexity of the cases seen. He delineated some of the current areas of services that may be of relevance to neuropsychiatry including directed enhanced services (DESs) for those with complex needs or at risk of undetected health conditions (for instance early dementia and learning disability), with mention of risk stratification schemes to identify patients, including those suffering mental health problems, at significant risk of unscheduled hospital admission. The summary discussion was based around methods of approach to help commissioners realise the cost of neuropsychiatric conditions such as those associated with epilepsy, and the cost effectiveness of treatment provision.

In contrast to many such conferences, there was not the same sense of an urgency to leave often defined by a mass exodus following the words of the last speaker. Many stayed to review the new Friday posters and catch up with colleagues, true testament indeed to the atmosphere generated by a well organised conference. All of the speakers are to be congratulated on such strong performances across the entire two days and the first-rate content of their presentations.
Delirium, dementia and the role of microglial cells: a review

Akshay Nair
NIHR Academic Clinical Fellow, Institute of Psychiatry

Abstract:
Delirium and dementia are two important and highly prevalent neuropsychiatric conditions. There is now a growing body of evidence that suggests that episodes of delirium increase the risk of developing dementia and can accelerate the clinical course of dementia. In this review we examine the clinical evidence linking delirium and dementia and consider the role of systemic inflammation and microglia in this overlap. It has been hypothesized that in the context of neurodegeneration microglial cells are in a primed state and mount an exaggerated pro-inflammatory and cytotoxic response to systemic inflammatory events. We examine the evidence behind this hypothesis before considering its potential clinical implications.

Introduction:
Dementia represents one of the most significant medical challenges facing our society. Eight hundred thousand people in England alone were estimated to be suffering from dementia in 2012 – a figure expected to double by 2040. Currently it is estimated that dementia costs the UK economy £19 billion per year.

The dementias are characterized by progressive loss of cognitive function and wide range of neuropsychiatric symptoms, such as depression, psychosis and anxiety resulting in ever increasing loss of independence and reliance on carer support.

The pathophysiological process underlying these neurodegenerative diseases is under intense research. Typically characterized by aberrant protein misfolding with progressive neuronal and synaptic loss, the mechanisms driving these processes remain under investigation. One focus for research has been the role of the immune system and the inflammatory process.

Delirium or the “acute confusional state” is a highly prevalent polymorphous clinical entity that is characterized by “disturbed consciousness, cognitive function or perception with an acute and fluctuating response”. Often presenting with psychiatric symptoms, delirium is the result of underlying organic conditions. A systemic inflammatory response is strongly associated with delirium. Evidence suggests
that having delirium strongly increases the risk of future dementia (and it appears to be associated with poorer long-term outcomes and a steeper cognitive decline in patients with dementia.

This review will examine the relationship between delirium and dementia. First presenting the existing clinical findings, we will then consider the potential biological mechanisms by which delirium may worsen neurodegeneration. The principle focus for this review will be the role of systemic inflammation and microglial cells in this process. Microglial cells are the only resident immune cells in the central nervous system (CNS) and therefore are in a prime position to explain the association between systemic inflammation, delirium and dementia.

**Delirium and dementia – clinical findings:**

The VaNTAA 85+ study by Davis et al prospectively studied 553 individuals over 85 over the course of 10 years to assess the impact of delirium on risk of dementia and longer-term deterioration of cognitive function. They found that an episode of delirium significantly increased the risk of developing dementia (OR 8.7, CI 2.1–35). They also demonstrated that patients who had delirium at some stage were associated with a significantly accelerated decline in MMSE scores over the 10-year study period (figure 1).

In patients with dementia Davis et al also found a significant increase in the risk of dementia worsening after an episode of delirium (OR 3.06, CI 1.49–6.29). Delirium was also associated with functional worsening and higher mortality. Other studies have also demonstrated that delirium is associated with increased risk of cognitive impairment, acceleration of the dementia process and reductions in times to death and permanent institutionalization. These studies suggest that delirium appears to be accelerating the development and clinical course of dementia. Intriguingly whilst delirium typically resolves within days to weeks, the above studies demonstrate that, by some mechanism, this insult worsens the dementia process in the long term.

The pathophysiology of delirium is unclear. Alongside proposed neurochemical abnormalities and the acute stress response it is believed that systemic inflammation is likely to play a significant role in the development of delirium. There is a considerable overlap between conditions that result in a significant inflammatory response and those that result in delirium. Studies have demonstrated that serum levels of pro-inflammatory cytokines such as IL-6 and IL-8 are associated with the development and course of delirium.

**Pre-clinical models:**

In order to begin the process of understanding the biological mechanisms by which these two neuropsychiatric syndromes interact, pre-clinical models are required. As described above Alzheimer’s disease, like other dementias, is characterised by misfolded protein aggregates. Pre-clinical models of dementia typically use transgenic animals that over-express these proteins to mimic the disease. Alternatively prion proteins (PrP) are used as models of progressive neurodegeneration.

As delirium is a clinical syndrome, translation to a pre-clinical level typically relies on replication of the underlying aetiological factors such as infection and surgery. As opposed to direct introduction of causative
pathogens, immunogens are often used. These include lipopolysaccharide (LPS) and polyinosinic:polycytidylic (poly I:C) acid.

In a study by Field et al mice infected with the ME7 prion were intermittently exposed to systemic poly I:C, used in this case to imitate viral illnesses. The hypothesis was that systemic inflammatory events would exacerbate and worsen the progression of the neurodegenerative process. Their results, as adapted by Cunningham, are shown in figure 2.

**Figure 2:** Based on the work by Field et al (2010), this graph shows the changes in rates of functional decline induced by exposure to repeated systemic inflammatory events in animals with neurodegenerative disease.

They found that in mice with a pre-existing neurodegenerative process, here created by the use of the ME7 prion, who were exposed to repeated systemic inflammatory events (SIE) showed a more rapid deterioration in level of function that those who were not exposed to the SIEs. It was also shown that normal mice exposed to the SIE did not show a functional decline during the study period. Importantly they showed that at the time the animals were sacrificed ME7 mice exposed to poly I:C did not demonstrate a higher PrP burden than ME7 mice who were not exposed to SIEs. This elegant study demonstrates a phenomenon in pre-clinical models that closely resembles the impact of delirium on dementia. Clearly peripheral inflammation triggers a process in the degenerating brain that accelerates degeneration and above what may be expected from protein burden. One of the proposed mechanisms for this is microglial driven neurotoxicity.

**Microglia: constant gardeners**

Microglial serve as the primary resident immune cell in the brain. Derived from myeloid precursor cells, microglia take up residence inside the brain during development. Once perceived as largely dormant sentinel–like cells, recent research has shown that these cells are constantly active and rapidly respond to injury leading to their description in Nature as ‘Constant gardeners’. In response to extracellular signals of infection or cell damage these cells can undergo phenotypic change from their resting ‘ramified’ bodies to a more ‘amoeboid’ shape. In this state microglia are considered to be ‘activated’.

In the activated state microglial cells also upregulate a number of cell surface receptors such as the major histocompatibility complex (MHC) and chemokine receptors to better detect and react to neuronal damage or infection. In this state microglial cells are also capable of excreting cytotoxic agents such as superoxide, nitric oxide and tumour necrosis factor alpha.

**Priming in neurodegenerative illness**

Activated microglial cells therefore play an important role in both health and disease states. The expression of cell surface proteins and the excretion of cytotoxic agents are tightly controlled by signals in the local cellular environment. In the brain of patients with neurodegenerative illness aberrant proteins and intracellular debris from neuronal break down alter the natural environment of microglia and the control over activation.

In an important study in 2005, Cunningham et al exposed mice with ME7 prion disease to both intracerebral and systemic LPS and recorded the inflammatory response within the brain. They found intracerebral LPS stimulation in control mice resulted in a detectable increase in the pro-inflammatory interleukin (IL–1β) with no detectable increase in inducible nitric oxide synthetase (iNOS). By contrast, in mice with the ME7 prion they found a marked increase in microglial IL–1β and iNOS in response to the same LPS challenges. The degree of iNOS induction in these groups is shown in figure 3.
Figure 3: These slides are stained for iNOS. Slide (m) shows iNOS expression in control mice with LPS stimulation, slide (n) shows ME7 mice with no LPS stimulation and slide (o) shows iNOS expression in mice with ME7 and LPS exposure from Cunningham et al (2005).

They also demonstrated the intraperitoneal administration of LPS in ME7 mice induced transcription of microglial IL-1β. Using TUNEL staining to identify cells undergoing the apoptotic process they found a significant increase in cell death in mice with the ME7 prion and exposed to systemic LPS as compared to control groups.

This study demonstrated that in the environment of neurodegeneration microglial cells show an exaggerated response to inflammatory signals and this results in increased cell death. The authors described these microglial cells as being in a ‘primed’ state.

Priming mechanisms:
The mechanisms by which microglia become primed remain under investigation. As immunological cells, microglia are capable of detecting micro-organisms via the activation of pattern recognition receptors (PPRs). There are multiple types of PPRs such as Toll-like receptors (TLR) and NOD-like receptors. These receptors have evolved to detect pathogen-associated molecular patterns (PAMPs) – molecular patterns that are typical of different classes of microorganisms. Upon activation of PPRs a series of signalling pathways, such as the nuclear factor–Kb pathway (NF–Kb) are activated and this leads to increased expression of pro-inflammatory chemicals. As discussed by Chen and Nunez PPRs are capable of detecting non-microbial signals such as nucleic acids and heat shock proteins. These endogenous signals that activate PRRs are collectively described as danger-associated molecular patterns (DAMPs). DAMPs are released as a result of cellular damage or cell death and they also activate the pro-inflammatory cascade described above. Dementia and neurodegenerative illnesses are characterised by cell damage and death. The local cellular environment is therefore likely to contain DAMPs which can activate PRRs on microglial cells and may act as a priming stimulus.

Aside from cellular damage, it is therefore worth considering whether the insoluble proteins, characteristic of the dementias, may act as a priming signal. Lee et al investigated this using mice that expressed mutations in the gene presenilin-1 (PS-1). PS-1 mutations are associated with hereditary forms of Alzheimer’s dementia and on a molecular level result in increased amyloid beta-production. In mice with the knock-in mutation of PS-1, Lee et al demonstrated that LPS stimulation resulted in significantly higher expression of pro-inflammatory chemicals such as TNF α and IL–6 as compared to wild-type mice. These findings suggest that the PS-1 mutation resulted in microglia priming possibly as a result of the excess amyloid. This is further suggested by the fact that the exaggerated response to LPS was not seen peripherally in the spleen, only occurring in the brain. Such studies demonstrate that it may be possible that the misfolded proteins found in dementia, especially those characteristic of Alzheimer’s disease, can prime microglia to mount an exaggerated inflammatory response.

More recently, Ramaglia demonstrated the importance of complement proteins in the microglia priming process. Complement proteins are a fundamental part of the innate immune system and have a wide variety of functions including chemotaxis, opsonisation and bacteriolysis and are highly expressed in the brain.
Ramaglia et al demonstrated that knocking-out a complement regulator protein primed microglial cells to LPS challenge. This primed response was extinguished when in a double knock-out model of the complement regulator and the C3 complement protein.

Other areas that have been identified as possible sources of priming include the reduction in molecules that physiological suppress priming and the inflammatory effect of neurotransmitters noradrenaline and acetylcholine. For further discussion of the topic of microglial priming I would direct interested readers to a review by Cunningham.

Implications for clinical practice:
The results presented in this review indicate that microglial priming and resultant exaggerated pro-inflammatory response are likely to play a significant role in the overlap between delirium, systemic inflammation and dementia. It is clear that this process is complicated and is likely to occur via a number of different pathways; however, better understanding of these mechanisms opens up prospects for future translational work.

In vivo imaging of microglial states is now achievable using the modality of positron emission tomography (PET). Using radioactive ligands it is possible to image activated microglial by measuring the level of translocator protein-18 kDa (TSPO) expression. TSPO is mitochondrial protein which, while minimally expressed in the healthy brain, is up-regulated in disease states. Using these techniques it may be possible to use PET to investigate microglial activation in the context of delirium and dementia. The success of these studies will depend on the development of better TSPO markers that could more sensitively detect levels of microglial activation and TSPO expression. If sensitive enough, PET microglial signal could be an important prognostic indicator after episodes of systemic inflammation or delirium in the context of neurodegeneration.

Better understanding of microglial priming and neurotoxicity secondary to systemic inflammation could also open up treatment options in the future. Modulating or dampening down the exaggerated pro-inflammatory response by microglial cells could, theoretically, improve the prognosis of patients who have systemic inflammatory events or delirium and dementia. It is interesting to note that despite the finding that anti-inflammatory drugs reduced the risk of dementia treatment trials with anti-inflammatory medications have largely failed. Research centred around microglial priming hints at a sub-category of patients for whom anti-inflammatory based treatments may have some beneficial effect.

On a more pragmatic level, the research highlighted in this review emphasises the gravity of delirium especially in those with dementia. As highlighted by NICE, clinicians should place a great deal of importance in detecting and managing delirium in dementia given its proven detrimental effects. Until inflammation-specific treatment adjuncts are trialled the emphasis should be on rapid and effective treatment of the underlying aetiological process driving the inflammatory process. Furthermore, this research has implications beyond delirium to comorbidities such as obesity, smoking and diabetes that may have an inflammatory component.

Limitation of this review:
Interest in this area has dramatically increased over the past 10 years and it is not possible to cover all avenues of research in one review. Before highlighting areas not covered here it is worth examining the common criticisms of the work presented here.

The epidemiological evidence linking delirium and dementia appears robust but it is worth noting a few common methodological issues with these studies. Firstly, by the very nature of the population, longitudinal studies investigating this area inevitably suffer from high-dropout rates associated with mortality. Secondly delirium, as a clinical syndrome, represents an aetiologically diverse exposure. To date there is little evidence to suggest that one form or underlying cause of delirium is specifically associated with worsening dementia; however, further research is needed in this area. Equally, the treatments and management of delirium is diverse and it is hard to know whether these have an impact on the association between delirium and dementia.

With regard to the pre-clinical studies it is clear that models of delirium can only be created using aetiological models, such as exposure to immunogens like LPS or poly I:C. It is therefore hard to establish whether the pathophysiological mechanisms that result in the clinical syndrome are truly replicated in animal models even when sickness behaviour is noted. Secondly, how well the dose of immunogenic substances and subsequent inflammatory response correlates with that seen in delirium is hard to assess. Finally, the cause
of dementias is unclear and therefore animal models of these conditions tend to replicate one area of pathology such as protein burden or, in the case of the prion models, the progressive neurodegenerative process. How translatable these models are to patients who suffer from dementia is therefore debatable.

Before concluding it is worth highlighting some areas that this review has not covered that are important in understanding this problem. We have focussed on the inflammatory component of delirium here; however, this is far from being the only pathological process in this condition. The vascular or neurochemical changes that may occur in delirium may be equally relevant in the overlap between delirium and dementia.

We have also not reviewed the communication between the peripheral immunological system and the central nervous system. In itself this represents a vast body of work and is not within the scope of this review to cover. Mechanisms, which may be of importance in the overlap of delirium and dementia, include neuronal signals from the periphery to the CNS, the role of the circumventricular organs, the blood–brain barrier’s (BBB) transport of cytokines and secretions from BBB cells. Detecting or interrupting the signals from the periphery to the CNS may also have an important role to play in translating the microglial priming theory into clinical practice. Finally, it was not the focus of this review to cover other cellular mechanisms such as those involving astrocytes or the recruitment of peripheral immunological cells but these are also important factors in understanding this phenomenon.

Conclusion:
Better understanding of the overlap between delirium and dementia is critical in reducing the disease burden of both of these important neuropsychiatric syndromes. Microglial priming and over–activation secondary to peripheral inflammatory events is likely to play a significant role. Better understanding of the pathways involved has the potential to offer profitable new avenues for diagnosis and treatment of these conditions in the future. Until this translation work is complete, perhaps this body of research can serve a reminder to clinicians of the importance of detecting and managing delirium in patients with dementia.

References:


Abstract

Background:
Little is known about self-harm in people with epilepsy (PWE), despite suicide being recognised as a significant cause of mortality in this population. Self-harm is defined as intentional self-poisoning, self-injury, or both.

Aims:
To investigate the characteristics of self-harm in PWE, and associated demographic, clinical and psychosocial factors in this population, compared to self-harmers.

Methods:
The study cohort was identified using the Oxford Monitoring System for Self-harm which collects information on patients presenting to a general hospital following self-harm. 132 PWE and 9,778 controls were identified over the 14-year study period 1994 – 2008. The diagnosis of epilepsy was confirmed through review of medical records. Demographic features, characteristics of self-harm and patient variables were compared using a regression model, adjusted for age, sex, and repetition. Patients presenting from 1998-2008 were followed up for all-cause mortality to the end of 2011, using Office of National Statistics data.

Results:
The relative risk for self-harm per individual with PWE was 2.04 (1.85, 2.25) times that of controls, and time to second self-harm event was reduced (hazard ratio 1.86 (1.46 – 2.38). PWE were significantly more likely to use antiepileptic medication in overdose, although genuine methods of self-harm were similar in the two groups, with no differences in suicidal intent scores, nor the proportion of patients who later died by suicide, being found. Previous outpatient psychiatric treatment, duration of unemployment, violence and housing problems were associated with epilepsy amongst people who self-harmed.

Conclusions:
This is the first study to specifically investigate self-harm in a cohort of individuals with a confirmed diagnosis of epilepsy. Several recent studies have identified an increased risk of suicide in epilepsy, and this study suggests that the same is true for self-harm. Of those who self-harmed, PWE have over twice the risk of further self-harm compared to patients without epilepsy, with a number of clinical and psychosocial variables mediating this association. PWE are more
likely to have had psychiatric care, suggesting a greater level of psychiatric morbidity. Identifying and modifying risk factors for self-harm in PWE may help to reduce morbidity and mortality in this population and regular assessment of mood disorder and suicidality should be part of the routine care of PWE. Improved liaison between neurologists, psychiatrists and GPs is important in achieving this goal.

132 people with epilepsy; 479 self-harm episodes

<table>
<thead>
<tr>
<th>Patient characteristics</th>
<th>Male</th>
<th>Female</th>
</tr>
</thead>
<tbody>
<tr>
<td>PWE</td>
<td>52%</td>
<td>48%</td>
</tr>
<tr>
<td>Controls</td>
<td>39%</td>
<td>61%</td>
</tr>
<tr>
<td>Age distribution shifted upwards in PWE</td>
<td></td>
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<table>
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<tr>
<th>Mortality data</th>
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</table>

Deaths by suicide and open verdict on follow up to 2011 (deaths/number followed up)

- PWE: 9/81
- Controls: 526/6824

<table>
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<tr>
<th>Repetition</th>
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<tbody>
<tr>
<td>Median self-harm events/year</td>
</tr>
<tr>
<td>PWE</td>
</tr>
<tr>
<td>Controls</td>
</tr>
</tbody>
</table>

Relative risk (adjusted, 95% CI) 2.04 (1.85, 2.25)  P < 0.001

Time to next event (adjusted hazard ratio, 95% CI) 1.86 (1.46, 2.38)

<table>
<thead>
<tr>
<th>Self-harm characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Similar rates of self-poisoning and self-injury between groups</td>
</tr>
<tr>
<td>No significant differences in suicidal intent scores</td>
</tr>
</tbody>
</table>

Most used AEDs in self-poisoning, amongst PWE

1) carbamazepine 6) levetiracetam
2) phenytoin 7) phenobarbitone
3) valproate 8) primidone
4) lamotrigine 9) topiramate
5) clobazam 10) gabapentin

Risk of death by suicide was not significantly elevated in PWE compared to self-harmers without epilepsy

9,778 controls; 19,314 self-harm episodes

<table>
<thead>
<tr>
<th>Year</th>
<th>1994</th>
<th>2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Deaths</td>
<td>0.71</td>
<td>0.71</td>
</tr>
<tr>
<td>Hazard ratio (95% CI)</td>
<td>1.37 (0.71, 2.67)</td>
<td>p = 0.25</td>
</tr>
</tbody>
</table>

59 cases excluded following review of records, leaving 132 cases:
- 15 (25%) had alternative diagnoses
- 44 (75%) had insufficient evidence supporting a diagnosis of epilepsy
Irritability Symptoms in Gilles de la Tourette Syndrome

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Introduction

Gilles de la Tourette Syndrome (GTS):
- A neurodevelopmental disorder characterised by multiple motor and vocal tics, in association with behavioural symptoms¹
- Population prevalence ≈1% ²
- Typical onset before 18 years of age
- Up to 90% of patients have other neuropsychiatric co-morbidities, most commonly OCD and ADHD³

GTS and Impulse-control Disorders:
- A link between GTS and impulse-control disorders (ICDs) has been suggested⁴,⁵
- Significant prevalence of intermittent explosive disorder, which is characterised by rage attacks and temper tantrums.
- Irritability, the state of being easily angered or annoyed, may act as a precipitant to this behaviour.

Study Aim:
To investigate the clinical correlates of irritability symptoms in adult patients with GTS, and to specifically assess whether there is any relationship with tic severity.

Method
Setting: Specialist Tourette Syndrome Clinic, The Barberry National Centre for Mental Health, Birmingham

Design:
Cross-sectional study using data collected as a broad study assessing the “Clinical correlates of HR-QoL in adult patients with Tourette Syndrome”

Sample population: Patients over the age of 16 with a diagnosis of GTS (by DSM-IV-TR)

Exclusion criteria:
- Age under 16 years
- Limited understanding of English
- Learning disabilities

Measurement tools:
- Irritability Questionnaire (IRQ)⁶
- National Hospital Interview Schedule (NHIS)⁷
- Diagnostic Confidence Index (DCI)⁸
- Yale Global Tic Severity Scale (YGTSS)⁹

Results
Demographics and clinical characteristics of the sample (n=101)

<table>
<thead>
<tr>
<th>Demographics</th>
<th>n/median</th>
<th>%/IQR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>67</td>
<td>(66.3)</td>
</tr>
<tr>
<td>Age at interview</td>
<td>28</td>
<td>(20.0)</td>
</tr>
<tr>
<td>Age at first tic onset</td>
<td>7</td>
<td>(5.0)</td>
</tr>
<tr>
<td>Family history of tics</td>
<td>48</td>
<td>(47.5)</td>
</tr>
<tr>
<td>Medication for tics</td>
<td>66</td>
<td>(65.3)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Co-morbidities</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>OCD (DSM-IV-TR)</td>
<td>35</td>
<td>(34.7)</td>
</tr>
<tr>
<td>OCS</td>
<td>48</td>
<td>(47.5)</td>
</tr>
<tr>
<td>ADHD (DSM-IV-TR)</td>
<td>21</td>
<td>(20.8)</td>
</tr>
<tr>
<td>Affective disorder</td>
<td>34</td>
<td>(33.7)</td>
</tr>
<tr>
<td>Anxiety disorder</td>
<td>14</td>
<td>(13.9)</td>
</tr>
</tbody>
</table>

Abbreviations: IQR – Interquartile range; OCD – obsessive-compulsive disorder; OCS – obsessive compulsive symptoms; ADHD – attention deficit hyperactivity disorder; DSM IV–TSR – diagnostic statistical manual for mental disorders (fourth edition text revision)
Moderate positive correlations were found between irritability score, total YGTSS score and vocal tic severity, however there was no significant relationship between irritability score and motor tic severity. Mean irritability scores were found to be significantly higher in those with ADHD than those without (t=1.98, p=0.05).

Multiple linear regression analysis produced a statistically significant regression model containing: YGTSS motor tic severity, YGTSS vocal tic severity, YGTSS impairment, OCD and ADHD status. Together, these factors were found to be attributable to approximately 20% of the variability in irritability score (R² = 0.199, p<0.001).

There is some relationship between tic severity and severity of irritability. Vocal tic severity appears to be a stronger predictor of irritability than motor tic severity. Patients with co-morbid ADHD tend to have a higher severity of irritability symptoms than those without. Further large scale research needs to be carried out, potentially using a variety of irritability measures.

Sample may not be representative of GTS population, as only the more severe cases attend clinic. Self-report questionnaires, no comparison available for IRQ scores, missing data was replaced using individual mean imputation, non-parametric tests were used when data were not normally distributed.

I would like to thank Professor Andrea E. Cavanna, Dr M. Sayeed Haque, Mrs. Andrea Roalfe and Dr. Kevin Craig for their assistance in the completion of this project.
References:


Introduction: Major Depressive Disorder (MDD) is the leading cause of non-fatal disease burden. Epigenetic mechanisms mediate the complex interplay between environmental stress and the genes, associated with MDD (1). Schizophrenia and bipolar disorder associated Bromodomain containing 1 gene (BRD1) is involved in epigenetic regulations of developing and adult brain (2) through histone acetylation (3). Brd1 expression is up-regulated by stress and electroconvulsive seizures in rat hippocampi (4). Selective histone deacetylase inhibitors, functionally analogous to Brd1, exert significant antidepressant activity (5). We have recently developed a constitutive knock-out mouse heterozygous for Brd1 (Brd1+/-). In this research, we aimed to investigate their affective behaviours and neurobiology.

Methods
Brd1+/- mice (Taconic sbs-6817; Taconic Europe A/S, Denmark) have a targeted deletion involving exon 3–5 of Brd1 gene on a congenic C57BL/6NT ac background.

We employed the following behavioural experiments;
(i) Locomotion: Open Field and 24 hours locomotion,
(ii) Affective behaviours: Forced swim (FST), Tail suspension (TST), Sucrose preference (SPT) tests and Amphetamine (5mg/kg) induced hyperactivity
(iii) Anxiety: Bright open field, Light and dark box and Elevated plus maze
(iv) Cognition: Fear conditioning (FCS) and 8–arm radial maze (8 ARM). FST and TST were repeated with Imipramine and Fluoxetine.

High-performance Liquid Chromatography (HPLC) was used to assess cortical serotonin and striatal dopamine levels. Golgi–cox staining was employed to study the neuronal morphology and dendritic branching of Anterior Cingulate Cortex (ACC) pyramidal neurons. 3-D image analyses were performed using Imaris 7.6.3 (Bitplane AG, Switzerland). Next Generation RNA sequencing (50bp SE) by Illumina HiSeq™ 2000 evaluated differentially expressed genes (DEG) in Amygdala and in Hippocampus CA3. RNA-seq data analyses were conducted using Tophat 2.0.6 and Cuffdiff 2.1.1.

Results
Female Brd1+/- mice exhibited significantly more anhedonia in SPT (p<0.01) and behavioural despair in FST (p<0.01) as well as TST (p<0.01). Their depressive phenotype could be reversed by both Imipramine and Fluoxetine. Female Brd1+/- mice displayed context–dependent learning deficits in FCS and impaired visuo–spatial memory in 8ARM. They did not differ significantly on their locomotion and on anxiety equivalent behaviours. They had significantly less serotonin in their frontal cortex (p=0.03) and less striatal dopamine (p=0.01). Their ACC pyramidal neurons exhibited significantly shorter dendrites, less dendritic branches and less dendritic spine density (p<0.001). Cell signalling, neuron development and transcription regulation associated genes were significantly enriched among the DEG in female Brd1+/- mice amygdala and Hippocampus CA3.
Conclusions
Our findings support the hypothesis that the BRD1 deficiency would lead to depressive equivalent behaviours. Depressive phenotype and its reversibility by antidepressants indicate the validity of female Brd1+/- mice as a novel model for MDD(6). As histone acetylation mediates the epigenetic programing of Gene–Environment interactions(7), female Brd1+/- mouse model may help further studies evaluating the epigenetic changes and neurodevelopmental abnormalities, pertinent to MDD. Studies evaluating the electrophysiology, neuroimaging, interactome and methylome of Brd1+/- mice are in progress.

Figure 1 Legend:
Differentially expressed genes along the serotonin signalling canonical pathway in the hippocampus CA3 of female Brd1+/- mouse
References:


Interview with Mary Robertson

Norman Poole

Consultant Liaison Psychiatrist, Royal London Hospital

Tell me about your roots in South Africa?
'I’m 11th generation. In 1652 Jan Van Riebeeck settled in SA, the first “white man” and he began documented/recorded history in SA (prior to that there was only verbal history in the indigenous Khoi-san people). My great–great grandmother times eight was sold as a slave to him (he was actually sent there for committing a crime, a little known fact). So, I’m a thoroughbred South African mongrel. The town Robertson is named after my great–great grandfather, who arrived in the early 1820s and was a Dutch Reformed dominee (minister) who preached in the area there for 40 years. And, the area is a good wine producer, so there is fabulous Robertson wine. I can say “Have a glass of the house wine” (with his name and signature on the bottle!). I was born and bred in Johannesburg, attending Parktown Convent School, which offered a very broad education (academic, sports, singing, acting and other extra–mural activities). It was actually fabulous and of course very privileged.'

Why did you decide on medical school?
'I always wanted to be a doctor and so my parents and others hired a private science teacher to fill our heads with science: only about half a dozen of the girls wished to study science at University, and our parents clubbed together. My Dad would like me to have done Law or be a teacher, like his parents. My mum did medicine but sadly I was born in the middle of her finals and so she never qualified. They hired a lady to look after me. One–day mum came back and found no one at home. Then at five o’clock this woman came back and said the staff drink alcohol so I took your daughter to the local dam. So my mother gave up [medicine] overnight – to look after me – what courage!

'I went to [University of] Cape Town and it was the best experience for university and life. All the teachers were outstanding but I admired most my psychiatry teacher, a doctor called Dr Mick Pascoe, one of the few of my teachers in the Alwyn Lishman range.

‘At UCT I met Professor Christiaan Barnard [the cardiac surgeon who performed the world’s first heart transplant in 1967]. My first patient was an Italian whose heart was in a dreadful state. I brought him cheese and spaghetti and bought myself a little dictionary and every day we spoke. I saw this patient’s heart operation and he magically improved. His Italian cardiologist invited me to Italy where I stayed with his family for about 2 months but I also stayed two nights.
in the patient’s home. Inside the patient’s wardrobe he had a big picture of Barnard and it said underneath: Thank you God for saving my life.’ I didn’t tell him, but in my wardrobe I had a picture of Barnard. I adored him. He was very handsome. As did Sofia Loren, Gina Lolabrigida and others – so I was in good company.

‘Prior to being a psychiatrist Dr Pascoe was a GP who practiced in the middle of nowhere in the country; he was the psychiatrist, forensic doctor and general surgeon. His wife was the paediatrician, O&G, and they did anaesthetics for each other. They were never off duty and went on-call on horseback. He spoke seven languages and dialects. When he retired early, he went to Cape Town and eventually became the state psychiatrist. I was very influenced by him. I had always been interested in the brain as such. I remember several specific cases with Dr Pascoe. One instance was of an African gentleman who worked for the President of SA and was hearing voices. Dr Pascoe interviewed him and spoke in Xhosa (and using the patient’s dialect) and Dr Pascoe decided that the man wasn’t mentally ill at all. The man’s father had died 3 months before, but because he was in such a high powered job he hadn’t asked to go home and the tradition was to kill a bull and hear it bellow if someone close died, and because he had not been able to do this – he could hear his father’s and other voices admonishing him saying “naughty boy” and other derogatory things. Dr Pascoe suggested the man had leave to undertake his tribal tasks – which he did – and after which he was 100% well again. I was so impressed by that and many other stories and therefore influenced by him. I was always interested in brain/mind people. The other career choice could have been O&G again because the teacher Dr Martin Shelton made it so interesting. When I first came to UK in 1973 I worked for Prof Norman Morris (O&G) and he was President/Founder of the UK Psycho-O&G Association – or the equivalent – of which I became a member.’

What was your first job in medicine?
‘My first house–officer post was at Baragwanath (Baragwanath Chris Hani now) teaching hospital in Johannesburg. I worked for an absolute treasure of a man – Prof Leo Schamroth, whose name internationally was synonymous with ECGs (I rememeber I had to stir his morning tea for him in the canteen reciting “S1Q3T3’’. Then I came to London and I worked in Charing Cross first in The Strand and we moved to Hammersmith whilst I was there – I remember seeing HM The Queen open the new hospital, which we naughtily named the “plastic palace” because we missed the old hospital.’

When did you start to research?
‘My first paper was a single author paper published when I was a final year medical student; it was on religious attitudes in medical students. After working in UK, I then in 1974 returned to South Africa from London, when I realised I wanted to be an academic. It happened that I was working as a psychiatry SHO/registrar and with a medical SHO/registrar saw these extraordinary patients in A&E: youngsters who had eaten malpitte seeds (Datura stramonium) in order to get a “high”. Malpitte actually means “mad seeds” in Afrikaans. We examined them, and personally took their bloods. The two of us got a buzz doing this work. After publication and when I had finally come to the UK someone asked me “Why is there no consultant on the paper?” The answer was simply nobody else knew about the paper and no one else was involved. There’s a buzz, trying to find something out, finding it out, submitting it and getting it peer reviewed. That appealed to me enormously.’

How did you arrive at neuropsychiatry and Queen Square?
‘I knew I was leaving South Africa. The reasons were a mixture of unhappy Apartheid, the question of what would happen after the Apartheid era and also my career. It was a brave decision because I was leaving my fatherland on a South African passport. I had escorted a patient who was psychotic to Portugal, and so I just paid the extra and came to London and had interviews for a junior post in psychiatry. Fortunately I obtained a post on the Royal Free Rotation starting at Friern Barnet hospital. I sat Part I of the MRCPsych five days after arriving and passed, so I was promoted to registrar and had a choice of jobs. I chose Queen Square and never left until I retired (early sadly – I was there from 1978–2004 inclusive). Professor Trimble said he could raise funds for me to do an MD in epilepsy and depression, some of the studies which had never been done and it was absolutely fabulous. I think I coined the term “PWE” (People With Epilepsy).

‘At the time however, the study of epilepsy was huge. I did a double–blind trial on Amitriptyline, which was supposed to increase seizures, nomifensine, which was supposed to decrease seizures and placebo which supposedly did nothing. At the end of six weeks the
I loved the patients and virtually nothing was known about it, so I was discovering and that was great. In 1981 it was said Tourette’s wasn’t genetic. By 1990 I had published my big family/pedigree and that was then submitted to complex segregation analysis, which showed Tourette’s was a single major autosomal dominant gene. This turned out to be wrong but that’s what all the labs were showing. Then the Tourette world moved on to pre and perinatal and the notion of PANDAS and Strep and neuroimmunology was born out of almost negative results in the genetics labs. So it was finding out and discovering all the time. I’m still learning and that’s exiting, which is why I do it now even though I’m retired. I love it.

If you’ve got Tourette’s really bad it’s hell. It’s not the swearing it’s the other things. I had a patient with a snorting tic. I used to bring him to lectures. Ironically, he used to flog medical equipment to doctors, but not one of them diagnosed him. He came and he was depressed. He was a nice bloke with the odd tic. He said his life’s ambition was to take his wife to the theatre, so he did and someone told him to shut up. He went home and he gassed himself: it was ghastly.

The truth is I had one day a week in Tourette’s. The rest of the time I ran a general adult psychiatry ward with one pre-MRCPsych Part I junior, so I did Tourette’s in my spare time. In the end Queen Square paid the University for two sessions – which freed me up somewhat as my general adult sessions were reduced from 6 to 4 a week.

I loved teaching. I’m happy to say I got the teaching prize many times and we had parties at the end of term at home for the medical students. I think I had a flare for teaching. It was a happy place. Everybody worked their butts off.

How did you come to focus on Tourettes?

Part of me thinks I was strategic. I met these Touretters and there was virtually nothing published. SJM Fernando and John Corbett had published a few papers here in London, and Mahler and Rangell had published some papers in the 1920s on psychoanalysis, and that was it. There were also some American papers. The Touretters were nice patients and they wanted to collaborate with my research.

I struggled with it because I don’t know. I have a few standard answers. First, it’s the disorders that sit on the fence between neurology and psychiatry so Parkinson’s, epilepsy, Tourette’s, Huntington’s, Wilsons, etc. Secondly there are the others, that is the psychiatric aspects of neurological disorders. Third and finally, I think that ten or 20 years down the road most of psychiatry will be neuropsychiatry. Hopefully we don’t lose empathy with the patients, or the capability for soft, kind psychotherapy, soft family therapy, that sort of thing.
I suspect down that down road most of psychiatry will have something in the brain, for example Mayberg and her depression area. Who knows? The abuse of DBS (deep brain stimulation) is my worry. I've collaborated with the Italians in Sicily and then in Milan with the leading group in DBS. The Milan group and I have published 3 papers, the most recent being a five year follow-up on 18 Touretters post DBS. So I know something about it. I also go to DBS conferences and am glad to have worked with Milan.

’In a lot of the European countries the doctors are dual trained. The only country with an actual training in neuropsychiatry is Italy. I think we [neurologists and psychiatrists] have had different types of training so there are differences, very definite differences but I wouldn’t want to expand on that. At the BNPA the neurologists aren’t typical neurologists and the psychiatrists aren’t typical psychiatrists, but we are different sorts of people and I have quite strong views on that.

‘One thing I remember about Alwyn Lishman is that he often sees the bigger picture. At the Maudsley they used to have Grand Rounds, wheeling in all the big consultant brains for comment. They presented the case of a Philipino who had a psychosis. They were all chatting about his brain saying there’s this lesion at X position and everyone was showing how wonderful they were. Then Alwyn Lishman said something nobody else had mentioned, that this man’s wife had died. More important than a blob in the brain was the psychosocial aspect. Cori Aquino was in power and the man had not coped with either (or so I recall) Needless to say nobody trumped him.’

What do you think have been the major advances in psychiatry during the span of your career?

’The quantum leap has been in neuro-imaging. When I was in medical school if you wanted to see the brain there was a skull X-Ray. As a junior doctor you had a CT scan then a PET scan, eventually an MRI and now you can do DBS under MRI guidance and of course there is also fMRI. It’s terribly exciting. In DBS they can target something within millimetres, and they know where they are, its just amazing.’

Tell me a bit about your interest in anthropology

’I have always been interested in travel and people. In 1976 I completed a Trans–Atlantic yacht race (Cape to Rio) and then flew on to Tahiti, where I joined the good ship Brigantine Romance which starred in the film “Hawaii” and had been rigged by Alan Villiers. I used Julie Andrews’s cabin, which was quite fun. I was the doctor on board. I’ll never forget when they put out the sails; the whoosh of wind was just magic. My favourite job was nipping the buntlines so the ropes wouldn’t chaffe on the sails and there I was sailing on the wind with these sails, 85 feet above these porpoises and it was just fabulous.

‘I was asked to leave the ship in Borneo. It was the year of the Soweto riots and it was not the time to be from South Africa. When we got to Borneo the Indonesians came on board and looked at everyone’s passports. They said to the Skipper if she stays on board the ship would be impounded and she would go to jail. The crew went to the skipper and said “we love the doctor but frankly we’ve paid to see Bali and Indonesia and so the doctor has to get off.” So there I was in Sandakan on the east coast of Borneo on my own. I can still see the ship, the sun rising and four of the crew rowing me to the shore in the ship’s boat. I thought “where can I go?” and suddenly thought of Brunei, which I mistakenly thought was British. I travelled overland from East to West Sabah in a landrover taxi, even being stopped in a road-block. I remember just knowing I would be OK. I then flew to Brunei.

’I went to the doctor in Bandar Seri Bagawan capital of Brunei and said I’d like a job please. I wanted to do something exciting. I wanted to go live with the head-hunters. They said I was mad. But I eventually got the job and then wishing to see the Ibans (head-hunters) I left Bandar by bus, eventually hitched on a truck and when a large fallen down tree crossed our path, I struck a deal with two local boys from what most people would call jungle who recognised me from hospital. I would pay for the petrol and they would take me on their canoe up-river. We got to the long-house in the middle of the Borneo jungle. They said I was only the second white woman who had ever come up the river so they treated me magnificently. One night I was lying on the raft and I saw hair and I thought “Oh God” thinking it might be a skull trophy so I asked and the chief Bull laughed and said: “That’s Jati’s hair, we cut it a few days ago.” One night there was a cockfight and I thought “how dreadful” but by the end I was cheering for the family’s cock. I was mind–blown by my behaviour but you don’t want to be prudish. I was made a Fellow of the Royal Geographic Society for this trip and circumnavigation under sail (well almost).’
Tell me about the scholarship you have endowed at the University of Cape Town

‘When I got my D.Sc. (Doctor of Science) in Cape Town the Chancellor who capped me was Nelson Mandela’s wife, Graça Machel. The Dean who presented me for the degree, after the academic citation said: “At a personal level Mary Robertson is the fourth generation to graduate at UCT. Her grandmother got the Gold Medal, and she is the ninth person and first woman to get this degree.” I was in tears of joy as I got a standing ovation from the crowd. I want to repay them and immediately instituted a prize for the top woman (The Excellence Prize). The next year I realised I needed to institute another prize for best previously disadvantaged female student, the “Progress Prize”. I’ve now put one woman (Dr Gabaza Mashele) fully funded through medical school. I have also funded so far 16 prizes for MBChB graduates and one Post-Graduate Mental Health Prize has been named after me as well. I have also funded a week-end together each year and one one we went to Robben Island together and there one of the girls said: “If they did a University in the sand (Mandela and co-prisoners teaching others by drawing in the sand) I can get a Higher Degree.” She’ll be the South African Minister of Health one day I suspect.

‘It’s been a huge privilege and very very special getting to know them. Now I need to start fund-raising to get more students through and also continue funding the Prizes and Prize Winners weekends which have become quite famous at UCT. I was given the UCT Gold Medal for philanthropy and have just been appointed an Honorary Professor in the UCT Department of Psychiatry and am absolutely thrilled.’
Neuropsychiatry Section notice of election 2014

Vacancies will arise in 2014 for the position of:
- Vice-chair
- Financial Officer
- Executive Committee members (7 vacancies)

The term of office for these posts is four years and job descriptions are available at [www.rcpsych.ac.uk/pdf/facjobdes.pdf](http://www.rcpsych.ac.uk/pdf/facjobdes.pdf). The current Officers and elected Executive Committee Members are listed below.

Members of the College in good standing who are members of the Section are eligible to stand for election. Candidates must be nominated by two College Members by **13 January 2014** using the form on the next page. If more than one person is nominated for a position, elections will then take place. The new postholders will take office from the date of the College’s next Annual General Meeting.

Full details of the election process can be found in the College Bye-laws and Regulations, available at: [www.rcpsych.ac.uk/files/pdfversion/OP73x.pdf](http://www.rcpsych.ac.uk/files/pdfversion/OP73x.pdf)

November 2013

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<th>Post</th>
<th>Current postholder</th>
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<tr>
<td>Chair</td>
<td>Dr. R. Faruqui</td>
<td>2012</td>
<td>Eligible to continue in office</td>
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<td>Vice-chair</td>
<td>Dr. N. Agrawal</td>
<td>2008</td>
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<td>Financial Officer</td>
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<td>Executive Committee</td>
<td>Dr. M. Bodani</td>
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<td>Dr. E. Chu</td>
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<td>Prof. S. Deb</td>
<td>2008</td>
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<td>Dr. M. Dilley</td>
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<td>Dr. G. El-Nimr</td>
<td>2012</td>
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<td>Dr. H. Mehta</td>
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<td>Dr. A. Mitchell</td>
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<td>Dr. H. Ring</td>
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<td>Dr. I. Rosenzweig</td>
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<td>Dr. P. Trimble</td>
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<td>Prof. M. Weller</td>
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Vacancy
I propose the following nominee for the office of;  
Vice-Chair / Financial Officer / Executive Committee member (please delete as appropriate).

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<th>Name of Nominee</th>
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I second the above nomination:

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I accept this nomination:

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Nominations must be received by Sue Duncan at the College by **13 January 2014**, using this form, by post to **21 Prescot Street, London E1 8BB**; by fax to **0843 659 3591**; or by e-mailing a scanned copy to **sduncan@rcpsych.ac.uk**.
From neurology to psychiatry and back: Facing challenges, crossing boundaries and joining forces to benefit patients

Tuesday 14 January 2014
Venue: Royal Society Of Medicine, 1 Wimpole Street, LONDON, W1G 0AE
Early bird booking deadline: Tuesday 17 December 2013
We are most grateful to Lundbeck, Re:Cognition Health and St Andrew’s Healthcare for supporting this conference

This conference aims to bring clarity and understanding to the diverse challenges that arise when patients with neurological conditions also present with psychiatric symptoms and challenging behaviour. It will also aim to raise the profile of the specialty of neuropsychiatry.

The conference will address questions such as: what can psychiatry offer to patients who have an organic basis for their psychiatric symptoms? Which brain infections can present with psychiatric symptoms? How has functional neuroimaging increased our understanding of the neuropsychiatric manifestations of neurological disorders? What is the role of Deep Brain Stimulation in psychiatric disorders?

The conference will focus on the latest advances in psychiatry and neurology to increase our understanding of the management of neuropsychiatric symptoms in the presence of neurological conditions.

This conference will be suitable for neurologists, physicians, psychiatrists, neuropsychologists, and general practitioners.

Objectives
- Review the practical assessment and clinical management of patients, presenting with psychiatric symptoms and challenging behaviour, in the presence of a range of underlying neurological conditions.
- Study the latest research and recent advances in the understanding of neuropsychiatric symptoms in neurological conditions; whilst also raising awareness about the psychiatric presentation of autoimmune and infectious disorders that can affect the brain.
- Integrate neurological and psychiatric approaches, together with neuroscience; towards developing a greater understanding and an enhanced collaboration between psychiatry and neurology.

The conference organisers are Dr James Rakshi, Neurologist and Dr Irene Cormac, Psychiatrist

The spectrum of neuropsychiatric symptoms in stroke
Professor Richard G Wise, Consultant Neurologist and Head of the Cognitive Neuroimaging Group, Imperial College Faculty of Medicine, London

The role of deep brain stimulation in mental disorders: New insights and hopefully new treatments
Professor Andres Lozano, Senior Scientist, Division of Brain Imaging and Behaviour Systems – Neuroscience Toronto Western Research Institute, Tasker Chair in Functional Neurosurgery, Canada Research Chair in Neuroscience and Dan Family Chair in Neurosurgery, University of Toronto, Canada
<table>
<thead>
<tr>
<th>Time</th>
<th>Session 2: Neuropsychiatric symptoms in Parkinson's disease, epilepsy, and multiple sclerosis</th>
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<tr>
<td>10.50 am</td>
<td>Tea and coffee break</td>
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<td>11.10 am</td>
<td><strong>Management of neuropsychiatric symptoms in Parkinson's disease: A growing problem</strong></td>
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<td></td>
<td>Professor Valerie Voon, Honorary Consultant Neuropsychiatrist, Wellcome Trust Fellow,</td>
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<td></td>
<td>Department of Psychiatry, University of Cambridge</td>
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<td>11.45 am</td>
<td><strong>Management of neuropsychiatric symptoms in Epilepsy: An established problem</strong></td>
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<td>Professor Dr Bettina Schmitz, Director of Neurology, Vivantes Humboldt-Klinikum für Neurologie,</td>
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<td>Am Nordgraben, Berlin</td>
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<tr>
<td>12.20 pm</td>
<td><strong>Management of neuropsychiatric symptoms in multiple sclerosis: A neglected problem</strong></td>
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<td>Professor Anthony Feinstein, Associate Scientist, Brain Sciences Research Programme, Sunnybrook</td>
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<td>Research Institute; Director, Neuropsychiatry program, Sunnybrook Health Sciences Centre; Pro</td>
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<td>fessor, Department of Psychiatry, University of Toronto</td>
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<td>1.05 pm</td>
<td>Lunch</td>
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<td>2.00 pm</td>
<td><strong>The emerging link between auto-immune disorders and neuropsychiatric disease</strong></td>
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<td>Professor Angela Vincent, Neurosciences Group, Department of Clinical Neurology, Nuffield</td>
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<td>Department of Clinical Neurosciences, University of Oxford</td>
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<td>2.30 pm</td>
<td><strong>CNS infections presenting with neuropsychiatric symptoms</strong></td>
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<td>Professor Tom Solomon, Director of the Institute of Infection and Global Health, University of</td>
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<th>Time</th>
<th>Session 3: Auto-immune encephalitis and CNS infections</th>
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<td><strong>Chair:</strong> Dr Irene Cormac, President of RSM Psychiatry Section</td>
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<tr>
<td>2.00 pm</td>
<td>The emerging link between auto-immune disorders and neuropsychiatric disease</td>
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<tr>
<th>Time</th>
<th>Session 4: Challenges for both neurologists and psychiatrists</th>
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<td></td>
<td><strong>Chair:</strong> Dr Rafey Faruqui, Chair of the Section of Neuropsychiatry, The Royal College of</td>
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<td>Psychiatrists</td>
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<td>3.30 pm</td>
<td>Psychogenic movement disorders: Pitfalls for the unwary</td>
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<td>Professor Kailash Bhatia, Professor of Clinical Neurology, Sobell Department of Movement</td>
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<td>Neuroscience, Institute of Neurology, University College, London</td>
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<td>4.05 pm</td>
<td>Problems and issues in differentiating neurological, psychogenic, and simulated amnesia</td>
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<td>Professor Michael Kopelman, Professor of Neuropsychiatry, King’s College London</td>
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<td>4.40 pm</td>
<td>Discussion</td>
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<td>4.50 pm</td>
<td>Closing remarks and completion of evaluation forms</td>
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<td>Dr James Rakshi</td>
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<td>5.00 pm</td>
<td>Close of meeting</td>
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From neurology to psychiatry and back:
Facing challenges, crossing boundaries
and joining forces to benefit patients
Tuesday 14 January 2014 - CPD: Applied for (6 credits)
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Ruth Cloves,
Academic Department,
Royal Society of Medicine,
1 Wimpole Street,
London W1G 0AE

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