



Emily Farrell
Parker Magin
Marie Pirotta
Mieke L van Driel

Training in critical thinking and research

An audit of delivery by regional training providers in Australia

Background

Critical thinking and research are important career skills for general practitioners. Vocational training in this aspect of The Royal Australian College of General Practitioners (RACGP) curriculum varies between regional training providers (RTPs).

Methods

A cross-sectional audit examining the delivery of the 'critical thinking and research' component of the RACGP curriculum at the RTP level, and documenting factors related to capacity and competence to deliver this training.

Results

Heterogeneity across RTPs was seen in the mode and intensity of education activities pertaining to critical thinking and research and in surrogate measures of capacity and competence to deliver this training.

Discussion

This study suggests that the training general practice registrars receive in research and critical thinking may vary according to which RTP delivers the training. This is of concern as it means that the knowledge and skills base of the next generation of GPs in this area is likely to be similarly variable, impacting on their ability to practise high quality, evidence based medicine. Critical thinking and research should be recognised as a priority area in vocational training across all RTPs.

Keywords

research; education, medical graduate; evidence based medicine

All general practitioners need a basic level of research literacy in order to be able to read, interpret and apply available evidence in day-to-day practice. Early and positive research experiences can increase capacity and appreciation of the importance of research and critical thinking in general practice.¹ Conversely, a lack of exposure in the vocational training years can lead to graduates viewing research as unimportant or insignificant.² It has been suggested that increased training of GPs in research and critical thinking skills has the potential to result in a more highly trained workforce, and ultimately lead to more GPs to engage in higher levels of research.³

Unfortunately, general practice research lags behind that of other specialties in both output^{2,4-6} and status,^{1,7} with only 3% of Australian GPs engaging in research.⁸ Low remuneration,⁹ pressure to work clinically² and a negative attitude toward research^{1,7} are cited reasons for this. Despite these negative perceptions and findings, research and critical thinking are recognised in The Royal Australian College of General Practitioners (RACGP) curriculum as important career-long skills.¹⁰ However, there is anecdotal evidence that this curriculum is implemented and delivered inconsistently within vocational general practice training.

At the time of this study, vocational general practice training in Australia was delivered by 18 regional training providers (RTPs). These are geographically based organisations that deliver general practice training as per the curriculum standards of the RACGP and, if applicable,

the Australian College of Rural and Remote Medicine. In the years preceding the study period there had been a number of mergers between RTPs, reducing the number from 21 to 18. Subsequent to the study, this was further reduced to 17.

Importantly, General Practice Education and Training (GPET) provides funding and support for research training at a vocational training level through their academic registrar post program, annual registrar research workshops and the registrar research prize (see *Resource*). However, the focus of this article is the general education and training experience of all registrars, not just those with a special interest in research.

Our study aimed to:

- examine how RTPs implement and deliver the RACGP curriculum on critical thinking and research
- document factors related to the capacity of RTPs to deliver training in research and critical thinking.

Methods

We conducted a cross-sectional audit of the RTPs delivering general practice training in Australia. Participants were recruited by email, with a follow up telephone call to non-respondents. In mid-2010, telephone interviews were conducted (by EF) with the director of training (or their nominated delegate) at each RTP. The questionnaire used in these interviews looked at location and numbers of registrars and training staff in each RTP, research experience of RTP staff members, capacity to deliver training in research and critical thinking, and what teaching and learning activities related to the RACGP research and critical thinking curriculum were currently in place.

Surrogate measures to assess capacity and competence to deliver the RACGP curriculum training in research and critical thinking included whether staff had a higher degree by research or had published articles in medical journals, whether a research coordinator was employed and whether the RTP was involved in research activities. Questionnaire items were informed by the available literature and the individual experiences of the investigators.

Responses were entered into SPSS as appropriate or tabulated in a word processing software package. Simple descriptive statistics were used. The audit nature of the activity and the small sample size meant it was inappropriate to draw any statistical associations between variables.

Results

All of the 18 RTPs in the Australian General Practice Training Program (as at April 2010) participated in the study. Most were based in

non-capital cities (as determined by the location of their head office), and almost 40% were primarily non-urban, providing all teaching in Rural, Remoteness, Metropolitan Areas (RRMA) 2–5 locations.¹¹ The total number of enrolled registrars (as stated by the directors of training for the RTPs) was 2276. Regional training providers varied in size, with registrar numbers ranging from 57 to 280. The number of medical educators (MEs) employed by RTPs ranged from six to 30. Most MEs worked part time. The average number of registrars per full time equivalent (FTE) ME was 37 (range 17–71, SD: 14.4).

Surrogate measures of capacity and competence to deliver the training in critical thinking and research differed between RTPs (Table 1). Nearly a quarter (23%) of all MEs had a higher degree (ie. Master or PhD), with a range per RTP from 0–48% (Table 1). Most RTPs (83%) had at least one ME with a higher degree working with them. Only 50% of RTPs however,

had an ME with a higher degree by research (as opposed to course work), while only 7% of all MEs had a higher degree by research. While only one RTP is affiliated with a university, all reported some formal or informal relationship with a university with the majority conducting research of some type, mostly educational. This self reported research activity ranged from quality assurance activities to large scale formal research projects. Most RTPs employed a research coordinator to facilitate these activities, but the FTE of these positions ranged from the minimal 0.01 to 1.0.

The mode and intensity of education activities pertaining to the RACGP curriculum on critical thinking and research differs between RTPs (Table 2). Only one RTP reported no specific teaching in this area. Others use a range of teaching and learning experiences with workshops, integrated teaching and practical research projects being the most common methods. ‘Showcase’ refers to

Table 1. Surrogate measures to assess capacity and competence to deliver the RACGP curriculum training in research and critical thinking in the regional training providers

RTP characteristic	Regional training provider																		% of RTPs with each characteristic
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
% of medical educators with a higher degree	10	0	0	14	45	33	44	7	10	14	50	0	25	11	5	48	30	10	83
Have a medical educator with a higher degree by research																			50
Have non-medical educator staff with higher degree by research																			39
Have staff who have published a research paper in a peer reviewed journal																			72
Have a research coordinator																			61
Undertaking research as an organisation																			78

researchers presenting their own research and similar activities.

There were no obvious links between mode and intensity of delivery and other RTP variables such as size, location and rudimentary markers of capacity such as employment of a research coordinator and the research experience of RTP staff members.

Discussion

This is the first study of its type in Australia. It demonstrates that although research and critical thinking are a distinct component of the RACGP curriculum for general practice vocational training, training in this area was variably delivered by RTPs. This suggests that research and critical thinking skills of the next generation of GPs may be similarly variable. This may have implications for the ability of these GPs to deliver high quality care based on evidence. The study also highlights the heterogeneity of RTP medical education units in terms of capacity (as measured by research experience, research activity, employment of a research coordinator) to deliver training in this area.

The international context for these findings is uncertain. We found little comparative international literature: most studies focus

primarily on research teaching and training rather than on critical evaluation and evidence-based practice. There is, however, some data from the United States that suggests training in this area is also variably delivered in American family physician training programs.¹² What factors influence the delivery and implementation of the curriculum at the RTP level is an important question to be explored qualitatively, as is the registrar experience.

A systematic review of resident research curricula in US medical specialist training programs also confirms a lack of systematic development of such curricula and little evaluation of delivered programs more broadly within vocational training.¹³ No similar evaluations exist in Australia.

International experiences suggest that access to knowledgeable and skilled faculty staff is both valued by trainees undertaking research activities and important in stimulating interest in research.¹⁴ From our results it is unclear if there is sufficient access and exposure to such research trained staff in Australia. The proportion of RTPs with a research coordinator is similar to the US experience.⁷ The majority of RTPs conduct research, however from their description it

seems often to be related to quality assurance rather than original research. Therefore the true research output is likely to be less than the US experience where about half of all residency programs were producing research that was nationally recognised.¹⁵

While there were no obvious links between mode and intensity of delivery and other RTP variables such as size and location capacity, a US study suggested that training programs based or linked with medical schools rather than community based training programs were more likely to have more research skilled staff.¹⁵ This link is worth exploring in the Australian context as the standalone nature and encouraged heterogeneity of the RTP structure may have had unintended negative consequences on the teaching of research and critical thinking; a fundamental component of the knowledge base of a GP.

Limitations of this study

The self reported nature of the responses is the major limitation of this study. The reporting of teaching and learning activities is particularly susceptible to information bias, including social desirability bias. Regional training provider mergers may have impacted on the

Table 2. Mode and intensity of education activities pertaining to the RACGP curriculum on critical thinking and research in the regional training providers

Research and critical thinking teaching activities		Regional training provider																		% of registrars N=2276
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	
Workshop or peer learning based teaching	1 session																			46
	2–4 sessions																			39
	>4 sessions																			8
Integrated into clinical teaching	Expected in clinical topics																			28
	Covered in some clinical topics																			10
Online module																				4
Showcase activities																				19
Optional skills workshop																				10
Compulsory research or evidence based medicine project																				48

ability of the respondent to adequately describe the teaching and research activities within their expanded RTP. While changes may have been made within individual RTPs subsequent to this study, and while there is an increased focus on supporting RTP research activities from GPET, these changes are unlikely to have fundamentally changed either the variability of teaching of research and critical thinking or the heterogeneity between medical education units. Our data provides a baseline from which to measure current and future initiatives.

Implications for general practice

- Research and critical thinking skills are vital to all GPs to be able to read, interpret and apply research evidence, but these skills are variably taught in vocational general practice training.
- There are many competing demands for RTPs focus and resources, but critical thinking and research should be recognised as a priority area.
- A coordinated national approach is needed to address this issue: this should recognise the variable capacity of RTPs to deliver training in this area and address issues of regional capacity.
- We must work together to educate the next generation in critical thinking and research as it underpins the practice of clinical medicine.

Resource

Information about GPET funded academic training is available at www.gpet.com.au/TrainingPosts/Academictraining.

Authors

Emily Farrell BAphSc(IPHC), BMBS, FRACGP, Brisbane, Queensland. emilyrfarrell@gmail.com
 Parker Magin PhD, FRACGP, is Medical Educator, General Practice Training Valley to Coast and Conjoint Senior Lecturer, Discipline of General Practice, University of Newcastle, New South Wales

Marie Pirotta MBBS, FRACGP, PhD, is NHMRC Career Development Fellow, General Practice and Primary Health Care Academic Centre, University of Melbourne and a general practitioner, Victoria

Mieke L van Driel MD, MSc, PhD, FRACGP, is Head, Discipline of General Practice, University

of Queensland and Adjunct Professor, Centre for Research in Evidence Based Practice, Bond University, Gold Coast, Queensland.

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correspondence afp@racgp.org.au