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Editorial

Caring for the ageing mind.

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Healthcare for the older patient is increasingly shifting from being supportive to providing active interventions to improve quality of life in addition to increasing longevity. For anaesthetists and peri-operative physicians, this means that a growing number of our patients presenting for anaesthesia and surgery will be elderly. It is immaterial whether this is defined as over 65 years or over 70 – what is relevant is that age-related cognitive decline is going to be present to some extent in a substantial proportion of our patients. In elective hip joint arthroplasty patients, 33.7% have pre-existing cognitive impairment; in coronary artery surgery patients this is likely over 50% [1,2]. The implication is that, just as we now screen for cardiac disease, we must do the same for patients with, or at risk of, cognitive decline.

Cognitive impairment is highly prevalent in our ageing community. Population studies reveal that 16% of dementia-free individuals aged over 70 years will have mild cognitive impairment [3], which is a condition diagnosed based on criteria defined in the Diagnostic and Statistical Manual of Mental

Disorders 5th Edition (DSM-5) [4]. As individuals age and morbid conditions increase, so the prevalence of mild cognitive impairment increases. Although not associated with a functional impact on daily life (as measured by Instrumental Activities of Daily Living), mild cognitive impairment is associated with measurable cognitive impairment and a memory concern (a subjective memory complaint by the individual, informant or clinician). Importantly, it is also associated with a high risk of progression to dementia (5-10% per year) and, of relevance to anaesthetic care, a higher risk of peri-operative cognitive disorders including postoperative delirium.

Recognising the growing need to better care for patients with cognitive impairment in our ageing population, many countries and organisations have produced guidelines for delirium and for hospitalised patients with dementia, but few have focused on peri-operative patients. This is a significant gap. In the UK, the National Institute for Health and Care Excellence (NICE) has produced a draft for consultation on dementia care [5], which although it mentions hospitalisation, does not address anaesthesia and surgery. There is a European Collaboration on Dementia [6] which is focused on research and community care. In Australia, there are national Delirium Clinical Care Standards [7] and a specific set of documents relating to care for patients with cognitive impairment in hospital [8] – however neither of these directly address or identify perioperative pathways, in fact they barely mention anaesthesia or surgery. In the US, the Alzheimer's Association has produced a number of guidelines for patients with dementia and delirium, but little content is specifically targeted at peri-operative care. In contrast, the American Society of Anesthesiologists have undertaken the Brain Health Initiative to specifically address the issue of delirium and cognitive decline associated with the peri-operative period [9].

The gap in communication and understanding between anaesthetists, surgeons (or peri-operative physicians) and other disciplines and medical specialties that care for older patients with cognitive impairment is slowly being narrowed. Delirium as a specific postoperative concern has rightly been considered widely in the literature in recent years, with recommendations generally focusing on 'bundles' of care as supported by the Hospital Elder Life Program (HELP) initiatives [10]. Despite this, many clinicians rely on pharmacological interventions which have been shown to be ineffective, and may in fact be deleterious [11]. The broader area of concern regarding patients with pre-existing cognitive impairment are less well addressed. In 2012, a Professional Interest Area was established for peri-operative cognition and delirium with the Alzheimer's Association International Society to Advance Alzheimer's Research and Treatment (ISTAART) [12]. The Alzheimer's Association International is the largest global organisation bringing together researchers, clinicians and carers for Alzheimer's disease patients, and establishing a 'peri-operative' Professional Interest Area was a

major step in bringing together anaesthetists, geriatricians, old-age psychiatrists and basic researchers in the one forum to address and progress clinical activity in this area. At almost the same time, it became apparent that concerns regarding postoperative cognitive dysfunction (POCD) in the elderly, and research regarding the impact of anaesthesia and surgery on cognition, was significantly hampered by barriers in nomenclature. Anaesthetic researchers were simply not talking the same language as psychologists, psychiatrists and geriatricians. Postoperative cognitive dysfunction was purely a research diagnosis, with no clinical symptoms required. Thus, members of the Peri-operative Professional Interest Area and the semi-formal anaesthesia neurotoxicity community joined together to define peri-operative neurocognitive disorders in a way that was relevant to researchers, multi-disciplinary clinicians and patients [13].

It is timely, therefore, that in this issue of *Anaesthesia*, the Association of Anaesthetists is publishing a guideline statement on the peri-operative care of patients with dementia [14]. The guidelines bring together recommendations from multiple sources relating to the clinical care pathway for patients undergoing anaesthesia and surgery. The guidelines are perhaps restrictively named because they also appropriately apply to patients with more subtle cognitive impairment. These guidelines are well considered and provide rationale for peri-operative care considerations. They also contain suggestions on implementation within hospitals. In our view, they should be considered by anaesthetists, surgeons, peri-operative physicians and geriatricians alike.

The guidelines include some practical recommendations for anaesthetic care. Best available evidence suggests that benzodiazepines, antipsychotics and drugs with central anticholinergic activity should be avoided if possible. Avoiding excessive depth of anaesthesia (or more correctly avoiding excessive anaesthetic agent administration) is also recommended, although there still remains some controversy here regarding processed frontal EEG monitoring and the literature is inconclusive [15]. A challenge is minimising opioids for postoperative analgesia and yet providing effective pain relief to avoid exacerbating distress and triggering delirium. The best anaesthetic technique to use in patients with cognitive impairment is still uncertain, and caution is recommended in translating animal data directly into clinical practice, without verification at least. Certainly, the best technique is one which provides anaesthesia whilst minimising physiological and psychological stress and allows for a rapid recovery of cognition.

There are unfortunately a number of unmet challenges in the care of elderly patients presenting for anaesthesia and surgery. We do not yet have screening tools which are simple, quick and sensitive enough to help us identify at-risk individuals. For example, the widely used mini-mental state examination (MMSE) is best at identifying moderate to severe dementia and is not sensitive to

milder forms of impairment [16]. We also have gaps in our research knowledge because most studies on cognitive outcomes exclude patients if they have known or identified dementia or have linguistic communication challenges. This limits the applicability of anaesthetic and other peri-operative research findings. The population for investigation must be expanded to include the 'actual' community, and also to target under-represented groups such as these. Furthermore, the guidelines rightly caution against interpreting trial data using cognitive outcomes based on average group data (i.e. pooled data) rather than individual outcomes. With cognition, some patients will improve or remain unchanged (this is a desirable outcome from the procedure), so grouping these results with those patients who decline may mask a potential effect.

Finally, often overlooked, but emphasised in these guidelines, are the issues of consent – both in terms of capacity to provide consent, but also regarding the need to communicate an understanding of the risk of delirium or cognitive decline and possible development of a perioperative neurocognitive disorder. These are relevant to informed decision making.

Future work should be directed to a number of areas. The evidence base for the effectiveness of the recommended interventions needs to be established. Classic randomised trial designs may be difficult, so approaches such as step-wedge or cluster designs may be useful. Sufficiently rigorous and large clinical trials are needed to establish optimal anaesthetic techniques to minimise harm and/or maximise neuroprotection. Ultimately, the basic neuroscience of delirium and cognitive impairment needs to be elucidated so that targeted physical, physiological and pharmacological interventions and preventive strategies can be developed.

Due to large gaps in the literature, these guidelines are not heavily evidence-based. Thus, in the meantime, while we gather better data, we must utilise documents such as the Association Of Anaesthetists guideline statement on the peri-operative care of patients with dementia [14] to improve our awareness and enhance team-based care for older patients presenting for anaesthesia and surgery. We are probably decades behind where we are with our peri-operative assessment and management of patients with cardiac disease, but neurocognitive recovery is critical to successful outcomes for older patients. There is much work still to be done in this important area.

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