

# RANZCO

## Annual Evaluation Report 2022



## Background

The RANZCO Annual Evaluation Report (AER) 2022 outlines the monitoring and evaluation (M&E) activities undertaken and facilitated by the Royal Australian and New Zealand College of Ophthalmologists (RANZCO) from January 2022 to December 2022. It provides a detailed report of the evaluation, monitoring and quality assurance activities that RANZCO has been undertaking in the learning and teaching of its trainees and Fellows including but not limited to the Vocational Training Program (VTP), Continuing Professional Development (CPD), online learning and cultural safety.

RANZCO AER 2022 focuses primarily on the evaluation activities that have been undertaken at RANZCO as part of the RANZCO Education Monitoring and Evaluation Framework 2021-2024. As stipulated in the RANZCO Education Monitoring and Evaluation Framework 2021-2024, M&E activities at RANZCO are undertaken:

- As part of reporting requirements to regulatory and funding bodies
- To assess program and policy outputs and outcomes
- For quality assurance and continuous improvements of processes, programs, and policies

## Organisational Context

In its role as a specialist medical college for ophthalmologists in Australia and New Zealand, the core responsibilities of RANZCO are training new ophthalmologists and supporting the ongoing education of ophthalmologists as they progress through their careers. RANZCO also plays a leading role in advocating for improved eye care services in Australia and New Zealand and supports ophthalmic education internationally, specifically in the Asia-Pacific region.

RANZCO delivers a Vocational Training Program (VTP) for future ophthalmologists and maintains a Continuing Professional Development (CPD) system for its Fellows. RANZCO is accredited as a specialist medical college by the Australian Medical Council (AMC) and the Medical Council of New Zealand (MCNZ) and is required to meet all their standards and requirements for medical education and training for VTP and CPD.

RANZCO supports the leadership role of ophthalmologists in influencing the factors that impact on the eye health and wellbeing of the community and the healthcare they receive. Advocacy activities are primarily focused towards increasing ophthalmic services to populations in need and improving the quality and safety of care for patients and promoting eye health. RANZCO and its members are committed to improving eye care in Australia, New Zealand and internationally. The international work specifically focuses on reducing avoidable blindness in the Asia-Pacific region through the education and improvement of local training institutions that are expected to, in turn, improve the local eye health workforce through increased knowledge and expertise.

## Monitoring and Evaluation at RANZCO

The primary objectives of the M&E at RANZCO are to:

- Determine whether the organisational strategic goals are being achieved
- Monitor and evaluate educational and other activities to improve these activities
- Ensure that the mandatory M&E requirements by the regulatory bodies for various programs and activities are adequately met
- Upskill staff from the Education and other teams to conduct basic evaluations of their work and integrate M&E into their day-to-day work
- Establish mechanisms to support committees to monitor and evaluate the activities and processes they are undertaking

RANZCO M&E activities are guided by the program logic published in the RANZCO Education Monitoring and Evaluation Framework 2021-2024 and aim to improve the educational programs and activities being undertaken by RANZCO towards achieving an eventual outcome to improve the eye health of the Australian and New Zealand populations and in the Asia Pacific region.

## RANZCO evaluation and quality assurance activities

### End of term feedback and Annual trainee survey

In October 2020, the Trainee Representative Group and RANZCO developed an End of Term feedback form and an Annual Survey for Trainees to provide feedback to RANZCO about their current posting and the training program. Basic and advanced trainees have been asked to complete the End of Term report every three months since launch and the first Annual Survey was conducted in October 2020.

In the End of Term feedback form, trainees are asked to provide feedback about their training and learning opportunities and experience at the training post at the end of the term. This feedback is planned to be used by RANZCO to identify and address any issues related to the training post and to ensure that the trainees' training needs continue to be met. The information will also be used by the Training Post Inspectorate when reaccrediting training posts.

The annual survey of trainees will help identify broader issues related to RANZCO, the training program and other areas where RANZCO can assist trainees or advocate on their behalf. The areas covered in the annual survey include RANZCO exams and resources, professional skills of trainees and their work intentions after graduation as well as mentoring and health and wellbeing.

To ensure participant confidentiality is maintained, it was decided that responses from the End of Term feedback will not be analysed until five rounds of data collection, which have now been completed. The RANZCO IT team is currently working on combining the data from the multiple feedback reports to provide aggregated data in a dashboard that can be accessed by the relevant staff, Training Post Inspectorate members and the network QEC Chairs and Directors of Training as required and upon request.

It is important that RANZCO continues its work in the areas identified in the previous annual trainee survey to consolidate and enhance the improvements that have been made in response to the previous surveys. The feedback from the 2022 survey indicates that the gains from the quality improvement activities that have been taken by RANZCO in the areas of RANZCO Advanced Clinical Examination (RACE), RANZCO e-Diary (ReD) and supervisor feedback in response to the previous annual surveys are yet to be fully realised. It is important that RANZCO continues the enhancement strategies it is currently undertaking while ensuring that the trainees, supervisors and clinical tutors and other relevant stakeholders are not fatigued by the amount of change.

#### Annual Trainee Survey 2022 Results

**Overall response rate (basic and advanced trainees): 46.1% (59/128)**

#### Key findings

- The feedback on areas that need to improve has not changed from the previous years.
  - Exam feedback
  - RANZCO e-Diary
  - Improvements to the Learning Management System including the availability of resources to help prepare for exams
- The proportion of those experiencing and witnessing bullying has increased (~2X) compared to 2021 but the proportion who believe their reports were followed up on has decreased (0.5X), which aligns with the Medical Training Survey reporting by the Australian government for Ophthalmology trainees.
- Trainees have expressed concerns about the practicality of online work-based assessment forms, particularly the theatre reports
- Trainees have suggested that on-call rostering can lead to excessive work hours and be a significant issue for patient care, teaching and learning and trainee health and wellbeing if not managed properly. RANZCO trainees have reported considerably longer working hours (52 hours/week) than the average for all specialties (46 hours/week) in the Medical Training Survey.
- Trainees increasingly see regional practice as a viable career pathway, but most would consider it only after subspecialisation.
- Trainees have suggested that limited oculoplastics exposure during the RANZCO VTP is a key barrier for them wanting to go regionally immediately after completing the VTP.

## Annual supervisor and clinical tutor survey

The Annual Supervisor and Clinical Tutor Survey 2022 (ASCTS 2022) was conducted concurrently with the annual trainee survey and addressed the same areas covered in the annual trainee survey from a supervisor and a clinical tutor perspective. As in the previous surveys, the key themes covered in ASCTS 2022 were curriculum standards, supervised clinics and theatres, teaching and learning for trainees and themselves, RANZCO policies and support, bullying, discrimination and harassment and health and wellbeing.

There was alignment in a lot of areas in the responses and feedback between the supervisors and clinical tutors and the trainees particularly about exam feedback to trainees, online work-based assessment and trainees' teaching and learning. It is equally important that supervisors and clinical tutors are kept informed about the changes to the VTP and any relevant policies that affect their roles.

Concerns continue to remain around the limited support supervisors and clinical tutors receive from their employers to perform their roles and the increasing administrative requirements to perform their supervisory roles. The conflict between service delivery and training cannot be fully avoided, however, RANZCO needs to consider more proactively raising the issue of time allocation to clinical tutors and trainees for teaching and assessment activities with hospital executives during the accreditation inspections.

Other findings from the survey will be made available to the relevant RANZCO staff and committees and are being addressed as part of continuous improvement processes.

### Annual Supervisor and Clinical Tutor Survey 2022 Results

#### Overall response rate: 45.7% (290/635)

The response rates were consistent across the training networks

Response rate by group:

- Supervisors: 56.2% (72/128)
- Clinical tutors: 43.0% (218/507)

#### Key findings

- An increasing proportion of supervisors and clinical tutors in 2022 (73.4%) compared with 2021 (69.2%) and 2020 (54.5%) find the RANZCO VTP curriculum useful in helping them decide what to teach trainees.
- Supervisors and clinical tutors are increasingly using the learning resources in the RANZCO learning management system (2022, 33.0%; 2021, 31.0%, 2020, 16.8%)
- The proportion of supervisors and clinical tutors receiving adequate support from hospitals or practices in terms of clinic and theatre loads to support the training has not changed from the previous surveys (clinics, ~50%; theatre, ~65%).
- The proportion of supervisors and clinical tutors who understand RANZCO policies on trainee progression and how it affects them has remained unchanged at approximately 40.0% since the 2020 survey. Queries have been raised about the potential legal implications to the supervisor or clinical tutor if they indicate a trainee as performing below the required standard.
- Supervisors and clinical tutors want to provide constructive feedback to trainees but are concerned that their employers and RANZCO will not support them if issues arise.
- Supervisors and clinical tutors acknowledge that work-based assessments are crucial in supporting trainee progression; however, a commonly raised issue is that the recently implemented online version of the work-based assessment form is cumbersome, unintuitive, difficult to navigate and complete and not easily accessible using browsers other than Google Chrome.
- Supervisors and clinical tutors experience and witness bullying at the same level as trainees do.
- Some supervisors and clinical tutors have indicated in their free-text responses that they are reluctant to give feedback that could be understood as being negative in case it is wrongly perceived as bullying or discrimination.
- 79.9% of the respondents have suggested that trainees do not receive adequate training on how to set themselves up in private practice when they are in the RANZCO VTP.
- Supervisors and clinical tutors continue to show poor indicators of health and wellbeing (inadequate sleep, 34.4%; inadequate physical activity, 39.7%; not spending enough time with friends/family, 33.3%), unchanged from the 2020 and 2021 surveys.

## **RANZCO data access and publication policy**

The launch of the RANZCO data access and publication policy in 2020 has provided a strong impetus and a well-defined pathway for members and other researchers to use RANZCO data better understand and address the issues facing the RANZCO VTP and other workforce service delivery issues.

The success of the RANZCO data access and publication policy is evident from the peer-reviewed publications that have resulted from some of the early projects that were provided data under this policy. Notably, these publications have also initiated actions within RANZCO to address the inequities in the male and female trainees' surgical exposure and develop strategies to better support trainees and supervisors in regional areas.

The academic publications using RANZCO data that were published in 2022 and late 2021 are listed below.

1. Jessup B, Allen P, Khanal S, Baker-Smith V, Barnett T. Benefits and challenges to ophthalmology training via the Specialist Training Program. *Aust J Rural Health*. 2022 Nov 2.
2. Khanal S, Gole G, Kaufman D. Evaluation of virtual accreditation of medical specialist training sites for ophthalmology in Australia and New Zealand during the COVID-19 pandemic. *Aust Health Rev*. 2022 Aug;46(4):453-459.
3. Obamiro K, Jessup B, Allen P, Baker-Smith V, Khanal S, Barnett T. Considerations for Training and Workforce Development to Enhance Rural and Remote Ophthalmology Practise in Australia: A Scoping Review. *Int J Environ Res Public Health*. 2022 Jul 14;19(14):8593.
4. Allen P, Jessup B, Khanal S, Baker-Smith V, Obamiro K, Barnett T. Distribution and Location Stability of the Australian Ophthalmology Workforce: 2014-2019. *Int J Environ Res Public Health*. 2021 Nov 29;18(23):12574.
5. Gill, HK, Niederer, RL, Danesh-Meyer, HV. Gender differences in surgical case volume among ophthalmology trainees. *Clin Experiment Ophthalmol*. 2021; 49( 7): 664- 671.

## **Evaluation Projects**

### **Number of Multiple Mini Interview stations used for VTP Selection**

RANZCO started using Multiple Mini Interviews (MMI) in the second phase of the VTP selection process in 2019, and the number of applicants progressing to MMI is limited to 80-88 top-ranked candidates from the first phase due to venue restrictions, the limited number of examiners and time constraints. The MMI was initially devised to have eight stations and five questions in each station. Monash University, based on the internal consistency measures over three years, recommended decreasing the number of stations to seven in 2022.

The issue RANZCO attempted to address in this work is the minimum number of stations and questions required to maintain the validity and reliability of MMI scores for several reasons:

- RANZCO would like to put all applicants through MMIs and limit the number of applicants that are made available to the training networks for final selection.
- It is increasingly difficult to recruit subject matter experts to conduct MMIs.
- In the current format, RANZCO does not have the resources and time to put through all the applicants through MMI. Cost would also be a barrier unless the application fees are increased.
- There are no valid or ethical reasons to test the applicants more than what is required to reliably gauge the attributes in question.

The objective of this project was to determine the minimum number of MMI stations and questions in each station that are required for the total MMI scores to be a valid and reliable measure as part of the RANZCO selection process.

The principles of generalizability theory (G theory) were used. Generalizability study (G study) and decision (D study) studies were conducted to assess the reliability of the MMIs and to determine the minimum number of stations/questions that could be used to generate an acceptable G coefficient. Previous studies have suggested that between five to 12 stations may be needed for the MMI scores to be a reliable measure.

G studies were conducted on four sets of MMI data from the RANZCO selection years between 2019 to 2022 and D study on 2022 selection data using EduG software (Swiss Society for Research in Education Working Group). EduG is a program based on the Analysis of Variance (ANOVA) and G theory, which has been designed to carry out generalizability analysis. It uses the results of the analysis of variance in the form of estimated variance components to compute generalizability parameters. The D study was used to assess the minimum number of stations and questions that would be needed to generate an adequate G coefficient. A secondary D study using stations and tests as the fixed facet and candidate ID as the differentiation facet was conducted to assess the change in the G coefficient when the number of candidates sitting the MMI is hypothetically increased from 84 to 100. The number of applicants who sat the MMI was 84 in 2019 and 2022, and 88 in 2020 and 2021.

Results from the G studies showed that the G coefficient was lower in 2020 (0.59) compared to the Pilot year 2019 (0.65). The G coefficient has progressively increased in 2021 (0.70) and 2022 (0.75) (Figure 1). The decrease in the G coefficient from 2019 to 2020 is most likely due to the high level of support, training and guidance provided by external experts in the first year followed by a more sustainable approach, i.e. much less intensive involvement of the external experts in the subsequent year. It can also be seen that the G coefficients in subsequent years have increased progressively as RANZCO has gained more experience in designing and delivering the MMIs.

The D study, based on 2022 MMI data, showed that a G coefficient exceeding 0.7 can be achieved with 6 stations and 4 questions at the current sample size of 84 applicants (Table 2). In the secondary D study, the G coefficient increased by 3.2 when the number of candidates was increased to 100 from 84.

Based on the secondary analysis, previous reports that the G coefficient increases with sample size and the improving trend of the RANZCO MMI G coefficients over time, an increase in the number of candidates sitting the MMI to 100 applicants would be reliably expected to increase the current G coefficient of 0.69 to an acceptable level.

As an outcome of this project, RANZCO has decreased the number of MMI stations in the 2022 Selection process for the 2023 VTP intake to 6 stations.

## What is a G study?

A G study estimates how much the measure obtained for an object of study is likely to differ from the true score, i.e. the mean score that would be obtained under the whole set of possible conditions. The degree of agreement is quantified by the computation of a generalizability coefficient (G coefficient), which indicates the proportion of true score variance that is contained in the total score variance, the remaining proportion being attributable to error variance.

## How is a G study conducted?

Prior to carrying out a G study, three steps need to be undertaken to prepare the data for analysis;

- i) define the observation design by describing the structure of the data set in terms of the facets (variables) involved and their crossing/nesting inter-relationships,
- ii) declare the estimation design in preparation for estimation of the relevant components of variance (the ANOVA) by indicating the sizes of the facet populations and identifying each facet as fixed, finite random, or random, and
- iii) specify measurement design by distinguishing between the differentiation facets, which contribute to true score variance, and the instrumentation facets, that potentially contribute to error variance.

Once the observation, estimation and measurement designs have been specified, a G study can be carried out.

The result will be estimated variance components along with G coefficients. Generally, a G coefficient of 0.7 is considered to be adequate. It has also been suggested that a minimum sample size of 50 is required for G studies and that there is generally a corresponding increase in G coefficients with an increase in sample size of up to approximately 400 subjects.<sup>10</sup>

Once the results of the G study are known, a D study can follow. The aim of the D study is to use the G study information about relative contributions to total score variance to identify the facet sampling scheme that minimizes measurement error, i.e. the scheme that optimizes the measurement in focus. This is where the "What if?" analysis can be used to change the theoretical numbers of sampled levels for those facets that contribute most or least to error variance, to assess what effect various adjustments would have on the value of the G coefficient.

## Evaluation of the Supervisor Training Modules

Based on the outcomes from the Supervisor and Clinical Tutor Survey 2020, RANZCO identified the need to develop modules on medical education for supervisors that reflect the latest evidence-based practices contextualised to the discipline of ophthalmology. This led to a new RANZCO initiative, the supervisor training program, that involves a systematic approach to online learning based on effective learning design.

RANZCO developed four supervisor training modules, each 1-1.5 hours in length focussed on medical education in specialist ophthalmology training, including assessment and feedback. These modules align and comply with standards for adult learning principles, multimedia learning and visual design and aesthetics. They offer a stepwise progression of activities that provide automated levels of feedback for participants, cross-platform compatibility (Windows, Macintosh, iOS and Android), and are self-paced completion.

An initial pilot was conducted with four training networks which showed a very poor uptake (12 registrations, 0 completions). The modules were selectively released to the networks during the pilot phase and opened to everyone later. After a marketing campaign (e.g., newsletters and targeted emails), we recorded 40 module completions, but only 3 participants completed all four modules. On follow-up, it was evident that the length of the modules, although they did not have to be completed in one sitting, was seen as a barrier by supervisors and clinical tutors. In response,



we converted the modules into micro-module snippets where the content in the modules was split into 3–5-minute standalone segments. The uptake of these modules and micromodules has since improved but there still are only 40 and 705 completions for the full modules and microlearning snippets, respectively. The full modules have been archived since April 2022 and are fully replaced with the snippets. We needed to explore the reasons for the lack of uptake and address the issues to ensure that supervisors and clinical tutors are using these learning modules to improve the teaching and learning experience for themselves and the trainees. Also, the evidence would help inform RANZCO's discussions with the external stakeholders including the Australian Medical Council, who have expressed a desire to require all supervisors supervising trainees in Australia and New Zealand to complete supervisory training.

RANZCO conducted a follow up evaluation project to understand why the uptake of the modules has been so low even when the content was developed directly in response to the request for specific content by supervisors and clinical tutors. We investigated the reasons for the lack of uptake through the lenses of self-regulation and motivational theory to help design and implement a strategic plan to improve module uptake. A total of 22 interviews were conducted with randomly selected 14 clinical tutors and eight training post supervisors.

The key findings of the evaluation can be divided into the following themes.

### **Awareness, accessibility, and uptake of the modules**

- Most interview participants were aware of the modules. However, many did not know their intended purpose, learning outcomes, time to complete, or how to access them. Interview participants perceived they were not provided with a direct link to the modules.
- Supervisors/clinical tutors described an interest and motivation to complete supervisor training, which was mostly driven by a desire to improve their supervision skills for the benefit of their trainees. This perceived need and interest was strongest among new supervisors/clinical tutors and Specialist International Medical Graduates.

### **Reasons for non-uptake and non-completion**

- Reasons for not beginning or completing the modules were mostly attributed to time, including having minimal time available for non-mandatory training, the amount of time required to complete the modules (even when they were broken down into shorter snippets), and the relatively small proportion of time spent supervising trainees, which impacted their prioritisation of training opportunities.
- Interview participants described weighing up return on investment when deciding whether to complete discretionary training opportunities. Many noted that they haven't had enough information about the modules to make this assessment, perceived the modules as not relevant or useful to their day-to-day practice, or that the modules required too much time and/or effort to be a worthwhile value proposition. These assessments were based on the participants' quick judgement of the modules and/or promotional material received.

### **Ways to encourage completion**

- Interview participants reported that the most effective way to improve the uptake of the modules is to ensure they provide value, are useful and relevant to their work, and are worth the time and effort. They commented that this value proposition should be clearly articulated when promoting the modules.

### **Views on the usefulness and relevance of the modules**

- The module on feedback was considered the most valued, useful, and relevant. Although only a few supervisors and clinical tutors progressed to the feedback module, most of them said that it was useful as providing feedback to trainees was an important part of their role. The first module about educational theory was described as being the least useful and least relevant one.
- Most interview participants would have preferred that the modules were practical and that the content could be applied to their day-to-day practice.

### **Views on the delivery mode**

- Most interview participants were supportive of the online delivery of the modules, though several had a strong preference for face-to-face delivery methods. Across modalities, participants emphasised the importance of conciseness of the content, accessible terminology, and flexibility to meet the different learning needs of supervisors/clinical tutors.



- Interview participants stressed the importance of high-quality online learning materials. Most reported that the modules were not well-designed. Reasons included poor structure and navigation, lengthy text to read, gating questions designed to assess rather than promote learning, and lack of interactivity and feedback.
- The micromodule structure was generally viewed positively.

### **Views on the module structure, length and order**

- Interview participants highlighted the importance of the modules being designed to a high quality. Most supervisors/clinical tutors who started or completed the modules reported they did not feel the online training was delivered well for various reasons. These included lengthy text, multiple choice and open-ended questions that they felt were not useful for their learning and needing to navigate back and forth between different sections of the modules which they found to be cumbersome.

As an outcome of this project, RANZCO staff will review the content in the supervisor training modules and marketing strategies to address the concerns raised. The RANZCO Education & Training team are also exploring the possibility of flipping the order of the content of the modules to make it more scenario or case-focused at the start and providing theoretical background towards the end as optional reading for those who are interested. The order of the content in the modules will be reversed from concept, worked example, activity and feedback to scenario, solution and theoretical justification.

### **Trainee microsurgical skills and attitudes towards Eyesi simulator**

Previous studies have shown that the Eyesi simulator can improve technical skill acquisition and possibly decrease technical errors during cataract surgery among trainees. However, microsurgical skills combine motor, cognitive and psychological skills, and these non-technical skills play a crucial role in surgical outcomes for real patients. It is therefore essential to assess non-technical skills in conjunction with the surgical outcome data to determine the preparedness of trainees to perform microsurgery on real patients. The 2022 launch of the RANZCO Eyesi Training Program requirements offers an opportunity to assess the non-technical aspects of trainee readiness for live surgery.

RANZCO is conducting a multi-phase study based on continuity of learning and self-efficacy to identify whether the trainees are unaware or misled about their level of understanding of topics or performance of skills tested. The overarching aim of this project is to evaluate trainee development of microsurgical skills by establishing a correlation between simulator data and increased skills, confidence, and self-efficacy. A better understanding of this awareness could trigger trainees to undertake future learning activities including spending more time on the Eyesi simulator and/or consulting an instructor. The outcomes of this study are expected to have important implications for the RANZCO microsurgical training program and in the long-term, patient safety. The study will also contribute to the advancement of ophthalmic microsurgical education internationally and the peer-reviewed literature.

The first phase of this study, which was completed in 2022, was aimed at gauging commencing ophthalmology trainee attitudes towards VRS training. All RANZCO trainees commencing in 2022 were invited to participate voluntarily in a pre-training survey before starting the VTP. Trainees completed an online questionnaire on their perception of virtual reality simulators as a surgical training tool, their previous surgical experience and confidence levels in their surgical skills. Trainee attitudes were gathered utilising Likert scale items and certainty-based and open-ended questions. The results showed that ophthalmology trainees believe that the Eyesi simulator could improve theatre skills, including reducing levels of complications in live surgery (91.7%), developing clinical decision-making (83.3%) and enhancing patient safety (87.5%). It was clear that the trainees felt that Eyesi simulator training helped increase pre-operative (91.7%) and intra-operative confidence (91.7%). However, the role of the virtual reality simulator (VRS) in future training and ongoing skill upkeep was unclear. Forty percent of trainees did not believe that VRS would be useful as they progress to the latter stage of training and through their careers. They most likely perceive VRS as a bridge to live surgery, not realising its full potential to enhance their skills further. It may be beneficial to include in the VRS training curriculum a section highlighting the benefits of ongoing use of the Eyesi simulator.

The RANZCO Eyesi simulator study group is currently working towards the second phase of the study to assess surgical psychology in simulation cataract surgery to address the following research questions:

- Does innate talent matter? Is peak performance related to innate talent or how hard someone works to achieve that?

- Do naturally talented surgeons continue to drive themselves to achieve as high outcomes as those with less innate talent?
- How important is time to gate in predicting peak performance?

### **One peer-reviewed article from this work was published in 2022:**

Gin, C., Reyna, J., Khanal, S. & Chakrabarti, R. (2022). Trainee Attitude Towards Virtual Reality Simulation (VRS) to Acquire Microsurgical Skills in Ophthalmology. In T. Bastiaens (Ed.), *Proceedings of EdMedia + Innovate Learning* (pp. 753-758). Online: Association for the Advancement of Computing in Education (AACE). <https://www.learntechlib.org/primary/p/221369/>

The early results from this study have also been presented at the RANZCO Congress and the Asia-Pacific Academy of Ophthalmology Conference in 2022. There is one additional publication currently in press.

### **Promoting Success in the RANZCO Advanced Clinical Examinations (RACE)**

RACE is the final hurdle before trainees progress to the final year of the VTP, where they consolidate their learning and skills in preparation for working as unsupervised ophthalmologists. As such, RACE is considered by trainees and Fellows to have the highest stakes of all RANZCO examinations. RACE has two sections, objective structured clinical examination (OSCE) and written. Trainees need to pass both sections separately to commence their final year training.

The pass rate of RACE is important not only for trainees but also for workplace planning as it directly influences the number of new ophthalmologists available to join the workforce in the subsequent years. The ramifications of delayed entry of trainees into the final year and for new ophthalmologists joining the workforce have significant implications for ophthalmic service delivery, particularly in regions and settings that are currently underserved such as rural and remote areas and extended settings such as outreach services.

This ongoing study aims to explore the causes of success and failure in RACE and determine how RANZCO could provide additional support to trainees preparing for RACE. The study consists of three phases; analysis of RANZCO RACE data which includes past results and trainee surveys, semi-structured in-depth interviews with trainees and supervisors and review of past papers by general ophthalmologists to assess whether the questions are set at the right level for general ophthalmologists.

The first two phases of this study, which were conducted in partnership with the University of Tasmania, have been completed. The results from the analysis of trainee post-RACE survey data suggest that the trainees believe that the written component of RACE, although it aligns with the curriculum, is pitched at a subspeciality level rather than at a comprehensive, general ophthalmology level. Our analysis of RACE scores showed that there has been a decreasing trend in pass rates for both OSCE and written RACE over the years with the trend being steeper for written than OSCE. Pass rates tend to drop with the number of attempts which is likely because less competent trainees than those who passed on the first attempt are attempting the second time and so forth. Interestingly, the pass rates were the same for RACE OSCE and written in 2014 and have since diverged with fewer trainees passing the written examination compared with the OSCE, although the trend is not linear and the gap between the pass rates for the OSCE and the written examination have fluctuated over the years.

In the second phase of the study, semi-structured in-depth interviews were conducted with 29 participants via telephone or Zoom with ophthalmology trainees and Fellows. To be eligible, interviewees had to have sat the RACE within the past five years or were providing supervision to trainees preparing for RACE. Interviews were audio-recorded, transcribed and thematically analysed. The results suggest that recognising and facilitating preparation approaches that foster success in final summative examinations are the collective responsibility of trainees, training networks, RANZCO and health systems. The suggestions for RANZCO and training networks were to implement strategies that improve the preparation approaches that lead to examination success, such as organising events to foster collegiality, formalising readiness to sit appraisals, providing equitable access to past examination questions and model answers, and assigning mentors with recent experience on examination boards. It was also suggested that training networks could implement strategic training pathways, in rotations with manageable clinical workloads, protected in-hours study time, and better access to study leave leading up to the final examination.

In the second phase of the evaluation, two studies commenced in 2022 to understand whether the RACE written questions are appropriately targeting the assessment of trainees at the general ophthalmologist level. The first study aims to explore how the process is managed to facilitate contributions by general ophthalmologists or subspecialists from other practice areas in discussions about the relevance and level of RACE written questions and model answers by independent researchers observing an examination setting meeting. The findings are expected to help refine processes or recommend changes to the membership if required.

The second study aims to determine whether the ophthalmologists, who have been practising as generalists, believe the RACE written questions are suitably targeted at the level of a general ophthalmologist. A total of 40 Fellows who identify themselves as general ophthalmologists on the RANZCO database and have not been involved in RANZCO education-related committees were asked to review the questions from two past papers (one from 2017 and another from 2021) for their suitability at the general ophthalmologist level, of which 26 responded (65.0%). Participants were asked to rate the suitability of all questions and, for two case scenarios that were failed by the highest proportions of trainees sitting the exam, how they would manage the patient in their practice. Two previous RACE examiners have been asked to mark the general ophthalmologists' answers to assess whether there is a difference in expectations of the RACE examining board as opposed to how the patients are managed in general ophthalmology practice settings where the RACE candidates are most likely to work after graduating from the RANZCO VTP.

## RANZCO VTP applicants by gender

A comparison analysis of applications into the RANZCO VTP by gender from 2019 to 2022 was undertaken to assess whether there were any inherent biases in the RANZCO selection tools which advantaged one gender over another.

When comparing the number of VTP applications by state of residence, the proportion of total applications by women applicants was considerably lower in NSW (57/191, 29.8%) and WA (11/39, 28.2%) compared to the overall RANZCO average (198/537, 36.9%).

There were no statistically significant differences in the average scores attained by male and female applicants in any of the attributes assessed for selection. However, a lower proportion of women applicants (33.3%) were able to meet the threshold of a minimum of three points in regionality compared with men (38.9%).

Women in Ophthalmology and RANZCO staff are continuing this work to better understand how best to attract more women applicants to apply to the RANZCO VTP and develop strategies accordingly.

**Table 1: Comparison of applicant characteristics and selection scores by gender**

Attribute	Women (N=198)	Men (N=339)
Average age (years)	30.9	31.2
Average time since med school (years)	4.4	4.6
Average SJT Score (Max. 20 points)	15.8	15.7
Scholar (PhD) (%)	4 (2.0%)	3 (1.0%)
Scholar (Masters) (%)	56 (28.3%)	99 (29.2%)
Average scholar score (Max. 8 points)	4.6	4.6
Regionality minimum threshold reached	66 (33.3%)	132 (38.9%)
Average regional score if min. threshold reached (Max. 8 points)	6.3	6.6
Average other attributes score (Max. 4 points)	0.7	0.7
Average ophthalmic score expertise (Max. 4 points)	2.6	2.5
Average medical expertise score (Max. 4 points)	9.0	9.1
Average MMI** score (Max. 35 points)	25.0	25.1
Average professional attribute scores (Max. 2 points)	1.6	1.6

\*SJT = Situational Judgement Test

\*\*MMI = Multiple Mini Interviews

## Theatre exposure of RANZCO trainees by gender

The Censor-in-Chief and RANZCO education team committed to publishing annual gender-specific data on the mean number of surgical cases for each full-time trainee from 2022 in response to a paper published in 2021 in Clinical and Experimental Ophthalmology by Gill, Neiderer and Danesh-Meyer on gender differences in surgical case volume using RANZO trainee logbook data (<https://doi.org/10.1111/ceo.13969>). This study reported that at four years the mean was 21.1% lower for total surgery and 41.7% lower for cataracts for women trainees compared to men after accounting for parental leave or part-time training.

The 2022 surgical volumes by gender are reported in the table below. RANZCO will continue reporting surgical volumes logged into the RANZCO e diary annually.

**Table 2: Comparison of the average number of procedures by speciality logged into the RANZCO eDiary by female and male trainees in 2022**

Procedures by subspeciality	Female (N=83) (N procedures/trainee)	Male (N=111) (N procedures/trainee)
Cataract and Lens	79.8	83.5
Cornea and External Eye	15.5	10.6
General	55.5	34.9
Glaucoma	13.5	10.7
Neuro-ophthalmology	1.3	2.2
Ocular Motility	5.8	4.0
Ocular Oncology	0.3	0.4
Oculoplastics and Orbit	21.3	16.1
Paediatrics	0.2	0.2
Retina	6.2	5.0
Squint	1.8	1.6
Vitreoretinal	16.5	25.3
<b>Overall</b>	<b>222.9</b>	<b>199.6</b>

## Post-program and activity surveys

RANZCO routinely conducts post-surveys with participants for all major programs and activities conducted as part of the VTP, including selection, examinations and other activities such as the bi-national lecture series, RANZCO learning modules and the induction program for trainees (Eye-Camp).

The findings from these evaluations are used for quality assurance and continuous improvement of these programs and activities, and when opportunities arise, are included in the large-scale evaluations of the program or activity. As an example, the post-RACE survey data of candidates and examiners informed the development of the evaluation proposal to determine the approaches to promote success in RACE was being developed.

Another example of a post-program survey that contributed to a change in how the program was delivered is the Eye-Camp post-survey. The first RANZCO Induction Eye Camp for new trainees was conducted online across two days in 2022 due to Covid interruptions. A post-program survey of all participants was conducted about their perceptions as to whether they were able to meet the learning objectives and whether they enjoyed the learning experience. Open-ended questions were also included to capture suggestions for future inductions and what could be improved, technical issues and additional comments. Trainees, Fellows and RANZCO staff perceived the 2022 online induction as an overall successful and well-run event. It was suggested that the program has established a good foundation that can be built on in the future should the induction occur online again. Suggestions were made on how the Eye-

camp could be made more impactful for trainees. Importantly, a full face-to-face program and true Eye Camp concept (containing microsurgical skills training and providing opportunities for trainees to build relationships with others in their cohort) were suggested as being the most beneficial for trainees. Based on the feedback from the survey respondents, a decision was made to conduct the RANZCO induction program face-to-face in 2023.

## **Overall conclusion**

The evaluations conducted in 2022 align with the 2021-24 Evaluation Framework and meet the Australian Medical Council accreditation conditions.

As described in this report, the results from the evaluations have resulted in important process and quality improvements for existing VTP programs, activities and assessments. Also importantly, the projects have led to peer-reviewed publications and presentations at scientific and policy conferences that have contributed to RANZCO's reputation internationally in the advancement of ophthalmic education and workforce development. In addition to ongoing work, it is anticipated that further evaluation projects in 2023 will address some of the emerging areas such as the use of artificial intelligence in exams and assessments, data linkage to assess training opportunities for trainees at training sites and the alignment and compliance of RANZCO VTP with the National Medical Workforce Strategy.