Title page

Determinants of rural Australian primary health care worker retention: A synthesis of key evidence and implications for policymaking

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Determinants of rural Australian primary health care worker retention: A synthesis of key evidence and implications for policymaking

Abstract

Objective: To synthesise key Australian empirical rural retention evidence and outline implications and potential applications for policymaking

Design: A comprehensive search of Medline, PsychINFO, CINAHL plus, Scopus and EMBASE revealed 8 peer-reviewed empirical studies published since 2000 quantifying factors associated with actual retention

Setting and participants: Rural and remote Australian primary health care workers

Main outcome measures: Hazard ratios (hazard of leaving rural), mean length of stay in current rural position and odds ratios (odds of leaving rural)

Results: A broad range of geographical, professional, financial, educational, regulatory and personal factors are strongly and significantly associated with the rural retention of Australian primary health care workers. Important factors included geographical remoteness and population size, profession, providing hospital services, practising procedural skills, taking annual leave, employment grade, employment and payment structures, restricted access to provider numbers, country of training, vocational training, practitioner age group and cognitive behavioural coaching. These findings suggest that retention strategies should be multi-faceted and 'bundled', addressing the combination of modifiable factors most important for specific groups of Australian rural and remote primary health care workers, and compensating health professionals for hardships they face that are linked to less modifiable factors.

Conclusions: The short retention of many Australian rural and remote Allied Health Professionals and GPs, particularly in small, outer regional and remote communities, requires ongoing policy support. The important retention patterns highlighted in this review provide policymakers with direction about *where* to best target retention initiatives, as well as an indication of *what* they can do to improve retention.

Key Words

Health policy

Retention

Rural health services

Health manpower

General Practitioners

Allied Health Personnel

What is already known on this subject:

- Optimising the retention of primary health care workers is vital to ensuring adequate provision of PHC services in rural and remote areas, both nationally and internationally.
- The development of effective and sustainable Australian rural primary health care workforce policies requires policymakers to have a thorough understanding of rural health worker retention
- Until recently, there has been a lack of rigorous, quantitative empirical research investigating the factors associated with Australian rural and remote primary health care worker retention

What this study adds:

- Specific geographical, professional, financial, educational, regulatory and personal factors that are strongly associated with observed rural and remote primary health care worker retention are identified
- The sentinel factors include geographical remoteness and population size, health profession, types of professional activities undertaken, ability to take leave, employment grade or payment structures, legislation restricting location of practice, country of primary degree, stage in the training pipeline and practitioner age group
- The findings suggest that retention strategies should be multi-faceted and 'bundled' to ensure that they closely target the combination of factors important for the retention of

Introduction

Improving rural and remote primary health care (PHC) worker retention has been highlighted as an issue of vital importance both globally¹ and nationally.² Retention is critical for optimising rural workforce supply, for developing strong therapeutic relationships with patients,³ and for achieving improved health outcomes.⁴ Despite the importance of retention, there is evidence that in some rural and remote regions of Australia, the length of stay of PHC workers is short. The retention of Northern Territory's Remote Area Nurses and of some groups of NSW GPs in small remote communities, for example, have been shown to average as little as 20 months.^{5, 6} To address this problem, many Australian government programs have been funded to support and strengthen rural and remote PHC worker retention.⁷ In broad terms, these programs address regionalised education and training, financial incentives, professional support, and regulatory or legislative aspects of location choices made by PHC workers. Evidence of the effectiveness of these programs is scant, however. This relates in part to the difficulties associated with undertaking comprehensive evaluations of complex interventions, but also to a poor understanding (until recently) of how best to measure rural and remote PHC worker retention.⁸

A number of key factors associated with observed retention of PHC workers in rural and remote communities in developed countries have been identified.^{9, 10} Chief among them are geographical location of work¹¹⁻¹³ and of training,^{11, 14} restrictions relating to obligated service,¹⁵⁻²⁰ PHC worker profession or specialty,^{15, 17} and practice ownership or employment structure.^{11, 12, 16} However, until recently, most quantitative empirical evidence available to Australian policymakers has either been drawn from North American studies of physician retention or from Australian studies which have not specifically quantified actual retention or its association with the various factors thought to be important. These are important distinctions to make, because the Australian rural and remote PHC context differs substantially from the US context. Additionally, studies of rural or remote PHC worker retention intentions and preferences may not correlate strongly with actual behaviour, particularly in settings where the level of control over the workplace is low or where risk of burnout is high.^{21, 22}

The development of an effective and sustainable Australian rural and remote PHC workforce necessitates policymakers having a thorough understanding of PHC worker retention and its many determinants as they apply specifically to Australian rural and remote contexts. The aims of this paper, therefore, are twofold. First, to synthesise current empirical quantitative evidence on factors associated with the actual retention of Australian rural and remote PHC workers. Secondly, to outline implications and potential applications of these results for Australian PHC policymaking designed to ensure an adequate workforce for rural and remote Australia.

Methods

A comprehensive literature search was conducted using Ovid Medline, PsychINFO, CINAHL plus, Scopus and EMBase databases using keywords and synonyms as detailed in Table 1. Based on key search terms relevant to the aims of

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this study, 854 potential publications were identified. After removal of genuine duplicates and screening of titles, abstracts and full papers (as per the review process outlined in Figure 1), only 8 studies met the inclusion criteria for this review (see Table 2).^{6, 23-29} One reviewer extracted data from the 8 included studies using MS Excel (Microsoft Corporation 2010; Redmond, Washington) and a second, senior reviewer verified the accuracy and completeness of extracted data.

Retention profiles captured in this review included retention in rural or remote communities, health services, geographical regions, or in a practitioner's current position. Definitions of 'rural' or 'remote' were left to the discretion of the authors of each paper. The retention outcome measures captured in this review included hazard ratios (hazard of individuals leaving rural), mean length of stay in current position, and odds ratios (odds of individuals leaving rural).

This synthesis uses a modified version of the conceptual framework of factors affecting rural retention developed by Humphreys *et al.*³⁰ to organise the main empirical evidence. Results are reported according to 6 broad domains: geographical location and community factors; professional and organisational factors; financial and economic factors; regulatory factors; educational factors; and family and personal factors.

Results

The 8 studies included in this review investigated the actual length of stay (retention) of Australian rural and remote PHC workers across multiple professions, including General Practitioners (GPs), nurses, Allied Health Professionals (AHPs) and Aboriginal Health Workers (AHWs) (Table 3). The studies sourced workforce data from surveys and administrative databases, or a combination of both. Study sample sizes ranged from the relatively small study of 70 former Tasmanian GP Registrars²⁸ to 4223 Australian rural GPs.²⁵ The 8 studies used a range of different analytical methods. Several studies tested differences in proportions or differences in means without taking any potential confounders into account.^{27, 29} More sophisticated analytical approaches used regression models (including linear, logistic and Cox Proportional Hazards models) which adjusted for multiple factors at once.^{6, 23-26, 28} The highest quality studies were large and able to account for how long PHC workers had already been working in a rural location when assessing the risk of leaving.^{6, 23, 26}

Multiple factors, including some from each of the 6 broad domains of retention, were consistently found to be significantly associated with rural retention. Table 4 comprehensively and systematically captures each of these significant factors from the 8 studies, synthesises the findings according to the 6 retention domains and outlines policy implications and applications. Whilst the specific findings are not repeated here in text, sentinel findings are summarised in the following paragraphs.

Overall, geography was most strongly associated with retention – GPs working in small, remote communities had almost triple the risk of leaving compared to GPs working in small, inner regional communities (HR 2.65).⁶ Factors related to health worker profession were also strongly associated with retention – Podiatrists had twice the risk of leaving a health service compared to Occupational therapists (HR 2.13),²⁴ while Doctors and AHPs were also almost

twice as likely to leave (HR 1.80) compared to Nurses and AHWs.²³ Employment as a junior AHP (grade 1) was also associated with a significantly higher risk of leaving compared to employment at a more senior grade (HR 1.75).²⁴

Collectively, the multiple different factors shown in Table 4 explain a large proportion of the observed differences in rural health worker retention. To illustrate, one study found that five factors associated with GP retention – geographical remoteness and population size, coastal location, country of training, procedural activity, and hospital activity – together accounted for the average difference between a fully registered GP staying 20 months and staying 20 years in a rural community!⁶

Discussion

This synthesis of empirical evidence found that many factors are significantly associated with actual retention of Australian rural and remote PHC workers. Whilst specific findings, such as the strong association between geographical remoteness and population size and GP retention, have important implications for specific programs, it is critical that the overall importance of the many different findings is not overlooked. The key implications from these findings are that rural and remote PHC workforce retention policy must both

- a. address the full range of factors known to be associated with rural and remote PHC worker retention; and
- b. be carefully targeted to where workforce supply and retention is most problematic .

Addressing the broad range of retention factors is likely to require retention interventions to be packaged into multi-faceted bundles that include attractive financial incentives providing flexibility for individuals to address issues specific to their personal retention. This flexibility is important because immense health worker dissatisfaction in any single area may be enough to repeatedly trigger withdrawal of rural services. Of course, some factors are more easily modified than others, and there may also be some situations where the scope to improve retention through bundled incentives remains limited. For example, in certain 'hostile' environments, retention may only ever be comparatively short. In these situations a package of support measures that ensures that the position is sufficiently attractive and will at least keep rural and remote PHC workers for an optimal length of time, whilst also ensuring that they can be replaced relatively easily when the need arises may work best.

This synthesis identifies groups of rural and remote PHC workers that are at comparatively higher risk of leaving. It is these groups that rural retention strategies should preferentially target if improving health care access and reducing inequities in health outcomes remain key priorities of the Australian health system.³¹ In general terms, the higher risk professions are Doctors and AHPs. In more specific terms, they include GPs working in small and medium sized rural and remote communities and health workers providing public PHC services in certain AHP disciplines, such as Podiatry.

In addition to providing policymakers with direction about *where* to best target retention initiatives, this research also provides policymakers with some indication of *what* they can do to improve retention. Longer rural GP retention, for example, is associated with many factors: restriction of provider number access, provision of hospital
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services, provision of procedural services, undergraduate training in Australia, taking annual leave, and business and employment structures. These findings suggest that rural GP retention strategies may be most effective if they comprise a combination of interventions – including various ‘carrots’ (for example, better financial rewards, easily accessible and subsidised locums, excellent opportunities for procedural and emergency skill acquisition and maintenance) together with ‘sticks’ (for example, ensuring obligated rural service is for a sufficiently long time period).

The strength of evidence and the range of retention factors investigated for AHPs is weaker than for GPs. This limits the direct evidence available to policymakers to inform how they target retention interventions to AHPs.

Nevertheless, this research suggests that policymakers could investigate strengthening AHP rural career paths.

This review is inevitably limited by the quality of included empirical studies. Limitations include their observational study designs and the quality and availability of Australian rural and remote PHC workforce data analysed (especially for AHPs, but also for AHWs). This review and synthesis, too, has limitations, including that the literature search did not specifically include each of the many different health professions and its focus on retention without considering the impact of recruitment on health worker supply. Nevertheless, this synthesis, and the empirical studies which it captures, are ground-breaking and fill a major gap in the peer-reviewed Australian literature that will be of great use to workforce planners and policymakers.

Clearly, however, many questions of great interest to Australian rural and remote PHC workforce policymakers remain unanswered – particularly questions relating to the effectiveness of specific retention interventions. Essential aspects of supporting rural and remote PHC workforce retention and supply, therefore, are for policymakers to improve rural and remote PHC workforce data collection and accessibility, to build evaluation into workforce program as an integral component, and to facilitate much-needed ongoing research so that progressively more is known about what works well, where and why with regards to Australian rural and remote PHC workforce retention.

Conclusion

The retention of many rural and remote AHPs and GPs, particularly in small, remote communities, is suboptimal with average retention as short as 20 months. Such poor retention results in significant costs to the health service and government and contributes to poorer health outcomes for these populations. The different geographical, professional, financial, regulatory, educational, and community factors found to have significant and substantial associations with retention provides important clues as to how policy might be developed to improve rural and remote PHC worker retention. Our review suggests that health workforce planners would be well-advised to ensure that PHC workers interested in working in small rural and remote communities receive sufficient high quality rural and remote training to prepare them for successful independent procedural, hospital and community practice. Further, it is important that systems are introduced so that rural and remote PHC workers feel well-supported in their workplaces and communities and have well-developed rural career paths open to them. Enabling rural PHC

workers to take regular and sufficient leave and to have ready access to appropriate psychological, professional and financial supports may also help alleviate stressors and support retention.

References

- 1 World Health Organization. Increasing access to health workers in remote and rural areas through improved retention – Global policy recommendations. Geneva: WHO; 2010.
- 2 Standing Council on Health. National strategic framework for rural and remote health. Canberra: Commonwealth of Australia; 2012.
- 3 Mainous AG, Baker R, Love MM, Gray DP, Gill JM. Continuity of care and trust in one's physician: Evidence from primary care in the United States and the United Kingdom. *Family Medicine* 2001; 33: 22-7.
- 4 Saultz JW, Lochner J. Interpersonal continuity of care and care outcomes: A critical review. *Annals of Family Medicine* 2005; 3: 159-66.
- 5 Garnett ST, Coe K, Golebiowska K, *et al.* Attracting and keeping nursing professionals in an environment of chronic labour shortage: A study of mobility among nurses and midwives in the Northern Territory of Australia. Darwin: Charles Darwin University Press; 2008.
- 6 Russell DJ, Humphreys JS, McGrail MR, Cameron WI, Williams PJ. The value of survival analyses for evidence-based rural medical workforce planning. *Human Resources for Health* 2013; 11: 65.
- 7 Mason J. *Review of Australian government health workforce programs*. Canberra: Australian Government Department of Health 2013. Available from: <http://www.health.gov.au/internet/main/publishing.nsf/Content/review-australian-government-health-workforce-programs> [Accessed 11 June 2014].
- 8 Russell DJ, Humphreys JS, Wakerman J. How best to measure health workforce turnover and retention: Five key metrics. *Australian Health Review* 2012; 36: 290-5.
- 9 Humphreys JS, Jones J, Jones M, Hugo G, Bamford E, Taylor D. A critical review of rural medical workforce retention in Australia. *Australian Health Review* 2001; 24: 91-102.
- 10 Brooks RG, Walsh M, Mardon RE, Lewis M, Clawson A. The roles of nature and nurture in the recruitment and retention of primary care physicians in rural areas: A review of the literature. *Academic Medicine* 2002; 77: 790-8.

- 11 Horner RD, Samsa GP, Ricketts TC. Preliminary evidence on retention rates of primary care physicians in rural and urban areas. *Medical Care* 1993; 31: 640-8.
- 12 Pathman DE, Konrad TR, Dann R, Koch G. Retention of primary care physicians in rural health professional shortage areas. *American Journal of Public Health* 2004; 94: 1723-9.
- 13 Larson EH, Hart LG, Goodwin MK, Geller J, Andrilla C. Dimensions of retention: A national study of the locational histories of physician assistants. *Journal of Rural Health* 1999; 15: 391-402.
- 14 Fryer GE, Stine C, Krugman RD, Miyoshi TJ. Geographic benefit from decentralized medical education: Student and preceptor practice patterns. *Journal of Rural Health* 1994; 10: 193-8.
- 15 Cullen TJ, Hart LG, Whitcomb M, Rosenblatt R. The National Health Service Corps: Rural Physician Service and Retention. *Journal of the American Board of Family Practice* 1997; 10: 272-9.
- 16 Singer JD, Davidson SM, Graham S, Davidson HS. Physician retention in community and migrant health centers: Who stays and for how long? *Medical Care* 1998; 36: 1198-213.
- 17 Pathman DE, Konrad TR, Ricketts TC. The comparative retention of National Health Service Corps and other rural physicians. Results of a 9-year follow-up study. *JAMA: Journal of the American Medical Association* 1992; 268: 1552-8.
- 18 Crouse BJ, Munson RL. The effect of the physician J-1 visa waiver on rural Wisconsin. *Wisconsin Medical Journal* 2006; 105: 16-20.
- 19 Rosenblatt RA, Saunders G, Shreffler J, Pirani MJ, Larson EH, Hart LG. Beyond retention: National Health Service Corps participation and subsequent practice locations of a cohort of rural family physicians. *Journal of the American Board of Family Practice* 1996; 9: 23-30.
- 20 Lapolla M, Brandt EN, Barker A, Ryan L. State public policy: The impacts of Oklahoma's physician incentive programs. *The Journal of the Oklahoma State Medical Association* 2004; 97: 190-4.
- 21 Pathman DE, Konrad TR, Agnew CR. Predictive accuracy of rural physicians' stated retention plans. *Journal of Rural Health* 2003; 19: 236-44.
- 22 Opie T, Dollard M, Lenthall S, *et al.* Levels of occupational stress in the remote area nursing workforce. *Australian Journal of Rural Health* 2010; 18: 235-41.
- 23 Russell DJ, Wakerman J, Humphreys JS. What is a reasonable length of employment for health workers in Australian rural and remote primary healthcare services? *Australian Health Review* 2013; 37: 256-61.

- 24 Chisholm M, Russell D, Humphreys J. Measuring rural allied health workforce turnover and retention: What are the patterns, determinants and costs? *Australian Journal of Rural Health* 2011; 19: 81-8.
- 25 Russell DJ, McGrail MR, Humphreys JS, Wakerman J. What factors contribute most to the retention of General Practitioners in rural and remote areas? *Australian Journal of Primary Health* 2012; 18: 289-94.
- 26 McGrail MR, Humphreys JS. Geographical mobility of General Practitioners in rural Australia. *Medical Journal of Australia* 2015; 203: 92-6.
- 27 Gardiner M, Kearns H, Tiggemann M. Effectiveness of cognitive behavioural coaching in improving the well-being and retention of rural General Practitioners. *Australian Journal of Rural Health* 2013; 21: 183-9.
- 28 Nelson M, Bunyard J, Quinn S, Williams D. PORRIGE - a cohort study of general practice registrars. *Australian Family Physician* 2011; 40: 138-41.
- 29 Smith T, Cooper R, Brown L, Hemmings R, Greaves J. Profile of the rural allied health workforce in northern New South Wales and comparison with previous studies. *Australian Journal of Rural Health* 2008; 16: 156-63.
- 30 Humphreys JS, Wakerman J, Kuipers P, *et al.* Improving workforce retention: Developing an integrated logic model to maximise sustainability of small rural & remote health care services Canberra: Australian Primary Health Care Research Institute (APHCRI); 2009.
- 31 Australian Government Department of Health and Ageing. Building a 21st century primary health care system: Australia's first national primary health care strategy. Canberra: Commonwealth of Australia; 2010.
- 32 Scott A, Witt J, Humphreys JS, *et al.* Getting doctors into the bush: General Practitioners' preferences for rural location. *Social Science and Medicine* 2013; 96: 33-44.
- 33 Ferguson-Pare M, Mallette C, Zarins B, McLeod S, Reuben K. Collaboration to change the landscape of nursing: A journey between urban and remote practice settings. *Nursing Leadership* 2010; 23: 90-100.

Tables

Table 1: Literature search terms

Concept	Search Terms
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Health	health OR healthcare OR health care OR health service* OR medical care OR medical service*
	AND
Workforce	employee OR human resource* OR manpower OR personnel OR professional OR provider OR staff OR workforce OR worker
	AND
Retention	labor mobility OR labour mobility OR retain OR retention OR turnover OR turn over
	AND
Rural or remote	deprived OR frontier OR medically underserved OR non-metropolitan OR remote OR rural OR underserved
	AND
Australia	Australia OR New South Wales OR Northern Territory OR Queensland OR South Australia OR Tasmania OR Victoria OR Western Australia

Table 2: Inclusion criteria

Inclusion Criteria:
<ol style="list-style-type: none"> 1. Empirical study 2. Quantitative analysis 3. Actual retention as a health professional (length of stay) is measured (not intentions or preferences) 4. Australian rural or remote Primary Health Care professionals 5. Recent data (2000 to August 2015) 6. Published in peer-reviewed journal 7. Quantifies factors associated with retention and reports statistical significance of any differences between groups 8. English language

Table 3: Studies meeting the inclusion criteria

Study	Year	Study design	Population	Sample Size	Years studied	Data sources	Statistical Methods	Outcome measure
McGrail and Humphreys ²⁶	2015	Cohort	Australian rural and remote General Practitioners	3782 origin-destination pairs	2008 to 2012	Waves 1 to 5 of MABEL longitudinal survey of doctors	Multiple logistic regression analysis	Odds of leaving rural General Practice
Russell, Wakerman et al. ²³	2013	Cohort	Australian rural and remote (RRMA [†] 5 to 7) Nurses, Doctors, Allied Health Professionals, Aboriginal Health Workers	1285	2003 to 2009	Survey used to collect administrative data from health services	Multiple regression survival analysis	Comparative hazard of leaving a health service located in RRMA 5 to 7
Russell, Humphreys et al. ⁶	2013	Cohort	NSW rural General Practitioners	2783	2003 to 2012	NSW Rural Workforce Agency administrative data	Multiple regression survival analysis	Comparative hazard of leaving a rural General Practice position
Gardiner et al. ²⁷	2013	Cohort	South Australian General Practitioners	312 and 49	2000 to 2003	(1) SA Rural Workforce Agency administrative data and (2) Volunteers for a Cognitive Behavioural Coaching Program intervention	Chi-square test of differences in proportions.	Proportion remaining in rural general practice
Russell, McGrail et al. ²⁵	2012	Cross sectional	Australian rural and remote General Practitioners	4223 and 1189	2008	(1) Rural Workforce Agencies' National Minimum Data Set for GPs and (2) Wave 1 of MABEL‡ longitudinal survey of doctors	Multiple linear regression analysis.	Length of employment in current rural position
Chisholm et al. ²⁴	2011	Cohort	Victorian Allied Health	901	2004 to 2009	Survey and site visits to	Multiple regression	Comparative hazard of

			Professionals			collect administrative data from health services	survival analysis	leaving a health service
Nelson et al. ²⁸	2011	Cohort	Tasmanian General Practice Registrars	62	1995 to 2005 and 2009	Survey of former General Practice Registrars	Multiple logistic regression analysis	Odds of being a GP working in Tasmania
Smith et al. ²⁹	2008	Cross sectional	NSW rural Allied Health Practitioners	225	2005	Survey of Allied Health Professionals	One sided t-test of differences in means	Mean length of stay in current position

†RRMA Rural and Remote Metropolitan Area; ‡MABEL Medicine in Australia, Balancing Employment and Life

Table 4: Factors statistically significantly associated with observed rural retention of Australian health workers and the implications and applications for policy

	Significant factors associated with observed rural retention	Implications and potential applications
1. Geographical location and community factors	<ul style="list-style-type: none"> The hazard of GPs[†] leaving a community is highest in small, remote centres (HR[‡] 2.65), and intermediate in small, outer regional centres (HR 1.33), compared to everywhere else (HR 1.00)⁶ GPs in small/medium rural towns are more likely to leave rural practice (OR[§]3.04/3.96) compared to regional centres (OR 1.00)²⁶ The hazard of Nurses leaving a health service is higher in remote centres (HR 1.53) than in small rural centres (HR 1.00)²³ 	<ul style="list-style-type: none"> Remoteness and population size should <i>both</i> be taken into account when devising payment of retention incentives to GPs[†] Australian Government Rural Health Workforce Strategy policies, such as scaling return of service obligations for Medical Bonded Scholars and reductions in the 10 year moratorium, could take into account the 2.65 : 1.33 : 1.00 differential in GP retention associated with community remoteness and population size
2. Professional and organisational factors a. Profession	<ul style="list-style-type: none"> GPs/AHPs have an increased hazard of leaving rural or remote health services (HR 1.81/1.84) compared to Nurses/AHWs^α (HR 1.00/0.97)²³ Retention varies by AHP discipline. Podiatrists are more likely to leave a public rural health service (HR 2.13) than OTs^β (HR 1.00)²⁴ Pharmacists (16.5 years), Optometrists (17.6 years) and Physios (12.8 years) have longer than average retention for AHPs (10.3 years)²⁹ 	<ul style="list-style-type: none"> Selection and training of ‘home grown’ nurse and AHW students may underlie longer retention. This needs to be better understood so it can be applied, where appropriate, to AHPs/GPs Short retention of publically employed AHPs (similar to GPs) suggests that more effective policies and resources are needed The shorter retention in some AHP disciplines may relate to better private sector opportunities. Retention interventions must be tailored and take forgone opportunities into account
b. GPs: Hospital work, Procedural work, Annual leave	<ul style="list-style-type: none"> Non- VMO GPs^γ have an increased risk of leaving a rural community (HR 1.49) compared to VMOs (HR 1.00)⁶ Non procedural GPs have an increased risk of leaving a rural community (HR 1.42) compared to procedural GPs (HR 1.00)⁶ Each week of annual leave taken by a GP in the past year is associated with 3% longer GP retention in their current position²⁵ 	<ul style="list-style-type: none"> Supporting GP procedural, hospital and emergency work through the Rural Procedural Grants Program, rural generalist pathways and funding of rural hospitals, may enhance GP retention Supporting GPs to take annual leave through adequate funding and well-targeted locum support programs³² or innovative networked service delivery models³³ may assist retention.

c. AHPs: Grade of employment	<ul style="list-style-type: none"> Grade 1/2 AHPs have a higher risk of leaving a rural health service (HR 1.75/HR 1.33) compared to grade 3 AHPs (HR 1.00) ²⁴ 	<ul style="list-style-type: none"> Development of rural/remote AHP career pathways that don't require departure from a rural or remote health service in order for career progression to occur may support rural retention
3. Financial and economic factors	<ul style="list-style-type: none"> Salaried/contracted GPs have ~30% shorter retention than average ²⁵ GPs paid by fee-for-service have 50% longer retention than average ²⁵ GP practice owners have 70% longer retention than average ²⁵ Salaried/contracted GPs are more likely to leave rural practice (OR 3.89/5.18 compared to GP principals and partners (OR 1.00) ²⁶ 	<ul style="list-style-type: none"> Further research is required to identify how the retention of salaried/contracted GPs can be optimised (eg. alternative payment mechanisms and business models), given that Gen Y graduates seem less inclined towards practice ownership.
4. Regulatory factors	<ul style="list-style-type: none"> GPs with restricted access to Medicare provider numbers (conditional registration) have 52% shorter retention than non-restricted GPs ²⁵ Conditionally registered GPs have a lower risk of leaving a rural community (HR 0.67) compared to fully registered GPs (HR 1.00) ⁶ 	<ul style="list-style-type: none"> The 10 year moratorium, with strict enforcement of rural service, effectively retains rural GPs while restrictions remain in place. The risk of leaving is higher amongst (previously coerced) overseas trained GPs than amongst (never-coerced) Australian-trained GPs. Long periods of obligated service may best support rural retention
5. Educational factors	<ul style="list-style-type: none"> GPs trained overseas ⁶ have an increased risk of leaving a rural community (HR 1.45) compared to Australian graduates (HR 1.00) ⁶ GP Registrars have been in their current practice for about half as long as non-Registrars ²⁵ 	<ul style="list-style-type: none"> Improved orientation, better educational support and efficient accreditation and registration processes are strategies which may improve the shorter rural retention of overseas-trained GPs. These GPs form a large part of rural and remote medical workforces
6. Family and personal factors	<ul style="list-style-type: none"> GPs aged 35-60 have a reduced risk of leaving a rural community (HR 0.65, 0.74) compared to younger and older colleagues (HR 1.00) ⁶ Cognitive behaviourally coached GPs are less likely to leave rural practice within 3 years (OR 0.25) compared to other GPs (OR 1.00) ²⁷ Former GP Registrars who were un-partnered or partnered with a non-doctor were more likely to remain as Tasmanian GPs compared 	<ul style="list-style-type: none"> Flexible retention strategies targeting differing needs according to life stage are needed (eg. older GPs may desire fewer work hours) Specific psychological interventions can effectively address GP mental health issues and stressful work conditions. Extending resourcing, so that proven interventions are more widely and systematically offered to rural and remote Primary Health Care

to those partnered with a doctor²⁸

workers in all professions, has substantial upside

† GP General Practitioner

‡ HR Hazard Ratio

§ OR Odds Ratio

¶ AHP Allied Health Professional

α AHW Aboriginal Health Worker

β OT Occupational Therapist

γ VMO Visiting Medical Officer

δ in countries other than Australia, United Kingdom, Ireland, Canada, United States or New Zealand

Figures

Figure 1: Flowchart of review process

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