



Royal Australasian College of Surgeons

Research & Evaluation, incorporating ASERNIP-S

Age, performance and revalidation - Report



The Royal Australasian College of Surgeons

The Royal Australasian College of Surgeons (RACS), formed in 1927, is a non-profit organisation training surgeons and maintaining surgical standards in Australia and New Zealand. The College's purpose is to be the unifying force for surgery in Australia and New Zealand, with FRACS standing for excellence in surgical care.

As part of the RACS role in maintaining high surgical standards in Australia and New Zealand this report is intended to summarise the existing peer-reviewed evidence on ageing as it relates to surgical performance.

Executive Summary

At the August 2016 Executive Committee of Council it was noted a “need to address cognitive impairment in the ageing surgeon” in the context of revalidation. This issue was subsequently followed up by Professional Standards and more recently the Governance and Advocacy Committee has identified revalidation as a 2017 advocacy priority. In their submission to the consultation on revalidation being undertaken by the Medical Board of Australia the RACS wrote “there is now irrefutable evidence that demonstrates that cognitive and technical skills decline with age, at a time when they may be under less scrutiny by clinical governance processes or undertaking locum work across a number of hospitals” (Royal Australasian College of Surgeons 2016). This report was undertaken to identify the current body of literature on the subject and to place it in the context of revalidation and assessment of ageing surgeons within Australia and New Zealand.

Overall, literature on the subject of ageing and surgical performance is extremely heterogeneous and there is a paucity of robust data relating advancing age and postoperative outcomes. This issue is pertinent to the national discussion on revalidation and identifies a need to clearly define lines of responsibility for ensuring competence. It also highlights a need for increased professional awareness about planning for retirement and opportunities for transitioning from active practice into supportive and/or advisory roles. Of the 655 surgeons over the age of 60 participating in the 2016 surgical workforce census approximately 58 per cent were still in active practice and of respondents aged 65 or older 20 per cent reported an intention to continue in paid employment for the next two years, with many surgeons reducing their hours as they move to semi-retirement (Royal Australasian College of Surgeons 2016).

The Medical Board of Australia is currently considering models of revalidation to maintain and enhance the performance of all doctors, and to proactively identify those at risk of poor performance. Existing mandatory notification programs provide avenues for remediation of impaired clinicians; however, the threshold for reporting is high and it can be difficult to identify what level of impairment constitutes a risk to patient safety. Good data to support informed discussions on the relationship between surgeon age and performance is sparse, especially from Australia and New Zealand. For certain complex procedures there is a relationship between surgeon age and patient mortality (Waljee et al 2006). When considering studies on cognitive performance data suggests that self-perceived cognitive changes in memory do not align with objectively demonstrated cognitive outcomes (Bieliauskas et al 2008; Drag et al 2010; Lee et al 2009). While the vast majority of surgeons practise safely and are sufficiently self-aware to retire at an appropriate juncture, there is a very small minority of individuals who are either unaware of their deficits or in denial of them. It is this small pool of individuals that represent true risk to quality patient care.

In summary, part of the complexity around this issue has to do with defining levels of responsibility for tackling the issue, as well as identifying strategies that help to minimise the stresses or negative perceptions around exiting active practice. The latter sections of this report including Table 5 have been developed with a view to stimulating reflection on how such issues might be approached by individuals and organisations with differing levels of responsibility and oversight for surgeon competence.

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1. Background

1.1 Introduction

Older and more experienced surgeons are often amongst the most valued of their peers as mentors and sources of guidance. Research shows that older health professionals are more adept at making diagnoses (Bhatt et al 2016), and often have important roles in leadership and training. However, with ageing comes decline in physical and cognitive functions that are unpredictable in their age of onset, severity and time course to deterioration (Bhatt et al 2016; Boom-Saad et al 2008; Drag et al 2010; Fergo et al 2016). As the medical workforce ages, concerns about the effect that age has on performance, particularly in the surgical setting where (operated) patients are highly vulnerable, have been raised (Ahmed 2016; Bhatt et al 2016; Blasier 2009).

Surgery is often compared with commercial aviation because both professions come with a significant responsibility to protect public safety. However, while pilots are subject to annual health checks and performance assessments as well as a mandatory retirement age, there is no such mechanism in place for surgeons. Also, although generalised survey data demonstrates that as surgeons age there is a withdrawal from working hours (Greenfield 2002; Royal Australasian College of Surgeons 2014) not all individuals take steps to withdraw from responsibilities as their skills and competency decline. It is some of these individuals that become the subject of troubling anecdotal reports about serious breaches of patient safety (Blasier 2009).

The objectives of this report are:

- To present an overview of current activities regarding moves towards revalidation and potentially assessment of ageing surgeons within Australia and internationally.
- To identify key evidence from the surgical specialties on the relationship between surgical performance and cognitive function and ageing.
- To discuss key issues raised by this evidence and broader literature on the issue of ageing within the medical specialties.

1.2 Methods

The methodology for the development of this report included searches of both the published peer-reviewed literature and grey literature on the issue of revalidation and ageing in surgery. Websites of key organisations, both within Australia and internationally, were searched to identify relevant information about revalidation or management of ageing surgeons. These included: the Medical Board of Australia, the Australian Health Practitioner Regulation Agency, the Royal Australasian College of Surgeons, National Health Service England, the American College of Surgeons, the Medical Council of New Zealand and The Royal College of Physicians and Surgeons of Canada. Supplementary searches were also conducted in Google to identify news reports, position papers or other relevant information. In the course of searching for information on revalidation, any additional information on other relevant mechanisms for assessment was also collected and summarised (see Section 7).

In order to identify key evidence from the surgical specialties on the relationship between surgical performance and cognitive function and ageing, literature searches were conducted in PubMed with key references pearled to identify new studies. Supplementary searches in other databases were also

conducted; however, because there are no consistent search terms for these topics the search strategy was utilised only as a starting point with key references used to broaden the literature base.

Search terms included:

- surgeon OR surg*, AND
- ageing OR age, AND
- Clinical competence [MeSH Terms] OR surgeons/standards [MeSH Terms] OR performance OR competence OR revalidation OR cognition OR function

These terms were adapted depending on the database searched and were used in varied combinations to obtain the most recent and relevant publications. A number of review articles were identified by these searches; however, as these articles note, the literature in this field is heterogeneous and very little of it is directly relevant to surgical specialties. All primary studies relating to surgeon age and surgical performance identified have been included in this report as this was the primary intention of the project. This consists of only a very small pool of data, none of which was conducted in an Australian setting. This limitation necessitated a narrative discussion of the literature rather than a quantitative synthesis of results.

All searches, extraction and discussion were undertaken by a single reviewer with oversight and input from the advisory surgeon, Professor Robert Pearce. Where possible results and key themes have been tabulated and the discussion aims to draw out the main learnings from published data.

2. Background to revalidation in Australia and New Zealand

2.1 *Medical Board of Australia consideration of revalidation*

In their submission to the consultation on revalidation being undertaken by the Medical Board of Australia, the RACS wrote “there is now irrefutable evidence that demonstrates that cognitive and technical skills decline with age, at a time when they may be under less scrutiny by clinical governance processes or undertaking locum work across a number of hospitals” (Royal Australasian College of Surgeons 2016b). However, there is a deficit nationally in guidance on how to approach the issue of ageing and surgical performance. In 2012 the Medical Board of Australia began considering revalidation and appointed an Expert Advisory Group (EAG) to provide input on models of revalidation. The EAG’s interim report included a two pronged approach consisting of:

- Maintaining and enhancing the performance of all doctors practising in Australia through efficient, effective, contemporary, evidence-based continuing professional development (CPD) relevant to their scope of practice (‘strengthened CPD’).
- Proactively identifying doctors at risk of poor performance and those who are already performing poorly, assessing their performance and when appropriate supporting the remediation of their practice (Medical Board of Australia Expert Advisory Group on Revalidation 2016).

The EAG and the Board are considering all of the feedback received and will recommend actions in a final report due in mid-2017. It is not clear whether this report will be made publicly accessible. This issue of identifying those at risk of poor performance is intrinsically linked to the question of determining what constitutes safe and unsafe age-related physical and cognitive decline in a surgeon. This may require a specialty specific approach. The interim report of the EAG suggests that a proactive approach is necessary in order to ensure public safety.

In New Zealand there is a current process of recertification administered through the Medical Council and specialist colleges. To be eligible for recertification all doctors in New Zealand must participate in ongoing education in order to be eligible to renew their practising certificate every year. Vocational training of specialists (such as surgeons) is the responsibility of the specialist medical colleges. Each medical college manages the training and recertification programs for particular vocational areas of medicine. These programmes are accredited by the Medical Council against the relevant standards and are managed and administered by the specialist colleges (Medical Council of New Zealand 2011b).

2.2 *Identified roles and responsibilities in revalidation*

In order for any policy on this issue to be effective it is necessary to:

- identify triggers for performance review;
- specify how performance will be reviewed and assessed;
- specify cut-off points for definitive actions (e.g. remediation, removal or privileges, dismissal etc.);
- define whose responsibility it is to identify at-risk practitioners and whose responsibility it is to review them;

- define whose responsibility it is to act on the results of the review.

Table 1 specifies the details presented in the interim report on revalidation.

Table 1 Elements of a system for identifying poor performing individuals as provided in the EAG interim report (Medical Board of Australia Expert Advisory Group on Revalidation 2016)

Element	Details from the EAG interim report
Risk factors or triggers	Age (from 35 years, increasing into middle and older age) Male gender Number of prior complaints ¹ Time since last prior complaint
Screening processes	Unclear: Cost-effective and practical models are needed to predict the risk of future underperformance. The interim report suggests that complaint registries as well as multi-source feedback during revalidation processes could trigger a review of performance. The EAG supports a tiered approach to assessment of performance, scaled to match the level of potential risk. This would consist of three tiers: 1) Specialty-specific multi-source feedback (MSF) is the recommended starting point to assess whether practitioners in at-risk groups are performing safely, or are underperforming, or are poorly performing. 2) For doctors who may pose more serious risk—more intensive peer-mediated processes. This could include peer review of medical records, peer review of performance in practice, and/or facilitated feedback based on practice or outcomes data. 3) The highest level of assessment would align with extensive performance assessment, as can be mandated by regulators.
Responsibility for screening	Unclear: The interim report identified a need for avenues for communication between patients, peers, employers, colleges, coroners, jurisdictions, insurers and other data holders to exist in order to 1) understand what each group is responsible for doing with their information and 2) facilitate a whole-of-system approach to early identification and intervention.
Responsibility for remediation	Two-tiered: For those within an organisation with defined clinical governance structure responsibility could be shared by the specialist college and employer, or if outside of a college, it would be borne by the employer. For those practising outside of a clinical governance structure responsibility for remediation could lie solely with the specialist college.
Forms of remediation	No specific form of remediation is proposed. The EAG specify that remediation should be tailored to the nature and level of the risk.

As is evident in Table 1, the RACS would be anticipated, on the basis of this interim report, to have a role both in identifying individuals at risk and, more importantly, in managing the consequences for their scope of practice. How this will be achieved in the context of age-related performance problems is unclear. Furthermore whether age-related performance problems could or should be separated from general questions about performance across a surgical career is uncertain. It is anticipated that the RACS, along with other professional organisations, will need to work closely with the Medical Board of Australia in determining how revalidation activities will function in practice. New Zealand has in place measures for the annual recertification of doctors.

This document is intended to provide an overview of current arrangements for managing this issue as well as some of the more comprehensive research examining the interplay between age and performance in surgery. It should be interpreted in light of the fact that a process for revalidation of medical practitioners is anticipated to be rolled out by the Medical Board of Australia in the coming

¹ Compared with doctors with one prior complaint, doctors with two complaints had nearly double the risk of recurrence, and doctors with five prior complaints had six times the risk of recurrence. Doctors with 10 or more prior complaints had 30 times the risk of recurrence. Doctors named in a third complaint had a 38 per cent chance of being the subject of a further complaint within a year, and a 57 per cent probability of being complained about again within two years. Doctors named in a fifth complaint had a 59 per cent one-year complaint probability and a 79 per cent two-year complaint probability. Recurrence was ‘virtually certain’ for doctors who had experienced 10 or more complaints, with 97 per cent incurring another complaint within a year.

years, and as the mechanism of revalidation is refined and clarified the related issues may change significantly.

3. Snapshot of the surgical workforce

3.1 Introduction

Within Australia the RACS Surgical Workforce Projection to 2025 indicates that (Department of Workforce Assessment: Royal Australasian College of Surgeons 2011a):

- As at December 2010, there were 4,089 active Australian surgeons. Of those surgeons 28 per cent (1,135) were aged 60 or over, 17 per cent (713) were aged 65 and over and 8 per cent (334) were aged 70 or over.
- It is difficult to model the amount of work undertaken by the group of Fellows aged over 70 years and who are still self-determined to be “active” (Department of Workforce Assessment: Royal Australasian College of Surgeons 2011a).

The New Zealand RACS Surgical Workforce Projection to 2025 indicates that (Department of Workforce Assessment: Royal Australasian College of Surgeons 2011b):

- In New Zealand there are 746 surgeons who are registered as active Fellows of the Royal Australasian College of Surgeons of whom 85% are under the age of 65.
- RACS data indicates that six per cent of surgeons continue to practise beyond the age of 70 years (47 surgeons) with most working well into their sixties.
- It is difficult to model the amount of work undertaken by the group of Fellows aged over 65 years and who are still self-determined to be “active”.

From the 2016 RACS surgical workforce census the distribution of surgeon age and retirement status is described in Table 2 below (Royal Australasian College of Surgeons 2016c). The average number of working hours per week for different age groups is also reported. The number of working hours for those aged >69 years was not reported. However in the 2011 census the mean number of working hours for male surgeons aged 60-69 years was 43.2, for males aged 70-79 years was 25.5 and for those aged 80-89 years it was 21.3 (Royal Australasian College of Surgeons 2011). While there were no female respondents in the 70-79 and 80-89 year old groups, women in the 60-69 year old category worked an average of 35.5 hours a week. An extract on working hours across age groups from the 2011 report is also provided in Figure 1. It is unclear what type of work is being undertaken within the hours counted. With respect to intentions about retirement the 2016 report states that (Royal Australasian College of Surgeons 2016c):

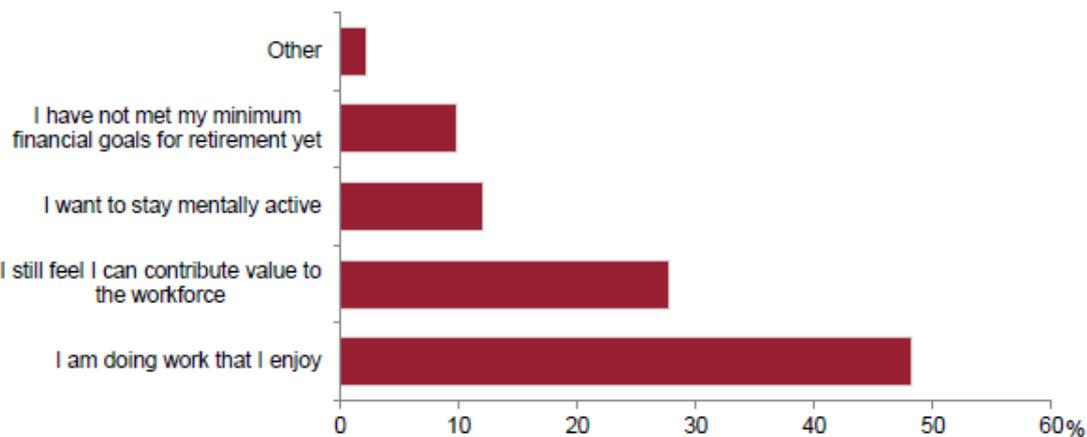
- “One in six Fellows [who responded] reported that they were working in a part-time capacity, however most (73%) of the Fellows who reported part time employment were aged 60 years or older, and this is likely to be a reflection of their transition into retirement.
- Approximately 9% of Fellows aged less than 50 years reported that they intend to retire from clinical practice in the public sector within the next 10 years. A small fraction of Fellows in this age group intend to retire from private sector practice or all forms of paid work.
- More than half of Fellows aged 50 years and older intend to retire from all forms of paid work within ten years.
- Almost one in five respondents was aged 65 years or older at the time of the Census. Among these, 20% reported an intention to continue in paid employment for the next two years.

- Until the age of 60 years, the average male Fellow worked around 50 hours a week, while female Fellows worked between 43 – 48 hours a week. Male Fellows aged 40-59 years worked the longest average hours of just under 52 hours a week, while female Fellows working the longest hours were aged 50-59 years, working an average of 47.7 hours a week. Fellows aged 60-69 years had the lowest average hour work week, with many reducing their hours as they shift into semi-retirement.”

Reasons for continuing in employment after age 65 are shown in Figure 1 below.

Figure 1 Extract from the 2016 census regarding reasons for staying in employment

Figure 7.8: Main reason why Fellows aged 65 years or older continue to be engaged in paid employment for the next 2 years



Note: Please refer to Table A7.8 in Appendix A for the tabulated data.

Table 2 Age distribution and Fellowship status of Census respondents (Royal Australasian College of Surgeons 2014)

Age group	Number Mean working hours per week	Active (%)	Semi-retired (%)	Retired (%)
<40	348 Male: 49.0 Female: 43.0	348	0	0
40-49	661 Male: 51.8 Female: 45.5	661 (100)	0	0
50-59	603 Male: 51.9 Female: 47.7	597 (99)	6 (<1)	0
60-69	415 Male: 41.6 Female: 40.2	327 (79)	87 (21)	1 (<1)
70-79	210 Hours NR	52 (25)	149 (71)	9 (4)
80+	30 Hours NR	3 (10)	22 (73)	5 (17)

There are a small number of surgeons over the age of 60 years who continue to work considerable hours. It is not clear what activities are performed in these working hours and to what extent these surgeons continue to operate. Figure 2 is taken from the 2011 Surgical Workforce Census Report.

Figure 2 Table 2.4 of the surgical workforce census report (Royal Australasian College of Surgeons 2011)

Table 2.4: Average number of hours Australian and New Zealand respondents worked per week – stratified by age group and gender

Age group	Gender	N	Percentage of respondents							
			< 20 hrs	21-30 hrs	31-40 hrs	41-50 hrs	51-60 hrs	61-70 hrs	71-80 hrs	> 80 hrs
30-39	F	49	6.1	8.2	22.4	28.6	26.5	6.1	12.2	1.0
	M	439	1.6	1.8	10.7	26.4	36.2	19.6	8.2	16.0
40-49	F	59	5.1	11.9	13.6	39.0	18.6	11.9	6.8	0.0
	M	905	0.6	2.3	8.2	26.1	37.5	22.5	8.8	26.0
50-59	F	34	0.0	2.9	14.7	26.5	41.2	14.7	17.6	0.0
	M	750	1.2	2.7	8.5	23.2	42.0	19.9	8.9	19.0
60-69	F	6	33.3	0.0	0.0	33.3	16.7	16.7	0.0	0.0
	M	634	12.6	10.7	16.9	23.2	23.8	11.2	2.8	7.0
70-79	F	1	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
	M	243	37.0	16.9	15.6	16.0	7.8	3.3	1.2	0.0
80-89	M	42	59.5	14.3	16.7	7.1	2.4	0.0	2.4	0.0

4. Literature Review

4.1 Introduction

Lazar Greenfield is an early writer in the field of age and surgical performance. In his presidential address to the International Society for Cardiovascular Surgery in 1993 he spoke to the issue of the end of mandatory retirement in relation to the performance of ageing surgeons (Greenfield 1994). While this piece is not recent, the issues summarised are still pertinent today. In this address he provides an overview of the physiology of ageing, highlighting its complexity, individual variation and inevitability. Furthermore, Greenfield points out that as a profession, the attention on competency has long focussed on ensuring appropriate selection of surgeons and standards for entry and licensing in the early phases of a career. The timing and criteria for exiting the surgical profession are less clear, resulting in surgeons as a group being unprepared for the cessation of operative practice. Greenfield covers a range of ideas for tackling this issue, including:

- Reducing the negative stigma around retirement in the medical profession coupled with emphasising forward planning about retirement.
- Managing exit from surgical practice with the provision for retaining teaching, administrative and other important roles where individuals are able.
- Considering the idea of mandatory cessation of operating room privileges when appropriate.
- Gathering better longitudinal data around ageing surgeons integrated with cognitive and functional tests that are validated for use as performance criteria.
- Utilising processes for managing “impaired” individuals whose self-awareness and responsiveness to decline is limited.

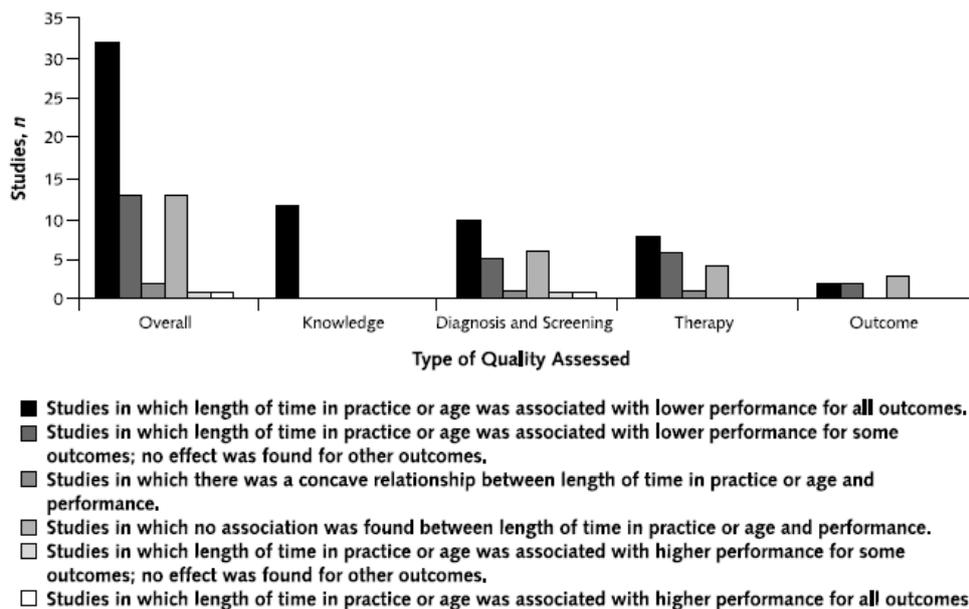
Overall, there have been many changes in the field of surgery since 1993 and there has, in the intervening years, been an increased focus on how to manage the process of ageing in the context of an active surgical career. However, it is clear that mandatory retirement is not seen as an acceptable approach to the issue for a range of robust reasons. Rather the conversation has shifted to one focused on the idea of establishing continued competency with a view to prospectively screening for competence at a specified age.

The idea of assessing competency is more acceptable to most because it allows for some mechanism for protecting patient safety while safeguarding able surgeons from forced exit from practice. However, despite broad agreement that assessing performance in ageing surgeons is relevant, there have been no specific recommendations from any Australian professional bodies for how this should occur. This stems from a lack of consensus regarding valid, reliable and practical tools that could be used to assess competency, and further to this, what constitutes an acceptable level of competency in an ageing surgeon and whether this should vary across specialties. The following discussion covers some of the most cited and comprehensive literature on this issue.

Choudry et al (2005) attempted to systematically review the relationship between clinical experience and the quality of healthcare to determine whether suggestions that there is an inverse relationship between years in practice and level of care provided has a basis in evidence. This review did not focus on surgeons but was broad in its inclusion criteria. The literature identified was extremely heterogeneous and because search terms for clinical experience are inconsistent, thus the authors

noted that several studies may have been missed. However, the authors of the study concluded that, despite serious limitations of their study, the findings are troubling and somewhat paradoxical in nature. After review of 59 studies the authors found “older physicians possess less factual knowledge, are less likely to adhere to appropriate standards of care, and may also have poorer patient outcomes. These effects seem to persist in those studies that adjusted for other known predictors of quality, such as patient comorbidity and physician volume or specialization”. Very few of the included studies assessed surgical outcomes and literature was most commonly from American sources. An overview of the outcomes assessed and number of studies included is described in Figure 3.

Figure 3 Results presented in Choudry et al 2005



Bhatt et al (2016) undertook a narrative review of literature with a view to determining when a surgeon should retire. Their analysis included thirty-six studies and included subjects such as the effect of ageing on brain biology, individual variation in the ageing process and the impact of ageing on surgical performance. Their review identified conflicting evidence regarding the impact of surgeon age on surgical performance and noted that cognitive decline is highly individualised. According to *Bhatt et al (2015)*, speed and acquisition of laparoscopic skills were found to correlate positively with the number of years after training (*Risucci et al 2001*). This study did not consider surgical outcomes but rather simulated surgical techniques. In another study (*Prystowsky 2005*) *Bhatt et al 2015* report that the outcomes of complex alimentary tract procedures were found to be poorer among less experienced surgeons than more experienced colleagues (however, the age of surgeons was not actually specified). The authors cite results from the cognitive changes and retirement among a senior surgeons self-report survey, finding that most surgeons say that a decision to retire would be based on skill rather than age (*Lee et al 2009*). However, they also point out that this decision would be based on perceived ability which may not correlate with actual ability and that this might result in either premature retirement or overdue retirement. Overall, *Bhatt et al 2015* included only limited data that specifically intended to assess the relationship between age and performance. The primary studies that attempted to do this have been included in the report below.

4.2 Surgeon age and operative outcomes – primary studies

4.2.1 Surgeon age and operative mortality in the United States

Surgical procedures, particularly with more complex patients or operations require a high degree of physical and mental stamina—capacities of the individual which are well known to diminish with advanced age. However, to what degree age affects such capacities and at what age it becomes a barrier to safe practice is both undefined and likely to vary substantially between individual surgeons. Waljee et al (2006) examined operative mortality in approximately 461,000 patients undergoing 1 of 8 procedures between 1998 and 1999 in the United States. This article is the most comprehensive study on the topic available. They found that compared with surgeons aged 41 to 50 years, surgeons over 61 years had higher patient mortality rates with respect to some but not all procedures (see Table 3). The main findings of the study were:

- Mortality rates for older surgeons were higher for carotid endarterectomy, coronary artery bypass grafting, and pancreatectomy. However, the overall magnitude of difference was small.
- For most procedures, surgeon age was not an important predictor of operative risk (e.g. for aortic aneurysm repair, cystectomy, aortic valve replacement, lung resection, or oesophagectomy).
- There was no difference in patient age, sex, race or risk assessment (admission acuity, or Charlson comorbidity scores) in patients treated by older surgeons versus younger surgeons.
- The effect of surgeon age was largely restricted to surgeons with low procedure volumes. When considering low-volume surgeons², surgeons over 60 years of age had higher mortality rates for each procedure; differences that were considered clinically and statistically significant.

Table 3 Adjusted Odds Ratio for Operative Death, According to Surgeon Age, taken from Waljee et al 2006

	Odds ratio for operative death according to surgeon ages (v surgeons 41-50 years)	
	<40 years (v 41 to 50 years)	>61 years (v 41 to 50 years)
Cardiovascular		
Elective repair of abdominal aortic aneurysm	1.10 (0.92-1.31)	1.02 (0.83-1.26)
Carotid endarterectomy	1.13 (1.0-1.29)	1.21 (1.04-1.41)
Aortic valve replacement	0.92 (0.81-1.05)	1.06 (0.92-1.22)
Coronary artery bypass grafting	1.02 (0.95-1.09)	1.17 (1.05-1.29)
Cancer resections		
Lung resection	0.97 (0.79-1.18)	1.02 (0.84-1.23)
Oesophagectomy	0.81 (0.54-1.23)	0.82 (0.50-1.35)
Cystectomy	1.04 (0.77-1.41)	1.30 (0.86-1.95)
Pancreatectomy	0.88 (0.62-1.24)	1.67 (1.12-2.49)
<i>Adjusted for patient characteristics of severity, gender and age. Adjusted for surgeon characteristics of surgeon volume, hospital volume and hospital teaching status. Bolded figures indicate higher mortality associated with the > 61 year-old group.</i>		

² A low-volume surgeon does about 50 cases or fewer per year, a medium-volume surgeon does 51 to 100, a high-volume surgeon usually does about >100.

Overall there is a paucity of data examining the mechanisms underlying variation in surgeon performance. It is not clear from Waljee et al (2006) what the relationship between surgery volume, mortality rates and still being in active practice is for older surgeons. How relevant such data is to the Australian and New Zealand context where the population is smaller and more geographically dispersed is unclear – typical surgeon volumes are likely to vary from that in other countries.

4.2.2 Prestige of training programs and experience of bypass surgeons as factors in adjusted patient mortality rates

Hartz et al (1999) used data from three American states to evaluate whether certain aspects of the experience of a coronary artery bypass graft (CABG) surgeon were related to the surgeon's performance or prestige of their training program or hospital. With respect to mortality, the mortality ratio (the observed mortality divided by predicted mortality) increased with advancing age (Figure 3) and lower volume³. As with Waljee et al (2006), this study identified that the more operations a surgeon performed the lower the mortality rate; however, in Hartz et al (1999) the effect of physician age was not explained by volume differences in older and younger surgeons because older physicians in this study did not have lower practice volumes. Rather the authors hypothesize that younger surgeons may be better trained in newer and more effective techniques than older surgeons. Importantly this study involved only CABG procedures and therefore its generalizability to surgical performance in other procedures is extremely limited.

Figure 4 Extract from Hartz et al (1999)

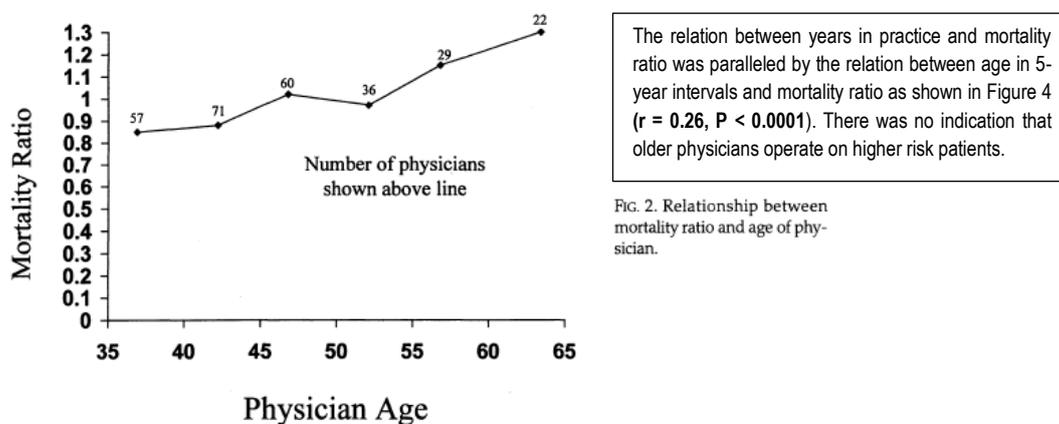


FIG. 2. Relationship between mortality ratio and age of physician.

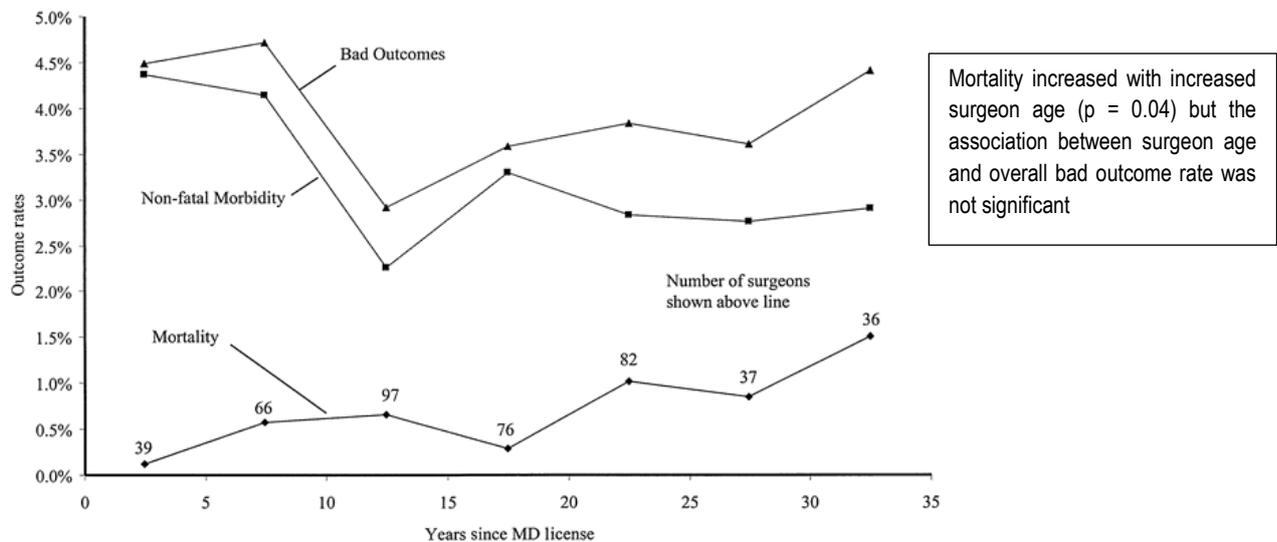
4.2.3 Surgeon characteristics associated with mortality and morbidity following carotid endarterectomy

O'Neill et al (2000) aimed to identify the characteristics of surgeons associated with mortality or morbidity following carotid endarterectomy. To achieve this they considered data obtained from the Pennsylvania Health Care Cost Containment Council on all inpatient discharges from the 284 non-federal Pennsylvania hospitals for the period from 1994 to 1995. Physician data included name, sex, specialty, year of birth, board certified, and year of licensure. They studied 12,725 cases and found

³ The mortality ratio increased with the rank of the academic appointment; it was 0.79 for instructors (a total of 23 surgeons and 7,971 patients), 0.95 for assistant professors (80 surgeons and 25,457 patients), 0.99 for associate professors (46 surgeons and 17,919 patients), and 1.19 for full professors (28 surgeons and 8,018 patients), $P < 0.002$ using a statistical test for trends.

that there was an effect of volume on outcomes but that it was not a linear measure. Surgeons performing one to two cases a year had the highest mortality and total number of “bad outcomes” while surgeons performing three or more had less. Increasing volume after three cases did not appear to affect outcomes. The authors then undertook analysis excluding the lowest volume category and re-evaluated the data finding that no other variables, including surgeon age, were found to be significantly predictive of “bad outcome rates” (Figure 4).

Figure 5 Relationship between the outcome rates and surgeon experience measured in years since licensing



4.2.4 Proficiency of surgeons in inguinal hernia repair: effect of experience and age

Neumayer et al (2005) randomised 2,164 men to open mesh or laparoscopic mesh repair of inguinal hernia and examined factors which were associated with recurrence at two years. Of the 2,164 men enrolled 1,984 underwent repair and 1,696 were available for assessment of recurrence at 2 years. This was a multicentre trial conducted at Veterans Administration hospitals and both surgeon experience and resident postgraduate year level were examined as factors potentially affecting performance. To examine the effect of surgeon age the authors considered surgeons to be either older (≥ 45 years) or younger (< 45 years). The age range of surgeons participating in the trial was from 27 to 76 years old. Overall the authors found that for laparoscopic hernia repair, inexperienced surgeons (those who had performed less than 250 repairs) 45 years of age or older had recurrence rates significantly higher than equally inexperienced but younger surgeons (1.72 times the risk of recurrence). However, it is not clear what might explain this finding, particularly as this effect was not observed to be statistically significant when considering open hernia repair.

5. Ageing surgeons and cognitive performance measures

Literature on the relationship between age and cognitive performance in surgeons and non-surgeons

Several authors (Bieliauskas et al 2008; Drag et al 2010; Lee et al 2009) report on the Cognitive Changes and Retirement among Senior Surgeons Self-Report Survey (CORASS) trial across a number of publications. In the CORASS study, the participants completed computerised activities from the Cambridge Neuropsychological Test Automated Battery that are related to surgical skill including:

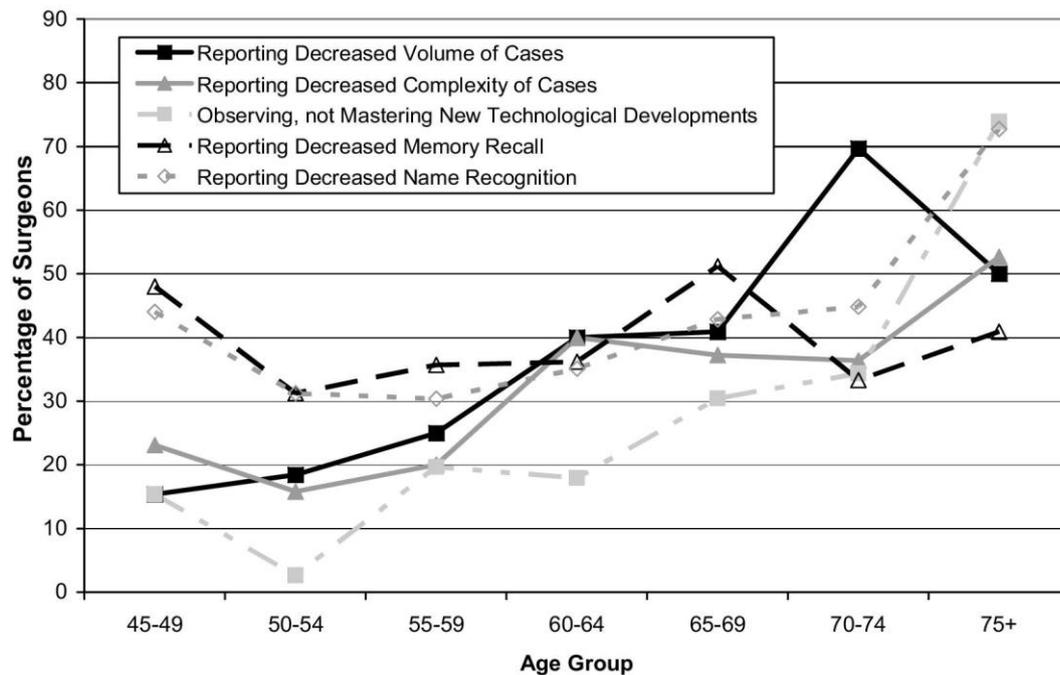
- stress tolerance (by computerised testing of rapid visual information processing, RVIP and paired associates learning, PAL) ;
- psychomotor functioning (by computerised testing of reaction time) ; and,
- visuospatial functioning (by computerised testing of RVIP and PAL).

Surgeons also completed a survey regarding self-appraisal of surgical practice and plans for retirement. Participants were recruited through a booth at the annual Clinical Congress in the United States and a total of 294 surgeons participated with some being re-tested in subsequent years. Surgeons were stratified into younger surgeons (<60 years, n= 126) and senior surgeons (>60 years, n=168). Of respondents in the senior group, 36 per cent were retired (mean age 70.25 years), 33 per cent were planning to retire within 5 years (mean age 65.95 years) and 30 per cent did not have imminent retirement plans (mean age 66.37 years).

5.1 Self-report changes in clinical practice, cognitive functioning, and recreational activities with age

According to self-report surveys of the participants there was an age-related decrease in volume of patients, complexity of cases, mastery of new technological developments and name recognition. Self-reported memory recall was not reported to have decreased (See Figure 6).

Figure 6 Relationship between age and self-reported items



5.2 Objective cognitive performance measures

Retired surgeons were excluded from analysis and for currently practising surgeons three tests were administered on cognitive skills related to stress tolerance, psychomotor functioning and visuospatial functioning. This analysis showed expected age-related declines among surgeons. Senior surgeons performed significantly below younger surgeons across all measures. However, within the group of senior surgeons there was substantial variability in individual performance. Senior surgeons' worst performance was in the task of visual learning and memory (RVIP and PAL), while age had less impact on psychomotor speed.

When considering individual performance, 61 per cent of senior surgeons performed within the range of younger surgeons across all tasks. No individual performed significantly below the younger surgeons on all three tasks. Seven (6.5%) practising senior surgeons performed significantly below younger students on two tasks. The proportion of practising senior surgeons who performed below the younger surgeons on at least one cognitive measure increased with age but this was not a uniform effect. In practising surgeons aged 70 and older more than one-third (9/24) of the surgeons performed within the range of the younger surgeons on all three tasks demonstrating that some individuals continue to show cognitive competence despite advanced age (see Figure 6).

Figure 7 Number and percentage of practising senior surgeons performing significantly below younger surgeons according to age group

Number of tests	Age group, y								Total
	60-64		65-69		70-74		75+		
	n	%	n	%	n	%	n	%	
0	43	78	14	48	7	47	2	22	66
1	10	18	11	38	7	47	7	78	35
2	2	4	4	14	1	6	0		7
3	0		0		0		0		0
Total	55	100	29	100	15	100	9	100	108

66 (61.1%) performing within range of younger surgeons

35 (32.4%) performing significantly below younger surgeons on one item

7 (6.5%) performing below younger counterparts on 2 tests

0 (0%) performing below younger counterparts on all 3 tests



5.3 Perceived cognitive performance

Interestingly, the CORASS study did not find any relationship between self-perceived cognitive changes in memory and objectively demonstrated cognitive performance. Decision to retire did not correlate with performance on tested variables either; however, self-perception of declining recall and name recognition was related to retirement status – i.e. those who thought their memory recall had declined were more likely to be either currently retired or retiring in the next five years. However, surgeons’ perceptions of cognitive performance and decline did not demonstrate a relationship with performance on cognitive tasks. Based on this, the authors suggest that subjective awareness of cognitive changes amongst surgeons is not accurate and may result in either premature or overdue retirement.

This finding is supported by a study by Davis et al (2006) which included 17 studies on self-assessment amongst physicians and their relationship with external assessment. This review identified that the majority of evidence suggests physicians have limited capacity to accurately self-assess their abilities and performance, suggesting that external assessment is a more reliable measure of competence. Furthermore, those receiving the poorest external assessment are least effective at self-assessment (66/108).

In conclusion, taken together, this study demonstrates age-related decline across stress tolerance, psychomotor functioning and visuospatial functioning with visuospatial functioning being the most affected. While no practising surgeon performed significantly below younger surgeons on all tests there was considerable individual variability with more than one third (9/24) of practising surgeons over the age of 70 years performing within the range of their younger counterparts. In this study perceived abilities did not appear to correlate with actual abilities suggesting that self-assessment of ability may be an unreliable measure of performance. However, it is entirely unclear how performance on these tests translates into outcomes for patients of older surgeons—particularly as older surgeons also self-reported decreases in patient volume and mastery of new techniques. Furthermore, it is important to note that observations about cognitive changes with age and the reliability of self-assessment as a safeguard are not unique to the surgical field.

6. Programs developed to manage ageing surgeons

6.1 *Introduction*

Some suggest that in comparable fields, such as aviation, there is a mandatory retirement age and therefore there should be a mandatory retirement age in surgery. However, there is no real consensus on how that should be applied or what the age should be. One alternative is multi-attribute screening tests intended to examine a surgeon's physical health as well as to measure any cognitive deficits. Several such "programs" have been developed. However, they are not as yet validated, as surgeons are reluctant to volunteer for them, and, it is not clear how they should be appropriately weighted in the final decision about the scope of a surgeons practice. Table 4 provides a brief snapshot of existing processes in selected countries.

6.2 *Distinct programs for managing ageing surgeons*

The following were identified during the writing of this report as articulated policies or programs aimed at managing the issue of ageing surgeons or physicians. This list is not intended to be exhaustive but provides a brief overview of selected programs for which information was publicly accessible.

6.2.1 *Stanford Health Care late career practitioner policy (Weinacker 2017)*

The policy consists of a three-component screening process for physicians aged 75 years and older who have clinical privileges. In information on the Stanford Health Care website it states that age 75 years was chosen somewhat arbitrarily, but the choice was guided by data that show that the rate of decline of cognitive functions, including inductive reasoning, spatial orientation, perceptual speed, numeric ability, verbal ability and verbal memory. The three part process is outlined below; however, it is relevant to note that the process is intended as a screening evaluation rather than a pass/fail test. If the screening identifies a risk to patient care then this would trigger further evaluation.

- 1) Peer assessment by "three colleagues on the medical staff who are in a position to evaluate the practitioner's clinical performance. These colleagues will be chosen from among six recommended by the practitioner himself/herself. They are asked to complete a clinical evaluation form that has been adapted from the form currently used by the School of Medicine in the faculty appointments and promotions process."
- 2) A "comprehensive history and physical exam, typically to be performed by the individual's primary care physician."
- 3) "A cognitive screen, which is performed by experts in the neuropsychology division of the Stanford Department of Neurology, and paid for (at least in the first year) by a grant from the Stanford University Medical Indemnity and Trust Insurance Co."

6.2.2 *The Aging Surgeon Program (LifeBridge Health 2017)*

The Aging Surgeon Program was introduced at Sinai Hospital of Baltimore and, according to its proponents, is "a comprehensive, multidisciplinary, objective and unbiased evaluation of physical and cognitive function for older surgeons. It was designed to identify potentially treatable or reversible

disorders that, if properly treated, could restore or improve functional capacity. Results of the program would protect surgeons from arbitrary decisions based on their chronologic age, protect patients from unsafe surgeons, and ameliorate hospitals' liability risk". The program consists of:

- general physical examination, hearing screen;
- neurology examination;
- physical evaluation;
- neuropsychology evaluation ;
- ophthalmology examination.

The program's website notes that the final report includes no recommendations regarding privileges or retirement—rather; it provides objective findings of evaluation to the person who paid for the program. This might be the surgeon or their employer. It is unclear whether any surgeons have been put through this program and, if so, what the outcome has been to date. An online article from June 2015 reported that while no surgeons had yet stepped forward to be put through the program, a number of physicians had opted to retire when it was suggested they be put through the program (Whitehead 2015).

Table 4 Brief overview of age-based screening programs or revalidation within Australia and selected comparable countries

	Mandatory retirement age?	Age-based screening of competency?	Details of screening or revalidation
Australia	No	No	Revalidation is currently under consideration by the Medical Board of Australia.
Canada	No	Yes	The College of Physicians and Surgeons of Ontario randomly selects physicians under the age of 70 who have been in independent practice for at least five years to undergo peer assessment. All physicians over the age of 70 are subjected to a peer assessment every five years.
New Zealand	No	No	All New Zealand doctors must hold a current practising certificate issued on an annual basis by the Medical Council of New Zealand. All doctors in New Zealand must participate in ongoing education in order to be eligible to renew their practising certificate every year. The Medical Council accredits the Continual Professional Development programmes offered by the medical colleges and audits compliance by doctors. This process is called recertification.
The United Kingdom	No	No	Revalidation for all medical professionals under the General Medical Council. The revalidation cycle occurs once every five years with requirements for annual appraisal information.
The United States	No	Inconsistent	<p>Certain programs exist that incorporate age-based screening and competency assessment:</p> <p>Duke University mandates that doctors retire from clinical practice at age 70,</p> <p>Screening policies for older doctors also have been adopted by the University of Virginia and in the 20 hospitals run by the University of Pittsburgh,</p> <p>Stanford Health care has a late career practitioner policy that incorporates health, cognitive and peer assessment,</p> <p>The Aging Surgeon Program was introduced at Sinai Hospital of Baltimore in 2014. It incorporates physical and cognitive function tests with a suggested 2–3-yearly evaluation for all surgeons aged 70 +,</p> <p>The American College of Surgeons has a statement on ‘the ageing surgeon’ which outlines high-level principles. The responsibility for implementing and transforming this into specific policies is left to individual institutions.</p>

7. Mandatory notification in Australia and New Zealand

Grey literature searches did not identify any formal programs or systems in Australia or New Zealand for managing surgeons whose performance may be compromised by ageing-related decline. It is anticipated that, at present, the majority of these situations are handled informally by employers and colleagues. However, for surgeons whose performance is impaired by an age-related condition or disorder such as dementia, mandatory reporting regulations do provide an avenue for remediation. Noting that in recent times concern has been expressed that mandatory reporting laws act as a disincentive to health practitioners seeking treatment and that the Australian Health Ministers' Advisory Council is currently considering this issue (Parnell 2017).

The Australian Health Practitioner Regulation Agency (AHPRA) functions in conjunction with the 14 National Boards regulating registered health practitioners in Australia. AHPRA works to implement the National Registration and Accreditation Scheme under the Health Practitioner Regulation National Law as per each state and territory (Australian Health Practitioner Regulation Agency 2014). In 2014 the National Law was amended to include mandatory notification requirements in order to protect the public from practitioners who represent a risk. When notifications are investigated, the national boards can take a range of actions including the request of health assessment and, if required, the imposition of conditions on registration or removal from the register.

Section 140 of the National Law defines 'notifiable conduct' as when a practitioner has:

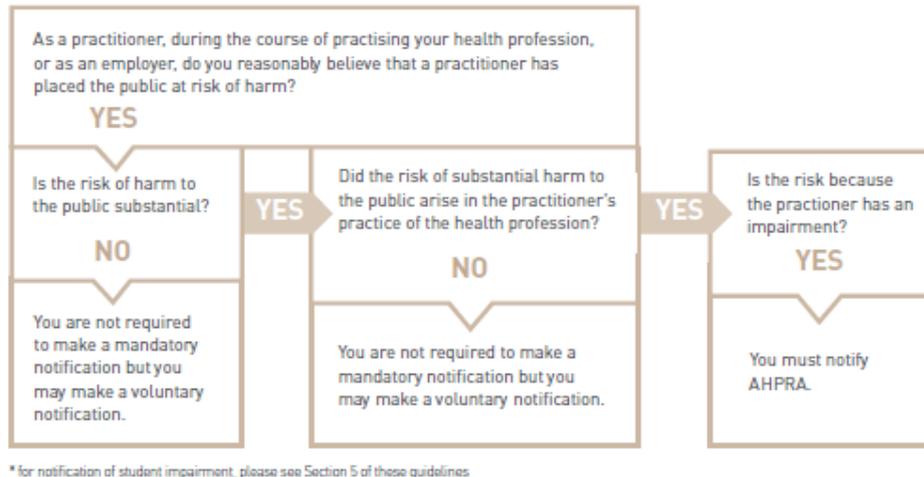
- practised the practitioner's profession while intoxicated by alcohol or drugs; or
- engaged in sexual misconduct in connection with the practice of the practitioner's profession; or
- placed the public at risk of substantial harm in the practitioner's practice of the profession because the practitioner has an impairment; or
- placed the public at risk of harm because the practitioner has practised the profession in a way that constitutes a significant departure from accepted professional standards (Australian Health Practitioner Regulation Agency 2014).

The law requires that practitioners, employers and education providers report notifiable conduct. The guidelines state that the practitioner "must have first formed a reasonable belief that the behaviour constitutes notifiable conduct or a notifiable impairment or, in the case of an education provider, a notifiable impairment". In a case where the risk is clearly addressed by being appropriately managed through treatment and the practitioner is known to be fully compliant with that, mandatory notification would not be required. Hence, mandatory notification requirements would apply in situations where earlier intervention on the part of employers or colleagues has either failed or not been attempted. Notable exceptions for the requirement of other practitioners to report impairment or other notifiable conduct include being a treating practitioner practising in Western Australia or a treating practitioner, practising in Queensland under certain circumstances.

Under the National Law, impairment *is* "a physical or mental impairment, disability, condition or disorder (including substance abuse or dependence) that detrimentally affects or is likely to detrimentally affect the person's capacity to practise the profession" (Australian Health Practitioner Regulation Agency 2014). In order to trigger notification on the basis of impairment, a practitioner

must have placed the public at risk of substantial harm where that is determined to mean “considerable harm such as a failure to correctly or appropriately diagnose or treat”. The decision guide presented in Figure 8 is taken from the Mandatory Notification Guidelines (Australian Health Practitioner Regulation Agency 2014).

Figure 8 Excerpt from the Mandatory Notification Guidelines on the decision to notify impairment



Pesiah et al (2007) published an article in the Internal Medical Journal entitled “Australian pathways and solutions for dealing with older impaired doctors: a prevention model”. At the time the article was written only Victoria and South Australia had mandatory reporting rules regarding impairment. However, since the publication of this piece, the situation has changed substantially with processes for notification now more standardised around Australia and options for central reporting via AHPRA. Different states and territories also specify their own approaches to the circumstances in which it is appropriate for a clinician or health care worker to be suspended from duty. Pesiah et al (2007) commented that most processes begin with informal discussions intended to support and advise doctors who may be impaired. Pesiah et al (2007) writes that “Options of retirement to non-practising or limited prescribing are canvassed with the alternative of neuropsychological testing and performance review should the doctor seek to remain in practice. Doctors often decide to retire at this point and the matter does not proceed further” (Pesiah et al 2007). However, an unanswered question at the time of writing that piece, and which is still pertinent and unresolved, is how to determine what level of impairment constitutes a risk to patient safety or compromises outcomes. Overall, the Australian national systems for dealing with issues related to poor performance are predominantly reactionary, requiring a high threshold of risk for action. Pesiah et al (2007) suggest that such systems may not be adequate to deal with the more insidious and subtle problems associated with age-related decline in surgical ability or performance.

New Zealand has required mandatory notification of impaired health practitioners since 2003 under the Health Practitioners Competence Assurance Act 2003 (Parliamentary counsel office 2003). The Medical Council of New Zealand manages notifications regarding impaired physicians or surgeons and the act defines a “mental or physical condition” as “any mental or physical condition or impairment; and includes, without limitation, a condition or impairment caused by alcohol or drug abuse”(Parliamentary counsel office 2003). The Medical Council lists as a condition affecting the ability to perform functions required to practise medicine “declining competence due to age related

loss of motor skills or the early stages of dementia". Further to this the Medical Council provides the following guiding questions to assist individuals deciding whether the threshold for notification has been reached (Medical Council of New Zealand 2011a):

"Factors that could suggest that the threshold for notification is reached include:

- is any suspected condition, or consequent behaviour and conduct, actually impacting on the doctor's practice, even if that hasn't necessarily had an adverse impact on patients to date?
- are you concerned that a health problem exists that is not being acknowledged and addressed, and that has the capacity to affect the doctor's practice without effective intervention?
- have any local interventions failed?
- is the condition the doctor has a relapsing one, and might there be the potential for this to have a greater impact on their capacity to practise in a more independent role, or if they move away from their existing supports?
- should any other workplace know about the doctor's health problem, and be aware of its potential to impact on their practice?
- is any behaviour or conduct a one-off incident, or is there a pattern emerging that may be attributable to an illness process?
- is there a risk to the doctor themselves? How big is that risk, and how serious would the consequences be for the doctor and their colleagues?

The doctor's level of insight will always be a critical factor to be taken into account, especially a lack of insight about the capacity for a condition to impact on their ability to practise, or if they have a newly diagnosed condition and they are still learning to integrate this into their everyday life and their practice.

Other factors that may be relevant when deciding whether or not to involve Council

Again, the doctor's level of insight will be a critical factor, irrespective of whether they have a chronic, relapsing, or progressive illness. If you are satisfied that:

- the condition is likely to be short lived, and respond quickly to treatment with a full recovery, with any consequent risks to patients be managed during treatment and recovery, for example with sick leave or modified hours or duties for a short period.
- the behaviour or conduct causing concern is likely to be due to personality disorder or dysfunction, which can be managed through the employer's HR processes
- the doctor has a good understanding of any condition they have, and its capacity to impact on their practice
- there are no concerns about their compliance with, or readiness to access, any treatment required
- they have good supports in place

Things that demonstrate the last three points would include the doctor's acceptance that they have a condition that needs to be managed, their willingness to share information with others as appropriate, how they monitor their own health and responses, and what feedback they seek on these."

8. Discussion

Literature on the subject of ageing and surgical performance is extremely heterogeneous and there is a paucity of robust data relating to advancing age and postoperative outcomes. Data that is available also raises more questions than providing answers because effects of age are also confounded by both level of experience and volume of cases. Overall, the most comprehensive study of mortality and surgeon age identified poorer outcomes with older surgeons when they were performing lower volumes of certain procedures (Waljee et al 2006). This effect appeared to be procedure-specific which might suggest that in higher-risk operations requiring superior judgement and fine technical skills it might be more advisable to either perform such operations at a normal volume or withdraw from practising them altogether. Such analyses are also complicated by the fact that there are smaller numbers of older surgeons than their younger counterparts with whom they are compared, and, when considering high-volume surgeons, there are even fewer. Unfortunately, peer-reviewed literature from Australia on the subject is lacking with studies being almost exclusively based in the United States, limiting the ability to generalise.

In Australia and New Zealand there are an estimated over 300 “active” surgeons over the age of 70 years. However, it is unclear how “active” these surgeons are in comparison to their younger peers. It has generally been assumed that surgeons self-regulate based on their own and peer assessment of their physical and cognitive performance. However, literature indicates that physicians have a limited ability to accurately assess their own competency and that most senior surgeons report no changes in perceived cognitive abilities with age—something which is unlikely to reflect reality (Davis et al 2006; Drag et al 2010). Despite the evidence that age is a relatively weak predictor of postoperative mortality there is no question that with advancing age comes increasing deficits in sensory function such as vision and hearing as well as cognitive processing; furthermore, as individuals age the prevalence of chronic illness also increases (Greenfield 1994). And while the functioning of some individuals is well preserved into advanced age, the variation between individuals is significant—with variation greatly increased with increasing age (Bieliauskas et al 2008).

It is a recognised problem in the literature that there is a small group of individuals in whom advanced age will not serve as a cue to withdraw from practice and that this is a situation for which hospital administrators and colleagues can be unprepared (Blasier 2009). In the American Medical Association Journal of Ethics, Peter Angelos describes the ethical dilemmas regarding colleague responses to the diminished capacities of an ageing surgeon. He makes the salient point that surgeons, as part of the implicit social contract between themselves and patients, are obligated to minimise the patient’s risk of being harmed (Angelos 2016). Hence, in the situation where a surgeon has diminished physical or mental capacities there is a clear ethical responsibility on the part of the individual, colleagues and superiors to intervene. He also points out that such intervention does not necessarily need to be punitive but may involve a transition to more appropriate activities. Hence, the obligation on the part of the surgical profession is clear but it remains to be defined “when does decline become impairment? And, when does impairment compromise safety?” (Angelos 2016).

A recent study describes 41 older (>60 years) impaired doctors (including three surgeons) referred to the New South Wales (NSW) Medical Board. It found cognitive impairment or dementia was in 53.7

per cent (22/41), including 12 per cent (5/41) having frank dementia⁴ (Peisah and Wilhelm 2007). Twenty-nine per cent (15/41) were diagnosed with substance abuse, 22 per cent (9/41) with depression and 17 per cent (7/41) with two comorbid psychiatric conditions. Cognitive impairment was the most common reason for impairment in older referred doctors. Typical findings included that long-term memory is well-preserved, as were consolidated verbal skills but that auditory memory and learning ability were compromised. Also compromised was the ability to learn new information, rapidly process information and sensory input, and, plan and deal with complex situations. Some impaired doctors were reported as working 50-60 hours a week and were identified as “workhorses” while others (identified as “dabblers”) were seeing a very small number of patients. For some, a sense of obligation to staff and patients as well as confusion about life after retirement contributed to avoidance or postponement of retirement. While some were receptive to the intervention and results of testing the authors identified that, for most, denial was the typical response. Almost all impaired physicians had been the subject of a complaint or poor performance assessment within 10 years of examination and they were most likely to have been referred for assessment by state pharmaceutical services, treating physicians and hospital administrators. Referral by colleagues was very uncommon.

The most troubling finding of Peisah and Wilhelm (2007) is that there were a number of doctors practising with Mini-mental State Examination scores as low as 21 or 24, which correspond to significant impairment at the level of day to day functioning. Given that these individuals were practising at the time of identification, the authors interpret this as evidence that impaired practitioners are being identified relatively late in their decline. While it is difficult to determine how prevalent this problem may be across Australia it would be reasonable to assume that similar situations have occurred in all states and territories.

The current approach to dealing with ageing impaired surgeons in Australia appears to be primarily reactive, driven by breaches of appropriate patient care rather than proactive identification of risky situations. This speaks to the substantial challenges associated with implementing policies and practices related to age-based revalidation. The main challenge is balancing the risks to patient safety that accompanies a decline in physical and cognitive function in surgeons and the surety that surgeons will be assessed fairly and not discriminated against due to their age. A complicating factor is determining how to define safe and un-safe levels of impairment which may need to be specialty specific.

⁴ The stage between normal forgetfulness due to aging and frank dementia is called mild cognitive impairment

9. Reflections

The RACS code of conduct (Royal Australasian College of Surgeons 2016a) advises surgeons to be aware of the ageing process, to refrain from practice if impaired by a physical disability and, on retirement, to ensure a smooth handover of patients under their care. The RACS also facilitates the Senior Surgeons Group—a group that developed from a 2004 RACS workshop, “Winding down from surgical practice”. In addition, the RACS offers specialty specific courses on Building Towards Retirement. The 2012 position paper on Senior Surgeons in active practice can be found in Appendix A.

Such services are important to Fellows as they facilitate future planning and reflection on the appropriate time to exit practise. It is anticipated that while the vast majority of surgeons practice safely and are sufficiently self-aware to retire at an appropriate juncture, there is a very small minority of individuals who are either unaware of their deficits or in denial of them. It is this small pool of individuals that represent true risk to quality patient care.

In preparing this report, it was identified that part of the complexity around this issue has to do with defining levels of responsibility for tackling the issue as well as identifying strategies that help to minimise the stresses or negative perceptions around exiting active practice. The following points were developed to stimulate discussion and reflection on this issue and should not be considered recommendations. They are not drawn from a robust evidence base but simply attempt to provide some salient points from the reviewed information in light of a paucity of national guidance in dealing with this issue. Despite the time elapsed since of Greenfield’s 1994 address it is worth reiterating the following key items which need to be addressed with respect to ageing and surgical performance (Greenfield 1994):

- There is a need to reduce the negative stigma around retirement in the medical profession coupled with an emphasis on forward planning to retirement.
- It is good practice to identify ways for individuals to exit from surgical practice with provision for retaining teaching, administrative, and other important roles where able and desired.
- There is still a need to gather better longitudinal data around ageing surgeons, integrated with cognitive and functional tests that are validated for use as performance criteria. This can be used to support mechanisms for assessment of ongoing competence.
- There is a need to formalise processes for managing “impaired” individuals whose self-awareness and responsiveness to decline is limited.

Table 5 is designed to stimulate reflection on how such issues might be approached by individuals and organisations at different levels. It has been developed in the process of writing this report and is not intended to be read as prescriptive or final.

Table 5 Reflection points

Responsibilities/reflection points	Triggers for action
Individual (self)	<ul style="list-style-type: none"> • Age ≥60 years with particular vigilance over 70 • Near misses or avoidable complications • Feedback from peers, members of the community or supervisors • Concern from personal health providers • Personal/private concerns about your own competence
<p>Support from Community, peers, managers and other health professionals. Multi-source feedback can provide reassurance of ongoing competence or can provide assistance managing transitions to appropriate duties.</p>	
Peers (colleagues)	<ul style="list-style-type: none"> • Age > 60 years with particular vigilance over 70 • Near misses, avoidable complications, out-dated practice, overt dementia or concern for the wellbeing of patients or colleagues
<p>Support from Peer group as a whole, managers, organisations and professional organisations such as AHPRA or RACS. Clear policies from employers and peak bodies should provide guidance on when and how to deal with impairment.</p>	
Managers or organisations	<ul style="list-style-type: none"> • Age > 60 years with particular vigilance over 70 • Near misses, avoidable complications, out-dated practice, overt dementia or concern for the wellbeing of patients or colleagues. • Reports from staff members (any level)
<p>Support from Hospital human resources and professional organisations such as AHPRA or RACS. Clear hospital policies should provide guidance on when and how to deal with impairment</p>	
Professional bodies	<ul style="list-style-type: none"> • Age > 60 years with particular vigilance over 70 • Reports from any individual or member of the community
<p>Support from Government bodies, AHPRA.</p>	

AHPRA: The Australian Health Practitioner Regulation Agency; CPD: continuing professional development; RACS: the Royal Australasian College of Surgeons.

Appendix A – Royal Australasian College of Surgeons position paper (2012)

POSITION PAPER

ROYAL AUSTRALASIAN COLLEGE OF SURGEONS

Subject:	Senior Surgeons in Active Practice	Ref. No.	FES-FEL-048
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BACKGROUND

Workforce data indicates that approximately 19% of active College Fellows are aged 65 or older¹, a trend which correlates with national statistics that estimate 25% of the Australian population will be over 65 years old by the 2050² and in the New Zealand population by 2030³.

A result of this trend is a likely increase in demand for access to healthcare coupled with an ageing health workforce including surgical services. Consequences of the ageing process include an increasing propensity to acquire degenerative and cognitive disorders that, without dramatic advances in the treatment and prevention of these conditions, will also likely impact on an ageing surgical workforce.

The formation of a Senior Surgeons Section reflects the College's engagement in addressing workforce challenges and in supporting Fellows as they transition into the latter stages of their surgical career.

POSITION

The College supports the following principles:

1. Profile

The College supports the development of an accurate profile of the active senior surgeon, including those in full time operative practice at public and/or private hospitals and those limited to non-operative practice in education or administration. Data relating to hours worked and the nature of work performance would better assist in workforce planning and in understanding how the skills and experience of senior surgeons might enhance the delivery of surgical services.

2. Health Checks

Senior surgeons should attend an annual health check. If issues of degenerative disease have been identified (e.g. hypertension, diabetes, etc), further medical advice should be sought and action taken to ensure that any impairment will not compromise the senior surgeon's performance. Surgeons in operative practice should also consider an annual ophthalmic assessment, checking refraction, visual acuity, intraocular pressure and fundoscopy.

3. Continuing Professional Development (CPD)

All active Fellows are required to participate in CPD regardless of age or hours worked. The program offers a variety of practice options that reflect the transition of surgeons throughout the different phases of their career.

The College CPD program includes a category on Performance Assessment. Senior surgeons, particularly those in operative practice, should consider undergoing such a review at least every three years. Participation in performance review can act as a means of providing reassurance to the surgeon, colleagues and their patients. The process also assists to identify any problems at an early stage allowing remediation or alteration to a practice and minimising the risk of a poor outcome.

Senior surgeons can also opt to participate in a structured practice visit as a method of

¹ RACS annual activities report December 2012

² ABS

³ http://www.stats.govt.nz/browse_for_stats/people_and_communities/older_people/demographic-aspects-nz-ageing-population.aspx

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performance review, such as the New Zealand Orthopaedic Association (NZOA) program or through other peer groups.

All surgeons should participate in CPD relate to their specific scope of practice or profile.

4. The Senior Surgeon as a Locum

Senior surgeons often provide locum cover, particularly in regional and rural areas. Fellows working as locums are often able to participate in the normal peer reviewed audit that takes place in their hospitals. If locum surgeons cannot meet this requirement, they should submit their de-identified audit data to the Locum Evaluation and Peer Review Committee (LEPRC) for review. The LEPRC will only review the logbooks of locums who perform a minimum of the equivalent of 10 weeks full time work.

5. Support for the Senior Surgeon

The College has a number of publications and conducts seminars through the year to support senior surgeons, particularly in relation to financial, legal and social factors affecting them as they plan for retirement from practice. The Department of Professional Standards is also available to assist in addressing any specific concerns.

6. Further information

The information contained should be considered in conjunction with other publications including:

1. *Medical Board of Australia - Good Medical Practice: A Code of Conduct for Doctors in Australia*⁴
Includes information regarding personal performance, risk management, doctor's health and steps to close a medical practice.
2. *Medical Council of New Zealand - Good Medical Practice*⁵
3. *Medical Board of Australia – Guidelines for Mandatory Notifications*⁶
Explains implications for impaired doctors and circumstances where mandatory notification may be required.
4. *Royal Australasian College of Surgeons - Code of Conduct*⁷
The Code of Conduct promotes high standards of surgical care and defines professional behaviour for surgeons. In particular the Code of Conduct (Section 9) states:
 - A surgeon will be aware of the effects of ageing
 - It is a breach of this Code to practice with an impairment that could adversely affect patient outcomes

Disclaimer: This position paper does not replace the ongoing professional requirement for all surgeons to consider their practice, their health and any limitations which may adversely affect their practice.

Approver: Chief Executive Officer

Authoriser: Professional Development and Standards Board

⁴ <http://www.amc.org.au/index.php/about/good-medical-practice>

⁵ <http://www.mcnz.org.nz/news-and-publications/good-medical-practice/>

⁶ <http://www.medicalboard.gov.au/Codes-Guidelines-Policies.aspx>

⁷ http://www.surgeons.org/media/346446/pos_2011_02_24_code_of_conduct_2011.pdf

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