The following is a joint statement from the Boards of the European Delirium Association (europeandeliriumassociation.com) and the American Delirium Society (americandeliriumsociety.org) prepared for the G8 Dementia Summit.

Summary
People with dementia are highly likely to develop delirium when acutely unwell. Delirium is common, serious, distressing and costly. Delirium can worsen underlying dementia as well as lead to new dementia diagnoses. Because this bidirectional relationship is of major scientific importance, delirium research must be a central consideration if dementia science is to progress.

Which areas of dementia research would benefit most from international collaboration?
1.1 This case history illustrates a common scenario in day-to-day clinical practice and suggests a focus for international collaboration for advancing our understanding of dementia and its development:

John, age 77, is a retired businessman who continued to devote his efforts toward improving healthcare for children in developing countries. He noted on his last trip abroad that his long-standing arthritic knee was painful and was interfering with his walking. Upon his return home, John underwent a routine total knee replacement. After emerging from the successful operation, he developed a severe delirium, during which he was convinced that his roommate was a terrorist and that he had been abducted and was being tortured. A protracted hospital course followed his operation and involved many treatments and therapies. His recovery was hampered by his distress and subsequent hospital complications. Due to his significant cognitive problems, he was discharged to a nursing home and it took months before he could return to live with his wife. Later, John recalled those difficult times in the hospital with great anxiety. Unfortunately, he no longer had the ability to think clearly enough to continue his work. He gave up all independent endeavours as he found he was “never the same again” after his delirium.

1.2 People with dementia are highly prone to developing delirium, a serious acute confusional syndrome which often occurs when people develop an illness, such as urinary tract infection, or following surgery. Delirium not only causes distress and increases healthcare costs, but it is associated with developing new dementia, and accelerates the memory decline in those with pre-existing dementia. (e.g. Davis DH et al. Delirium is a strong risk factor for dementia in the oldest-old: a population-based cohort study. Brain. 2012; 135: 2809-16). Delirium is associated with new cognitive impairment in young as well as older intensive care unit patients (Pandharipande PP, et al. Long-Term Cognitive Impairment after Critical Illness. N Engl J Med. 2013; 369: 1306-16 – see also
CBS news item at [http://tinyurl.com/km2pxkb](http://tinyurl.com/km2pxkb). It is imperative to investigate delirium as a core part of dementia research if we wish to improve the care of these highly vulnerable patients.

1.3. Delirium is common: it affects at least 1 in 5 of hospitalised patients; two-thirds of people with delirium also have dementia. Delirium is extremely distressing to patients, and is costly. It doubles the length of time patients have to stay in the hospital and it increases the risk of permanent institutionalisation. Delirium causes enormous distress among caregivers and patients but despite all this misery, it is missed in up to 70% of cases. It has been suggested that delirium should be an indicator for quality of care in hospital, yet there is little research on this common complication of dementia.

1.4. The prevention and treatment of delirium are important intervention points for patients with, or at risk of dementia. Yet there has been little research regarding delirium reduction as a mechanism to delay the progression or onset of dementia. The study of delirium and its causes is extremely important for improving the management of dementia worldwide. Given that delirium prevention is already known to be cost effective and safe (UK NICE Guidelines on Delirium 2010), any effect on dementia will be low cost and could have an enormous impact on public health.

1.5. Delirium, as a complication of dementia, is a major priority for international collaboration. The field is small, because the subject has only recently gained scientific attention. International collaboration would greatly enhance the critical mass of experts, allowing for exponential growth and consequent impact. Larger international collaborations would allow for sharing and standardisation of research methods, combined study populations, and greater capacity to replicate studies in different settings. For example, understanding how delirium affects risk of future dementia is a priority and one important method is to study cerebrospinal fluid collected at the time of surgery in patients with hip fracture. Such research requires large sample sizes to generate definitive findings and opportunities for prevention, but because of the clinical and technical challenges involved in this work, multiple sites are required to generate sufficient numbers and hence shorten the time to clear scientific results. The same argument applies to basic science studies (in which there are very few relevant studies despite the obvious enormous potential of studying this new paradigm of dementia causation which is largely distinct from classical amyloid-focused approaches), large-scale epidemiological studies, neuroimaging studies of delirium predictors and consequences, studies in palliative care settings (where delirium and dementia commonly occur) and clinical trials to study treatment and prevention strategies. Greater international recognition and collaboration could also stimulate inclusion of measures of cognitive impairment in established longitudinal studies, allowing much-needed understanding of how delirium and other acute conditions influence the trajectories of cognitive decline.
How can we work internationally to get the most benefit from what we already know about dementia?

2.1. We already know that dementia is the most important risk factor for delirium. We know that many patients with dementia develop delirium and that this is often devastating for the person with dementia, causing significant distress and greatly increasing the risk of loss of independence. We also know that some proportion of delirium can be prevented, and that this has important effects on the immediate experience of patients with dementia in acute hospitals, nursing homes, and other settings.

2.2. Building effective international collaborations requires investigators in various countries to be introduced to one another and exchange ideas and current research strategies on dementia prevention and treatment. Recently-founded scientific societies such as the European Delirium Association (EDA; 2006) and the American Delirium Society (ADS; 2010) already hold yearly meetings to foster improved scientific exploration of delirium and its relation to dementia; encouraging collaboration by involving the leadership of these types of existing organisations would jumpstart the collaborative process.

2.3. For example, international collaboration involving the EDA and the ADS, and other relevant bodies, will increase the speed at which research on the dementia-delirium relationship can be translated into practice. Testing and implementation of widely-applicable delirium prevention programmes, along with standardised outcomes measurement, would have an enormous impact on the experience of vulnerable patients in acute hospitals prone to dementia. This would also have very large economic benefits, because delirium prevention is known to reduce length of hospital stay, reduce institutionalisation and reduce care needs. Moreover, delirium prevention in care homes may prevent delirium-associated hospital admission.

2.4. Establishing new international bodies outside Europe and the USA and Canada which can work with the EDA and ADS would be one very important development in bringing the benefits of such knowledge to other regions. Both EDA and ADS have significant multidisciplinary clinical representation and are well positioned to move translational research findings to the clinical realm where patients are seen and cared for.

What are the barriers to international collaboration on dementia research and how could they be overcome?

3.1. The main barrier to international research collaboration includes the lack of funding aimed at the study of the interface between dementia and delirium. In general funders are rarely interested or able to contribute to organisations and institutions outside of the agency’s home country. Many funding programmes are restrictive in their terms (e.g. specifying the role of amyloid), such that newer causes or contributors to clinical dementia, such as delirium or other acute triggers of dementia, are not eligible for funding.
3.2. Diagnostic practice differences can be quite different from location to location and maintaining uniformity of diagnostic procedures is another constant challenge with any multicentre study, particularly those conducted in different countries. For international collaborations to be most productive, diagnostic uniformity is important. Although there is a variety of diagnostic approaches to delirium in various countries throughout the world, organisations like EDA and ADS continue to work jointly on clarifying the diagnostic approach to delirium. For example, the leadership of EDA and ADS together made an important and influential contribution to the new criteria for delirium in the American Psychiatric Association’s Diagnostic and Statistical Manual for mental disorders, 5th edition.

3.3. Sponsoring international meetings and research funding programmes that explicitly require collaboration of different countries on shared projects would enhance this type of effort, with potentially very large positive effects given that 1 in 5 hospital patients develop delirium, and 2 out of 3 of patients with delirium also have dementia.

What roles can business and industry play in improving quality of life for people with dementia?

4.1. Business and industry could provide the much needed funding for increased international collaboration around the development of new approaches to prevent patients at risk and treat those with dementia.

4.2. Business and industry could specifically fund research aimed at understanding why delirium, and associated acute illnesses, trigger or accelerate dementia. There is a great potential for the development of safer drugs and other treatments for the prevention and correction of delirium. Funding programmes explicitly targeting the delirium-dementia relationship are particularly important because this is an under-researched area which urgently requires increased capacity. An expansion of basic science work in this area is likely to be high yield, given existing data that points to the efficacy of drug interventions in model systems.

4.3. Private healthcare providers could fund programmes aimed at preventing delirium in high-risk acute hospital patients, especially those with dementia, a group who often receive suboptimal treatment. Investing in staff training on delirium prevention and treatment is likely to be cost effective: good care is less expensive.

4.4. Private organisations responsible for running nursing homes would also be well served by investing in delirium prevention and treatment programmes. As well as reducing suffering and the burden of illness for the patients and their caregivers, it makes strong economic sense to prevent delirium, given its high financial costs to the healthcare system (e.g. see the UK NICE Guidelines on Delirium, 2010).