Appendix 2. Data extraction table

Author (date and location)	Type of pathway	Study aim	Study design and participants	Barriers	Enablers	Key findings
Blattner et al (2019, New Zealand)[34]	Vocational. Dual pathway – combined general practice and RHM training	To explore how the introduction of rural hospital medicine had affected health practitioners and the health service at Hokitanga Health (a rural health service within a rural hospital including 10 inpatient and 4 maternity beds)	Qualitative case study, including two data sets: document analysis and semi-structured interviews. 8 medical professionals (2 GPs, 4 GP/RHM, 2 registrars), 1 senior manager, 1 senior nurse and 1 Māori cultural adviser (n=11)	Scope is broad 'I wonder if anyone understands the whole scope... some are more general practice orientated and probably less... inpatient focused' Exposure to high clinical workloads for trainees planning to practice rurally 'need to have seen lots of patients across acuities and with responsibility – not just watching' Sense of not completely belonging to recognised scopes of practice, which can lead to misunderstandings, misperceptions and external scrutiny of practice. Also double-ups of regulatory requirements due to multiple scopes	Dual training pathway seen as being fit for rural purpose nationally Integration of training 'here is very integrated... here I did (rural hospital and rural GP training) all mixed up together and that worked really well... you just see everyone and don't think about the separation which is quite nice.' Pathway enables formal accreditation and skill development 'Now there is a pathway that you can work out yourself to acquire the skills that you need for something like the work (here)... and you do need the formal training to be able to do (the inpatient care) confidently and efficiently. That's the benefit of the rural hospital training.' Pathway equips doctors in managing emergencies and transfers, and assist in managing wider scope beyond acute care, and to offer quality hospital care to people 'in their own place'	

Cuesta-Briand et al (2020, Western Australia, Australia)[17]	Prevocational	Explore internal decision-making process governing rural work intentions of junior doctors PGY 1–5	Qualitative cohort study. Semi-structured interviews. Junior doctors in PGY 1–5 (n=21)	Experiences can expose work–life balance issues, which are important to early career doctors	Exposure to specialty and rural practice solidified or reshaped professional interests through reassessment of how the experiences of the junior doctors matched their preferences and perceptions Positive experiences during medical school, including RCS exposures, shape career choices Career decision making for junior doctor is an ongoing process, and there was evidence of significant change of career intent from medical school to junior doctor driven by exposure to specialties and rural practice Junior doctors with GP intents show a preference for continuity of care, which influences career choice. 'Planners' start progressing careers early	

Eley et al (2015, Australia)[41]	Prevocational. Postgraduate general practice training both rural and general pathway	The aim is to describe the predominant personalities of existing ACCRM, RACGP and RACGP-RG trainees	Quantitative cross-sectional study via self-completed questionnaire. GP registrars from 2011 to 2013 across all of Australia (n=451)	General pathways have higher levels of reward dependence Female shows a strong effect size on levels of harm avoidance, reward dependence and cooperativeness – tended to choose WA/SA (which has the general and integrated rural pathway)	Having strong interest in rural practice – associated with lower harm avoidance and higher persistence, self-directedness and resilience – seen in ACRRM registrars (rural pathway) Older age associated with higher level of resistance Belonging to a rural club showed a low-to-moderate effect on levels of most traits: harm avoidance, persistence, self-directedness, cooperativeness and resilience	Doctors and medical students benefit from a high level of resilience to cope with and manage the challenges of the profession, arguably more so for rural practice The combination and levels of temperament (stable) and character (developmental) traits provide support for the notion of a mixture of personal characteristics that might be indicative of individuals best suited to rural and remote medicine Temperamental and character profiles differ across different GP and rural generalist training pathways, though individuals training with SA and WA providers show similar traits irrespective of their training path. It is unclear if individuals with a certain pattern of traits are attracted to rural practice training or if the training selects (via exposure to rural life and rural medicine) those who are most suited to the profession. The training providers in SA and WA offer a more integrated program between rural and general pathways, which might then attract doctors who enrol in rural training but who might not be as firmly devoted to rural practice as those in dedicated streams

Goodyear-Smith et al (2020, New Zealand)[39]	Vocational. Postgraduate general practice training	Explore GP registrar views on academic learning needs during and following vocational training	Qualitative cohort study. Online self-completed survey. GP registrars (n=314)	Half of the respondents express interest in pursuing a PG qualification (most often a taught Certificate or Diploma), with a number wishing to undertake a Masters or PhD. Others, while identifying further training as important, appear to place less value on academic study, with no interest beyond the required minimum of one 15-point PG course. The numbers of GP registrars taking up PG study to qualification level to date remain low and have been rising only slowly since the introduction of the one-paper requirement in 2015. Lack of time, low expectations, lack of encouragement and poor understanding about the purpose and value of PG qualifications are barrier to PG qualification	20% of GP registrars indicated an interest in conducting research in their practice, and a further 13% in the context of an academic career	GPs are expected to fulfil diverse and highly skilled roles and responsibilities The RNZCGP holds this important role for vocational GP training in NZ.
Hanson et al (2020, Queensland, Australia) [35]	The PIERCE as part of the QRGP	Explore whether trainees engaging in the PIERCE placement had achieved their learning objectives and to identify facilitators and barriers to the realisation of these objectives	Qualitative cross-sectional cohort study. Semi-structured interviews and a realist evaluation framework. QRGP trainees on either the 15-week PIERCE placement (n=9) or a 10-week regional placement (7 QRGP trainees	Regional hospital placements can undermine some trainees' commitment to rural medicine. Capacity issues at both PIERCE and regional hospital sites impacted on the availability of training opportunities, compounded by competition with other learners and industrial	PIERCE strengthen and consolidate trainee commitment to a rural outcome – trainees identify with their supervisors and the rural lifestyle, highlighting the importance of professional identity formation in junior doctor. PIERCE program allowed exposure to rural generalist	Major themes included emotional engagement with placement, supervisor support, rural medicine, community-based medicine, educational experience, duration of placement, variability of educational experience, limitations of educational experience, trainees want to do both placements

			and 2 non-QRGO trainees) (n=9)	arrangements (ie on-call arrangements, working hours) PIERCE was not seen to be able to replace regional hospital time, as trainees felt both placements were necessary for their clinical development PIERCE required more proactive engagement from trainees to seek out learning opportunities	career choices and affirms commitment to rural practice by assisting with professional identity formation 'I came away knowing absolutely that a rural generalist is what I want to be'; 'What they have now is what I see for my future' Length of program (15 weeks) allowed embedding into service and extension of skills, including the ability to fill out sections in the ACRRM logbook of critical care and other skills. Also allowed immersion in community to be 'living it like it will be.' Offer sufficient experience in anaesthetics, obstetrics and gynaecology, and paediatrics to meet rural generalist prevocational certification requirements PIERCE program increased training capacity with QRGP to provide an alternative to the traditional regional hospital anaesthetic, obstetrics and gynaecology and paediatric placements (10 extra intern positions were created by PIERCE participating facilities: 22 in 2015 to 32 in 2016).	

Hofer et al (2014, Northern Territory, Australia)[21]	Prevocational (resident medical officer)	To evaluate the Kimberley Population Health Unit (KPHU) prevocational public health placement in terms of its contribution to resident medical officers' (RMO) knowledge, skills, career path and aspirations	Mixed methods cross-sectional study. Online self-completed survey. RMOs (n=23)	For 2 respondents, the placement did not influence or negatively influenced their desire to work in public health	Placement allows exposure to public health and Aboriginal health, which influences desire to work in that field. Almost 2/3 (61%) said the placement influenced their desire to work in these fields 'a lot' or 'a great deal'. Ninety-one per cent of respondents agreed or strongly agreed that their KPHU placement was worthwhile. Exposure to rural and remote health also influenced career choices, with 52% suggesting the placement had influenced their desire to work in rural or remote areas 'a lot' or 'a great deal'. Placement allows future GPs to gain greater population health perspective early in their careers. - RMOs completed more than 20 audits in the Kimberley and contributed to eight peer-reviewed publications covering topics including sexually transmitted infections, diabetes and rheumatic heart disease	A significant number of previous KPHU RMOs currently work in general practice, public health, Aboriginal health and rural/remote health

Kitchener et al (2021, Queensland, Australia)[38]	Prevocational. Rural generalist	To explore the reasons and circumstances surrounding why trainees who do not complete the Queensland rural generalist pathway make the decision to not follow the pathway through to the rural generalist endpoint	Qualitative case study. Semi-structured interview. QRGP trainees not completing to the primary RG end point (n=41)	Experiences within the program confirmed career pathway was not that of Rural Generalist 'My [prevocational] rural term confirmed this was not for me.' One trainee cited a lack of availability of RG positions on completion of training as a barrier. Program could be more flexible. Interactions with Regional Training Organization were problematic (described by one respondent as 'horrific'). Requirements of the placement were unclear to participants, or restricted options 'I didn't know I would have to do so much GP work', 'should allow people to do more than one advanced skill' Trainees suggested that having to do an advanced skill was a barrier to completion of the RG training: the reported reasons were not finding an AST they were interested in enough to pursue, waiting to practice office-based general practice and finding AST training less relevant for their future. Some (10 participants) started AST then separated to follow specialist training in that field Training conflicting with family was identified as a barrier for	Training pathway supported career decision 'I was always going to go rural.' The choice to give up their pursuit of an RG career was independent to this: they remained interested in rural and regional practice Prevocational workshops Advocacy and terms in prevocational years	12 of the 41 participants went on to pursue RACGP fellowship, and one pursued ACRRM outside of the QRGP pathway

				mainly female trainees. Trainees found arranging placements with partners and arranging training around family planning a barrier. Some also recognised that they had achieved a recognised vocational end point (FRACGP) without achieving the additional RG qualification		
Lewis et al (2016, New South Wales, Australia)[22]	Prevocational (RMO)	Explore the career pathways of former cadets, what training pathways they chose and their attitudes towards the program	Qualitative cross-sectional study. Self-administered semi-structured questionnaire. Doctors who had completed the cadetship program (n=142)	One respondent felt that rural training makes it harder to move back to the city for specialist training, though some commented that their rural service positively influenced their application for specialist training	Cadets with a rural background were more likely to choose general practice as a specialty, and also more likely to be practising rurally. Gender and having a spouse from a rural area did not influence practice location Career choice significantly influenced practice location 44% thought the cadetship and rural service were very important in influencing career path, 40% thought 'somewhat'. 39% thought the cadetship was very important for influencing rural practice location, 46% thought 'somewhat'. 87% would recommend the cadetship to others, particularly if interested in working and living rurally, and being able to fulfill the 2-year bond time	In return for financial support for the final 2 years of medical school, a relocation allowance and for educational support during the program, cadets are contracted to work 2 of their first 3 postgraduate years in a rural NSW hospital 90 participants had completed vocational training (51 in GP), 44 were trainees (12 in GP), 6 were non-specialist hospital doctors and 2 were no longer practising Over half (53%, n=74) were working rurally at the time of the survey and of these 58% were GPs 36% of the cadets who ended up in rural practice were from urban backgrounds, suggesting the program serves as an effective link between medical school and rural practice, particularly rural general practice

Malau-Aduli et al (2021, Queensland, Australia)[18]	Vocational	Explore GP registrars' level of satisfaction with a localised training model, and to investigate the relationship between satisfaction and academic performance	Mixed methods cross-sectional study. Quantitative phase: Satisfaction survey (n=651). Qualitative phase: Open-ended responses from survey, focus group discussions (n=10). GP registrars enrolled in JCU General Practice Training Program	Fellows were more satisfied with the model than those still in training. Satisfaction has no correlation to passing RACGP fellowship exams, and passing the ACRRM fellowship exam was not associated with satisfaction with the training Some registrars lived far from their placements, which was costly in terms of both time and money Competition for the popular practices existed, and it was noted that practice culture could either support or negatively impact the registrars' satisfaction with the training. More support for those experiencing difficulties in their training practices was suggested to overcome this barrier	Registrars chose the program for both the educational experience and the rural GP training Rural practice was associated with greater autonomy, and more complex and diverse patient presentations, as well as feeling like part of the medical and wider local community Having close connections with a GP supervisor as part of the program was a strength, as they were seen as accessible and approachable. The overall program was seen as well-structured and supportive Many of the registrars expressed an interest in continuing to work at their training post	92% of registrars were satisfied with the training environment (distributed model with training posts across smaller rural and remote communities across Queensland), with a similar satisfaction rate across RACGP and ACRRM and dual pathways. There was no difference in satisfaction across different regional to remote locations
McGrail et al (2016, Australia)[19]	Vocational GP training	Investigates associations between general practitioner vocational training location and subsequent practice location, including the effect of rural background	Quantitative longitudinal cohort study. Data from MABEL surveys analysed. GPs who completed vocational training and had transitioned (or transitioning) to independent practice between 2008 and 2014 (n=610)	Retention of rurally trained GPs is not strong for certain cohorts: Rural trained/metropolitan origin local graduates and rurally trained IMGs gradually shifted back to metropolitan areas to practice over the 5 years following fellowship	Retention of graduates who train in the same location type as their origin is strong. Rurally trained/rural origin and metropolitan trained/metropolitan origin cohorts showed strong associations between location of training and subsequent practice location for the 5 years following fellowship. 61–70% of rurally trained/rural origin GPs remained in the same community for the 5 years following fellowship	Policy surrounding rural GP vocational training and medical student quotas based on rural origin are likely to support recruitment and retention of rural GPs

O'Sullivan et al (2021, Queensland, Australia)[23]	Prevocational	Explored the attractors and barriers for early career doctors to pursue rural pathways after graduating from medical school	Qualitative cross-sectional. Semi-structured interviews. The University of Queensland graduates between 1 and 17 years postgraduation, (n=32)	Rural return of service for an international student graduate was seen as forcing them into rural work Clinical cases might be complex with limited support in more remote locations. Rural-based GP registrar described this as 'like being thrown to the wolves'	Existing rural connections from rural upbringing leads to doctors being attracted to rural practice Flexibility of partners in finding suitable rural work, particularly for female-fellowed GPs, was seen to allow them to pursue a rural medical role in early career Opportunities for rural postgraduate training in specialty: GP training particularly seen as well-developed and flexible Structured rural generalist pathways provide support for training in rural areas (providing 'little bit extra planning' helping you get through it.) Rural pathways allow teamwork with a wider clinical scope rather than siloed roles (in general practice and other specialties) Wide range of employment opportunities, particularly for GPs, attracts to rural pathways	Doctors might be more attracted to rural locations with high-quality training in reputable health services, where they could gain a breadth of skills in a supportive, safe and positive team environment

McGrail et al (2023, Queensland, Australia) [20]	Prevocational/vocational training	Investigate the combined impact of 3 key training pathway factors: Rural background, medical school rural immersion and postgraduation rural immersion, and the duration time of each immersion factor on working rurally	Retrospective Quantitative Cohort study Data analyses of the MABEL study (n=1651) and UQMediCoS (n=478) between 2000 and 2018. Consultant doctors and vocational training doctors		Rural background, spending more than 1 year at medical school in rural training, being rural bonded, being male and choosing general practice as a career were associated with spending more than 40% of their postgraduate training time in a rural location Postgraduate rural time is linked to subsequent rural work for both GPs and specialists, with those spending >40% of their post medical school time in a rural area significantly more likely to continue to practice rurally (OR 45 for GPs, OR 11 for other specialists). A similar trend also noted for prevocational time, with >40% prevocational rural time being linked to current rural practice for GPs (OR 3.8) and other specialties (OR 2.8)	An interest in a rural career path is developed in 2 key stages: Up to completion of medical school (stage 1), and after medical school (stage 2). Rural training pathways following medical school (stage 2) are associated with longer-term decision to work rurally, whereas the direct impact of rural background and medical school training time diminished once the decision to go rural in stage 2 is made
O'Sullivan et al (2023, Victoria, Australia)[24]	Vocational RG pathway	Explore the characteristics and satisfaction of doctors who participate in RG internship training in Victoria and their workforce outcomes	Quantitative cohort study. Retrospective self-completed survey. Doctors who had completed/were completing the rural generalist internship between 2012 and 2021 (n=59)	One in four (25%) agreed that in rural areas there is a low chance of burnout (suggesting 75% viewed the chance of burnout was probable)	48% of doctors did their rural generalist internship in the same region as their undergraduate studies, with 40% finding ongoing work in the region 61% of those undertaking the rural generalist internship went on to enrol in or complete GP training 42% self-identified as a rural generalist, with 92% planning to	RG-focused internship training allows doctors to have access to RG program coordination staff and enables both general practice RG supervision and RG scope of work in general practice, which can recruit doctors to the rural and RG workforce, and these doctors might continue to work rurally

					maintain skills in additional specialist skill area	
Rizan et al (2019, United Kingdom)[40]	Prevocational	Explore the reasons why Foundation 2 doctors choose to take a year out of training (complete an F3 year) and the impact that this had upon future career choices	Qualitative cross-sectional. In-depth interviews. Doctors starting F3 year in 2015 and 2017 (n=14)	Stress and exhaustion were described as resulting in a need to take time off training. Feeling unsupported by senior colleagues and having a high workload compounded this Sense of loss of control (which was partially regained during F3 year), with a sense of being trapped on a conveyor belt of education from school, through medical school and onto postgraduate training Minimal barriers reported in returning to training, described as 'psychological rather than specific logistical (barriers)' Some participants applied for specialty training but turned down training post offers and continued their F3 year, most often because the posts offered did not align with their desired locations	More time to decide and prepare for specialty applications More time to develop skills in chosen field (eg range of knowledge required of GPs, or follow further study routes) Ability to follow roles of personal importance, and 'personalize training' during year out	Some participants reported their peers wished they had taken an F3 and that they planned to do this after core medical or GP training

Rourke et al (2018, Canada)[26]	Vocational	Assess whether the Memorial medical degree and postgraduate programs were effective at producing physicians for their province, and rural physicians for Canada, compared with other Canadian medical schools	Quantitative retrospective cohort study. Canadian-trained physicians from CAPER database who completed postgraduate training between 2004 and 2013 (n=18,766)		55% (n=208) of Memorial graduates during the study period completed family medicine training, and of those 26.9% were practising rurally, which was higher than other medical schools in the area Of those who had established family medicine practice in Newfoundland and Labrador, 90.8% had completed their FM postgraduate training at Memorial and for those who established rural family practice in NL, 95% were trained at Memorial	Memorial's pathways to rural practice components start before admission to medical school (with outreach programs, Aboriginal initiative and rural-friendly admission) and feature a rural focus throughout the MD education (through curriculum, clerkships, context and placements), FM postgraduate residency training, and rural supportive continued medical education
Rourke et al (2018, Canada)[25]	Vocational	To assess Memorial University of Newfoundland's commitment to a comprehensive pathways approach to rural family practice, and to determine the national and provincial effects of applying this approach	Quantitative retrospective cross-sectional. CAPER database: Memorial graduates practising family medicine in Newfoundland and Labrador in 2015 (n=305), graduates from 2011 and 2012 (n=120), and doctors who completed family medicine training between 2004 and 2013 and were practising in Canada 2 years after completion of postgraduate training (n=8091)		Rural retention: 26.9% of Memorial family medicine program graduates were in a rural practice location 2 years after exiting their post-MD training from 2004 to 2013 (national rate 13.3%). 36% of the 305 Memorial graduates working in family medicine were in rural areas (14% nationally)	End-to-end rural focused training, including pre-admission, medical school and post-graduate training leads to local retention of rural family medicine practitioners
Russell et al (2023, Northern Territory, Australia) [37]	Vocational GP training	Examine and document trends in GP training commencements in the NT and nationally, identify major factors driving these trends	Mixed methods: Scoping review of Australian literature mapping key concepts to GP training pathway stages and	Declining medical school enrolment impacts on training of GPs as there are not enough entering the pipeline to begin with	Selection of junior doctors interested in rural generalist practice and long-term NT practice were suggested to be important	Workshop stakeholders saw prevocational training as the highest priority area of the pathway to target, with increasing primary healthcare

		and prioritise a range of potential solutions	marketing/communications; secondary data analyses; key informant interviews; and a stakeholder validation/prioritisation workshop (n=69)	Loss of PGPPP program saw decline in enrolments in GP training 'we've lost… exposure to general practice in the postgraduate years and the hospital years… as soon as (the PGPPP program) was cancelled, the numbers started to plummet' (stakeholder) Negative perceptions of general practice perpetuated in hospital environments can expose junior doctors to negative stigma 'it is disparaged as a career choice', 'people don't see general practice as a prestigious career', 'if you don't quite have enough intelligence, well you could be a GP' Not being able to train in place was linked to decline in uptake of training places nationally 'the lack of flexibility in the fact that they (GP Registrars) need to travel, they need to move around, it's particularly with the rural pathway on AGPT'	High-quality, culturally sensitive and flexible professional and personal support at the vocational training level Better renumeration and employment models for GPs, as lack of benefits including long service leave and poor pay leads to registrars preferring other positions Scoping review found that the characteristics of medical schools have a strong impact on graduates' choice of general practice career. A commitment to social accountability, tailored curriculum, access to inspiring GP role models and using distributed educational models (to ensure rural and remote immersion or substantial rural exposure from the outset of medical school) is strongly associated with subsequent rural and remote generalist training and work Graduates who are married/partnered, who have children, are IMGs or who are older are more likely to choose a specialty with a shorter training period such as general practice	training opportunities for junior doctors to be one strategy

Sen Gupta et al (2014, Queensland, Australia)[36]	Undergraduate, pre-vocational, vocational GP training	Describe the early career practice locations and specialty training undertaken by James Cook University graduates, and explore the association between later practice location with hometown and internship location	Quantitative cross-sectional study. Analysis of databases held by the JCU university, AHPRA registration details and data collected by contact with graduates. Graduate doctors finishing medical school between 2005 and 2011 (n=536)	Relatively few JCU graduates having a metropolitan hometown have ever practised in a remote or very remote location by PGY 7, although a significant proportion (30–40%) practise in RA 2 or 3 in each postgraduate year	Around two-thirds (65%) of JCU graduates undertook internship in regional or rural areas, with those from non-metropolitan backgrounds more likely to choose this location Metro hometown and metro internship is more likely to lead to metro practice. Metro hometown and non-metro internship graduates are more likely to practice rurally than their rural hometown/metro trained colleagues The RA category of internship being either metropolitan or non-metropolitan was associated with the same location of practice in PGY 2–7 35% of the subset for whom specialty choice was available chose to enter GP training with an additional 13% undertaking 'rural medicine' sub-specialty (total 48% committing to general practice)	RCS training through JCU results in more GPs and more doctors working in rural areas than the Australian average. Developing further regionally located internship and postgraduate specialty training program positions are important to maintain the workforce 'pipeline' and address geographical maldistribution of doctors
Shelker et al (2014, New Zealand)[27]	Prevocational	Evaluate the influence of the Otago Medical Programmes rural entry pathway and rural immersion programme on postgraduate medical training and location	Quantitative retrospective cohort study. University database, MCNZ register, New Zealand medical register data analysed (n=733)		Rural background or experience in medical school was linked to an increase in graduates who entered GP postgraduate training (13.8% entering if rural exposures, vs 9.7% if none) Rural background or experience in medical school was linked to a significant increase in graduates	

					who entered Rural Hospital Medicine postgraduate training (6.4% entering if rural exposures, vs 0.4% if none)	
Sureshkumar et al (2017, Australia)[16]	Vocational GP training	Investigate the factors eligible applicants consider in electing for a rural pathway into specialty training	Quantitative cohort study. Dataset from the 2015 AGPT program was analysed. Applicants interested in entry into AGPT program in 2015 (n=2221)	Foreign graduates of local schools who had exemptions from the moratorium, were associated with a lower probability of expressing a preference for rural pathway	Recruitment: Rural background, rural clinical school experience and English as first language applicants were more likely to elect the rural pathway Change of pathway: 9.9% of applicants with a lower score on the situational judgement test and the MMI changed from general to rural streams on finding out results, and 2.1% changed from rural to general streams	2221 doctors applied for a total of 1500 training places in 2015 70% of applicants were eligible for either the rural or general pathway, with 80% of eligible applicants electing for the 'general' versus 'rural' pathway Eligible applicants had a mean age of 30.5 years 61% were female 64% were Australian medical graduates, 28.5% were foreign-born students but who completed an Australian or NZ medical degree and 7.5% were IMGs
Wenghofer et al (2017, Canada)[28]	Vocational family physician	Explore if graduates from Northern Ontario School of Medicine are more likely to locate their practices in rural and/or northern Ontario than physicians who received their training from other Canadian medical schools	Quantitative cohort study. Data from College of Physicians and Surgeons of Ontario. Family physicians who graduated from training in 2009 or later (n=535)		Being either older, female and a trainee who are educated in rural and other underserviced areas are more likely to select work settings in such areas Established connections in rural communities (ie physician and/or his/her spouse/partner was previously or currently employed in northern Ontario) 25.4% of those graduating from NOSM were working in rural	

					Ontario, compared to 10.3% of those who graduated elsewhere Having undertaken postgraduate residency training at NOSM was linked to working in rural northern Ontario (25%)	
Woolley et al (2014, Queensland, Australia)[29]	Undergraduate, vocational	Describe factors predicting JCU medical graduates having a rural practice location at PGY 5	Quantitative cross sectional. Data collected from JCU dataset, AHPRA, and personally contacting some graduates. Medical graduates (PGY 5) from 2005 to 2008 (n=264)	Undertaking surgery training is associated with not practising rurally	Practise in a rural town in PGY 5 was predicted by having undertaken internship in a rural area, undertaken postgraduate training as a GP or RG, having a rural hometown, being Aboriginal and/or Torres Strait Islander and having not undertaken postgraduate surgical training	65/264 had undertaken GP training, 27/264 undertaken RG training. 65% of these doctors were practising in a rural (RA 3–5) town in PGY 5
Woolley et al (2017, Australia)[42]	Prevocational, vocational	To describe factors predicting JCU medical graduates undertaking at least 1 year of remote practice	Quantitative cross-sectional. JCU dataset used. Graduates who were in PGY 4–10 (n=529)		Rural generalist training, being awarded 'above average' interview in medical school selection, attending the Darwin clinical school for the final years of medical school, being female, being Aboriginal and/or Torres Strait Islander and undertaking an outer-regional or remotely based internship were all factors linked to undertaking at least 1 year of remote medical practice	9% of JCU graduates studied had practised in a remote location for at least 1 year between PGY 4 and 10. 16% had undertaken GP training, 14% rural generalist training Supports rural pipeline model, as JCU uses a preferential selection process that prioritises rural students, provides significant rural exposures during medical school then later provides regionally based internships and rural generalist training

Woolley et al (2019, Australia)[30]	Undergraduate, vocational	Explores the key influences that shaped graduates' vocational choice, and analyses whether JCU graduates are more likely to choose generalist careers than Australian medical graduates with a similar level of experience	Qualitative cross-sectional cohort study. Survey with some free-form elements. JCU graduates in PGY 4–10 (graduating between 2005 and 2011) (n=180)		48% of graduates had achieved fellowship of at least one college (27% FRACGP, 6% FACRRM) Interest in general practice careers was developed or strengthened during undergraduate training by positive clinical experiences in general practice settings and also developed in early postgraduate experiences (often within the PGPPP placements) Specialty of GP is seen as having a good work–life balance and more flexibility to do part-time training or engage in working hours and practise interest areas that suit the doctor Advanced specialist training allows trainees have 'variety (they are) looking for' Strong supervisors and mentors throughout medical school and vocational training influence commitment to GP training pathways	Compared to a group of Australian medical graduates with similar years of experience, JCU graduates are significantly more likely to choose GP/rural generalist careers or other general specialist careers rather than medical subspecialty careers
Woolley et al (2020, Australia and Canada)[31]	Undergraduate, vocational	Identify commonalities in one regional medical school in Australia and one in Canada regarding the association between postgraduate training location and a doctor's practice location once specialty qualified	Quantitative cross-sectional cohort study. Survey. JCU graduates from 2005 to 2013 in PGY 5+ engaged in survey (n=149). Northern Ontario School of Medicine records and licensing regulatory agency data provided information for physicians who had		38% of JCU graduates in the study had Fellowed as GPs, with 58% of these practising in northern Australia. Graduates were more likely to stay in the area if postgraduate training positions were available; of doctors who left the area for	A 'flipped training' model, where specialty trainees are based in rural or regional settings with some rotations to cities, rather than being primarily based in cities, might lead to better rural workforce outcomes

			completed residency in 2017 or earlier (n= 400)		postgraduate training only 14% returned 92% of family practitioners who undertook undergraduate and postgraduate training at NOSM stayed to practise in northern Ontario, in contrast to 24% of the control group who returned to northern Ontario after completing postgraduate training elsewhere	
Woolley et al (2021, Queensland, Australia) [33]	Undergraduate, prevocational, vocational	Investigates whether non-metropolitan practice location choices continue into mid-career for JCU graduates, and identifies the key underlying demographic, selection process, curriculum and postgraduate training factors associated with JCU graduates choosing to currently practise in regional, rural and remote areas of Australia	Quantitative cross-sectional cohort study. JCU database and AHPRA data used. JCU medical graduates across PGY 5–14 in 2019 (n=931)	Many trainees are subject to constraints of specialty college entry conditions, training requirements and job availability, all which might be further exacerbated by historic patterns of maldistribution	Rural practice was linked to holding a Medical Rural Bonded Scholarship, graduating from the JCU general practice training program, and internship training in a hospital in a regional city Graduation from JCU General Practice Training as a FRACGP or FACRRM is significantly associated with regional (35% of this subset), rural (37%) and remote (16%) practice	One-third of JCU graduates were working in non-metro areas in their mid-careers. 33% were working as GPs, 11% as rural generalists
Woolley et al (2021, Queensland, Australia)[32]	Undergraduate, prevocational	Quantify the financial ROI from key participant and rural workforce benefits arising from year 6 JCU medical students participating in extended rural placements from 2012 to 2018	Quantitative cross-sectional study. Survey. JCU MBBS graduates from 2012 to 2018 who had experienced extended placements (n=25)		75% of those who undertook extended rural placements intended to have a full-time career in rural or remote practice, with 68% pursuing careers as rural generalist and 16% pursuing careers as GPs (compared to 57% of the total JCU cohort) 64% of participants found the placements had 'influenced the type of doctor they want to be'	Extended rural placements were linked to strengthening the rural medical workforce, particularly rural GPs and rural generalists. ROI is calculated to be $7.60 for every dollar spent

					with all these respondents shifting towards rural practice and/or rural generalism	

ACRRM, Australian College for Rural and Remote Medicine; AGPT, Australian General Practice Training; AHPRA, Australian Health Practitioner Regulatory Agency; AST, assisted skills training; CAPER, XXX; FACRRM, Fellow of the Australian College for Rural and Remote Medicine; FRACGP, Fellow of the Royal Australian College of General Practitioners; GP, general practitioner; IMGs, international medical graduates; JCU, James Cook University; FM, family medicine; KPHU, Kimberly Population Health Unit; MABEL, Medicine in Australia: Balancing Employment and Life; MBBS, Bachelor of Medicine, Bachelor of Surgery; MCNZ, Medical College of New Zealand; MD, medical doctor; MMI, multiple mini interview; NL, Newfoundland and Labrador, Canada; NOSM, Northern Ontario School of Medicine; NT, Northern Territory; NZ, New Zealand; OR, odds ratio; PIERCE, Prevocational Integrated Extended Rural Clinical Experience; PG, postgraduate; PGY, postgraduate year; QRGP, Queensland Rural Generalist Pathway; RA, remoteness area; RACGP, The Royal Australian College of General Practitioners; RCS, rural clinical school; RGs, rural generalist; RHM, rural hospital medicine; ROI, return on investment; SA, South Australia; RMO, registered medical o icer; RNZCGP, The Royal New Zealand College of General Practitioners; UQMediCoS, University of Queensland's medical graduates cohort study; WA, Western Australia.