

Rural Health and the Medical Curriculum (2021)

Position Statement

The Australian Medical Students Association (AMSA) believes that:

1. Effective rural curricula promote positive perceptions of rural health leading to increased student interest
2. Rural health curricula have the potential to engage more students in rural placements, an important strategy to help address the rural medical workforce shortage
3. Rural health curricula should be crafted with vertical and horizontal integration to appropriately educate students on the unique characteristics of rural communities
4. Rural health curriculum models of teaching are an important research avenue to improve the quality of rural health education
5. Medical schools should have a standardised baseline requirement for rural health curricula
6. Extracurricular rural health engagement is an important aspect of rural health education

Policy

AMSA calls upon:

1. Australian medical schools to:
 - a. Provide students with a vertically and horizontally integrated rural health curriculum which includes:
 - i. A tailored preclinical rural health curriculum to their most relevant or appropriate regional setting from the commencement of their degree, including a public health curriculum;
 - ii. The incorporation of rural medical, nursing, and allied health practitioners, particularly rural generalists, in the provision of preclinical education;
 - iii. The involvement of simulated and real-life rural patients in teaching, emphasising the importance of “lived-experience”;
 - iv. Opportunities to explore and understand the unique challenges of rural medicine by providing exposure to rural health settings or interactions with rural and Indigenous communities both in preclinical and clinical years. For example:
 1. Short-term preclinical community immersion programs such as “Country Week”;
 2. Opportunities to complete General Practice practice placements in rural locations;

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3. Exposure to rural Indigenous Health practices and remote Indigenous communities;
 - v. The incorporation of technology such as clinical skill simulators and videoconferencing to ensure high quality and safe clinical learning is maintained;
 - b. Continue to integrate rural health scenarios and cases within medical curricula. When designing these scenarios:
 - i. Recruit diverse case writing teams that reflect the complexity of rural health services;
 - ii. Consult and include cultural perspectives of rural and Indigenous communities where relevant;
 - iii. Avoid a deficit-based perspective to the health behaviours and outcomes of rural communities;
 - c. Investigate the applicability of, and integrate aspects of various rural health curriculum models, including but not limited to:
 - i. A “3P” curriculum focused on Place, People and Practice;
 - ii. Elective programs with a rural health or health inequity focus;
 - iii. “Generalism” and community based learning;
 - iv. Vertical integration including facilitating medical student involvement in doctors-in-training education;
 - v. Working with regional training hubs to provide a connection between curricula and clinical understanding;
 - d. Allocate funding towards and offer students rural health-focused research projects;
 - e. Ensure that rural health opportunities are made clear to students seeking career guidance;
 - f. Regularly survey and evaluate both preclinical and clinical student perceptions of the rural health curriculum, and use these evaluations to improve the curriculum;
2. The Australian Medical Council to:
 - a. Review the current Accreditation Standards for Primary Medical Programs with a focus on including specific reference to rural and remote health;
 - b. Work with universities to establish a standardised baseline rural health curriculum;
 - c. Incorporate rural health content into written and clinical assessment standards and accreditation standards explanatory notes;
 3. The Federal Government to:
 - a. Fund and continue to support research into rural health in the medical curriculum, including but not limited to:
 - i. Reviewing current Australian medical curricula for effective learning techniques in preclinical and clinical rural health education;
 - b. Reinstate and evolve immersion programs like the John Flynn Placement Program;
 4. AMSA National and AMSA Rural Health to:
 - a. Advocate for more rural opportunities for students in order to improve engagement with rural health;

- b. Liaise with medical student councils to form stronger relationships with rural medical organisations, Aboriginal Land Councils, colleges and organisations;
 - c. Continue to advocate for the interests of students on rural placements;
 - d. Extend students' engagement with rural health beyond the medical curriculum by continuing to support events such as the Rural Health Summit;
 - e. Continue to promote the career opportunities available to students in rural health settings;
 - f. Conduct research into the current state of rural health curricula in medical programs;
5. Medical student societies and rural health clubs to:
- a. Increase student engagement in rural health by running events with a rural health focus;
 - b. Advocate for more opportunities for students to undertake placements in rural health settings. This includes but is not limited to:
 - i. Subsidies for students to attend rural health conferences;
 - ii. Increased opportunities for students to undertake short-term external rural placements;
 - c. Ensure suitable rural representation on society committees;
 - d. Consult rurally-placed students when developing periodical submissions to the Australian Medical Council;
 - e. Advocate for the provision of support services and appropriate teaching infrastructure for students placed in rural locations.

Background

Importance of Effective Rural Health Curricula

Australia's medical workforce maldistribution exacerbates the inability of rural and remote Australians to access health care services[1], impacting their health outcomes. One third of Australians live in regional, rural and remote areas, including 65% of Indigenous Australians [2]. Given the higher rates of risk-based accidents and mortality seen in rural populations, an effective rural workforce is essential for meeting their health needs, especially within historically underserved Aboriginal and Torres Strait Islander communities[1].

Rural health curricula educationally encompasses public health components such as epidemiology, community health, environmental health, and health systems and policy contextualised to a rural setting [3]. Rural health curricula components of medical education also include rural placements, extracurricular activities, and Rural Clinical Schools. However, rural health is often 'othered' in current medical curriculums, especially in preclinical learning and in metropolitan based medical programs. Parts of rural and remote Australia are considered unfamiliar and distant to some medical students [4], and the societal, institutional, and interpersonal challenges that impede access to health services are not sufficiently addressed by current medical curriculums [4].

Even if students do not plan to relocate to regional areas as doctors in the future, it is essential for all medical doctors to have an understanding of the different healthcare issues, the different communities, and the different healthcare experiences that affect those among regional, rural, and remote communities in Australia [4]. It is imperative for all medical students to understand the unique aspects of rural health, as even metropolitan based doctors could be in the position of treating those from a rural community.

A comprehensive and effective rural health curriculum has been identified as a potential strategy to address the current regional workforce maldistribution and discrepancies in healthcare outcomes for rural populations. However, significant research is still required into the construction and use of rural health curricula as a solution to the maldistribution of doctors.

Rural retention

Extensive literature supports the effectiveness of rural medical education in addressing the current shortage of rural clinicians, with medical graduates showing an increased interest in practicing rurally following rural placements[5,6]. The future of rural retention of workforce is critical for effective and coordinated health care[1], with rural background, and clinical experience, as explored in Rural Clinical Schools Policy (2021), being strong predictors of rural retention.

Rural health perception

Effectively delivered rural health curricula markedly improve student attitudes towards rural health. Literature around rural health curricula's impact on the perception of rural health in medical programs is limited, however, a 2020 study on final year Occupational Therapy students from James Cook University (JCU) found that the course curriculum itself was not found to influence students perceptual change [7]. Whilst curriculum may not influence student perceptions, a separate study determined that rural exposure through placements in rural and remote regions significantly increased students' likelihood to practice in rural and/or remote locations ($p = 0.003$)[5].

The teaching staff's delivery of content also has a significant impact on the perception of rural health by students [8]. A New Zealand study found that staff who discussed rural health more positively and promoted it as a clinical pathway produced students that not only viewed rural health more positively, but also saw it as a more appealing clinical pathway as a graduate[8]. Good role modelling from rural GP faculty members who facilitate rural educational experiences is also shown to have a positive influence on students' career aspirations into the future [9].

Current Rural Health Curricula

AMC Accreditation Standards

Domain 3 – “Health and Society” – of the Australian Medical Council's (AMC) Assessment and Accreditation standards for Primary Medical Programs outline several competencies relevant to rural health that Australian medical graduates are expected to demonstrate. Although rural and remote communities are not specially detailed within much of the standards, Clause 3.1 specifies understanding of the health and wellbeing of different “individuals, communities and populations” whilst Clause 3.2 refers to factors affecting populations including “health inequities and inequalities ... the socio-economic and physical environment”. The only specific reference to rural medicine is in relation to clinical curricula, with universities expected to “provide clinical experiences ... across metropolitan and rural health settings”. Importantly, universities are given significant autonomy over how they choose to implement and interpret these standards, and thus the delivery and content of rural health curriculums vary significantly between institutions [10]. The lack of a baseline standard to guide rural health curricula development has been labelled as concerning by academics reviewing current curricula [6]. As such, the adoption of explicit standards for all medical programs to follow is advised.

Preclinical

Although it is commonly recognised that clinical experience (learning “in context”) is the most significant part of rural health education [11,12], theoretical lecture or seminar-based introductions to rural health are essential for constructing the knowledge base for clinical applications [6]. In particular, knowledge of health inequalities and the social determinants of health are critical to understanding the complex sources of health disparity when comparing urban and rural communities [13,14].

It is difficult to determine the full extent of preclinical rural health education across individual Australian medical schools, with reviews of preclinical curricula demonstrating a lack of coordinated frameworks to guide program development [15]. However, several non-clinical themes such as patient interaction and communication specific to rural populations; cultural awareness and safety; integrative “whole-of-patient” medicine; ethics; non-clinical public health issues and professional boundaries in rural communities are commonly present within rural health aspects of medical programs [15,16]. These aspects are most commonly “horizontally integrated” within the curriculum, a pedagogical framework now accepted as the standard for medical curriculum delivery which involves the simultaneous teaching of different medical disciplines – for example, global health, pathology and pharmacology, – within the same course [17].

The predominant teaching method of preclinical rural health in Australia is through case and problem-based learning [18]. Simulated clinical problems are analysed by students in order to explore the various social determinants of health impacting rural medicine. One issue when designing such scenarios is the tendency to inadvertently present rural issues inappropriately or perpetuate negative rural health stereotypes [6,19]. To prevent the normalisation of negative rural health stereotypes, diverse case writing teams that adequately reflect the complexity of rural health services should be recruited, and writers should specifically consult and include the cultural perspectives of rural and Indigenous communities where relevant [19].

Clinical

Student Preparedness for Rural Practice

Despite the widespread implementation of a rural health curriculum in Australian universities, there remain barriers to achieving high levels of preparedness amongst medical students for rural clinical practice. A qualitative study interviewing medical students, supervisors and clinicians found that opportunities for clinical learning, personal and professional development as well as cultural awareness were important factors for preparedness for practice. The barriers were identified for preparedness was geographical isolation, educational risk and differing degrees of program engagement. [20]

Additionally, rural interns described the high level of responsibility placed on them as a ‘double edged sword’, because while it allowed them to rapidly upskill it also made them feel overwhelmingly accountable; more so than their metropolitan counterparts. [21]

Country Week

Learning in context and interactions with ‘communities of practice’ can generate transformative learning moments that enrich the medical curriculum by stimulating self reflection by students. [22] One such example of transformative learning is Country Week, an initiative developed by the University of Western Australia, where rural and Indigenous community members spend time with the students in small groups, sharing their perspectives of access to (or lack of) provision of health

services in their communities. This allows the students to explore the structural and systemic inequalities present within both rural and Indigenous communities in comparison to metropolitan areas. This program serves as an opportunity to equip students with the skills to work with rural populations who experience a multitude of socially determined health issues as well as marked limitations to access to health care. [22]

Rural Placements

Rural placements during clinical years of medical school play a large role in the preparation of medical students for future rural practise and the retention of clinicians in rural areas. Since a large percentage of rural medical practitioners are GPs, opportunities to complete General Practice placements in rural locations may be beneficial in terms of rural preparation [23,24]. Furthermore, one of the best predictors of future rural practice is the quality and length of the rural placement attended [25]. The following are factors that improve rural placement quality, as well as possible ways to achieve these factors [26-28].

Rural placements that can provide high-quality supervision and teaching generally produce better outcomes in terms of rural health education and overall placement quality. To ensure high-quality teaching, supervisors should have an interest in supervising students and should be adequately trained in the teaching, providing feedback, and assessing of students. Supervisors or rural clinical mentors able to assist students with career guidance and planning may improve rural health recruitment and retention [26-28]. The overall attitudes of staff were also found to contribute to the quality of the placement. Welcoming and supportive staff who students felt comfortable in discussing both clinical placement and personal issues were found to increase the overall quality of the placement. [26-28]

A well organised and structured placement provides opportunities to expand learning and develop skills in a clinical environment, directly correlating with improvements in rural health education. Current literature suggests that placements should be at least six to seven weeks in duration and must have clear learning outcomes [26-28]. Placement sites should also allow for completion of specific learning and assessment criteria whilst keeping course requirements outside of the placement at a manageable level. It is also strongly recommended that accommodation, utilities and Wi-Fi should be either free or highly subsidised [26-28].

Personal circumstances of students undoubtedly influence the quality of their rural placement experience. To minimize the detrimental effects of these personal circumstances, students should be adequately prepared for their placements. This involves providing students with at least 1 month's notice prior to placement to organize personal and professional obligations and providing comprehensive pre-placement information about local amenities, the site, the accommodation and key contacts [26-28].

Extracurricular

Medical students in Australia have many opportunities outside of their formal education to learn more about rural health in both theoretical and practical settings. These are broadly categorised into three main areas: national student networks, university health interest clubs and rural immersion programs.

In most universities that offer health courses there are also member organisations of national student networks such as the AMSA Rural Health Committee and the

National Rural Health Student Network (NRHSN). Some of the work the AMSA Rural Health Committee does to promote rural health includes providing students the opportunity to get involved with advocacy, information and education via social media and publications, research and mentoring programs. AMSA also organises annual rural health summits. The NRHSN is an initiative of the Australian Government Department of Health Rural Health Multidisciplinary Training Program. NRHSN represents students from medicine, nursing and allied health and provides governance for university rural health clubs across Australia. They also run rural experience programs, events and initiatives accessible to both clinical and preclinical students. [29]

Other university health interest clubs also play a significant role in rural health education, usually in the context of specific fields of medicine. One such example is Teddy Bear Hospital, a concept adopted by some universities where “clinics” are held at rural and primary schools with the aim of reducing childhood anxiety in medical environments and improving paediatric interaction skills for the participating medical students. [30]

The efficacy of these groups in increasing student engagement in rural health is corroborated by independent analysis from the Medical School Outcomes database, which found that students who belonged to a university rural health club (belonging to NRHSN) were nearly 3.1 times more likely to express a preference for a future career working outside a capital city. Around 60% of these members were not from rural backgrounds. [20]

Additionally, students have the ability to get involved with a number of independent rural placement programs external to those provided by their university, such as:

Placement Name	Program Description
NSW Rural Doctors Network (RDN) Bush Bursaries and Country Women's Association (CW)	Provides \$1,500 to assist with medical studies and 2 weeks of rural placement during university holidays for ACT/NSW medicine/midwifery/nursing students
Royal Flying Doctor Service Placement Program	Placement programs for QLD/SA/NT medicine, nursing or allied health students which includes the RFDS ride-along program, where students can spend a weekend 'on-shift' with aeromedical crews at Adelaide and Port Augusta bases
Heart Truck NextGen Medics Program	14-day placement which includes 5 days of clinical hours, interacting with patients, specialists and the operations crew of the Heart Truck. There is also the opportunity to attend GP education sessions as well as enjoying local tourism.
Medical Outreachers Australia: Hear our Heart Earbus Project	Opportunity for UNSW students to help provide ear check-ups to children in rural areas such as Dubbo, Wellington, Narromine, Nyangan and Warren.

John Flynn Placement Program

In the 2021-22 Department of Health Portfolio Budget Statement it was announced by the Department of Health that the funding of the John Flynn Placement Program was to be re-directed towards the John Flynn Prevocational Doctor Program (JFPDP) for

doctors-in-training [31]. This was justified by the Commonwealth government's assertion that there are now more opportunities for medical students to be exposed to rural training through end-to-end medical schools and Rural Clinical Schools programs [31]. However, this decision to coalesce the experiences within the JFPP with the other rural medical programs they fund can be seen to be short sighted, and there is a lack of evidence to underpin this decision.

JFPP was seen as more than an elective block in medical school, rather as a 'rural experiential program' [32]. JFPP allowed a true immersion of individual medical students into valuable clinical and rural social experiences, over a contingent of students representing one medical school that is commonplace with Rural Clinical Schools and rural placements. Students in JFPP were placed with a Mentor rural doctor, and it gave perspective not just into rural medicine but rural life [33]. Unlike other medical school placements in rural areas, this emphasis on community connection served to exhibit the lasting connection to community rural practice can create [33]. This connection to a mentor and community provided a major factor in the attractiveness of the program to medical students.

The majority of JFPP students did not come from a rural background, and much of the competition for positions on the program came from more established, 'city-centric' medical schools over those schools with a non-urban general practice perspective [32]. The JFPP went beyond the curricula delivery of rural health placements at medical schools, and the experience created a perception of a prestigious and valued experience [32]. The high quality of JFPP placements was known colloquially as 'John Flynn magic' [33] in medical schools, and the program had a low attrition rate of 4% in 2020.

Research

The number of rural health specific research projects receiving university and government funding from National Health and Medical Research Council (NHMRC) is significantly lower than those of metropolitan areas, with only 184 receiving funding between 2000-2014, equating to 1.1% of 16 651 research projects receiving funding during this period. [34] This percentage is disproportionately low, especially considering that 30% of the Australian population live in rural and remote areas. In addition to this, only 2.4% of the funds provided for research by the National Health and Medical Research Council-funded projects are allocated to rural specific research. The total NHMRC research funding going to Australian Rural Health Research (ARHR) was 1.4% in 2014, demonstrating a need for more rural health specific projects and opportunities for research within the medical curriculum. [34,35] In addition to general funding, strategic grant opportunities often also failed to target the generalist, complex research in this field and failed to consider the limited time researchers had for grant writing due to their demands within small academic teams.

The research capacity at RCS (Rural Clinical Schools) are low, reducing the research opportunities available to rural students. Only one third of the RCS (Rural Clinical Schools) were rated as "Very Good" or "Good" in implementing activities to build research capacity in their location. In contrast, two thirds were rated as "Adequate" or "Poor". In the same report published by the Department of Health, it is noted that maintenance of local professional and academic networks can be challenging in some rural sites. [36]

Even amongst rural specific research projects, of the 19 health care providers selected by a study conducted by James Cook University, over 95% of total reported research activities took place within major metropolitan hospitals, almost 5% within all other metropolitan hospitals and a <1% within regional and rural hospitals. The lack

of research opportunities available in rural settings severely reduces both the number and variety of rural-specific projects for medical students to take part in. [37]

In addition to this, research that is completed rurally faces its own challenges. Researchers found that they were poorly recognised for their work, often not receiving equal opportunities that staff based on the metropolitan campuses would. Researchers are also often faced with unpredictable and high workloads, exacerbated by the limited number of staff available rurally. Limited collaboration with other rural and metropolitan research groups was also expressed by rural researchers as a factor that increased their dissatisfaction with the process. [35]

In terms of the variety of research conducted, only three categories of projects have been conducted for rural health research: "Public Health", "Health Services" and "Clinical Medicine and Science", with the latter two each receiving 31% and 10% of the total funding for ARHR respectively. [34] An increased effort at the medical curriculum level could be beneficial in increasing the variety of projects involved, particularly in areas such as rural medical programs, accessing health and clinical medicine, as well as increasing the number of projects in these categories.

Components of Effective Rural Health Curricula

Preclinical-specific

A study of final year medical students at the Dunedin School of Medicine found that 50% of students had decided on a career choice by their final year, with only 1.1% of urban students indicating they would enter rural general practice. Thus, for many students, rural placements late in their clinical education may have very little impact on career choice, or more general, interest in rural health. For a rural health curriculum to be effective, it is therefore essential that rural health is integrated throughout the program, especially at early preclinical stages [9].

Broad curriculum reviews have identified various aspects of successful preclinical rural curricula. A 2011 review of rural health curriculums across Australia, Canada and the United States concluded a broad "3P" curriculum centred around the concepts of place, people and practice was most effective in rural medical education. The concept of "place" refers to the health discrepancies and challenges of rural health in comparison to metropolitan areas, as well as the differences in infrastructure. "People" refers to the complexities and nuances of rural communities, with exploration of the doctor's role in such communities, and the potential ethical issues that may arise from living in smaller tight-knit rural areas. "Practice" involves the specific clinical skills needed for rural medicine, particularly in communication and understanding of rural health networks [6].

Other evidence-based aspects of successful preclinical rural health curriculums include: integrating health inequality and ethics courses specific to rural health throughout all years of the program [38,39]; offering elective programs with a health inequity or specific rural health focus where applicable [40]; offering research opportunities in rural health, including broader topics such as health disadvantage as opposed to specific diseases [40] and in general, increasing time allocation to rural health scenarios and content [40].

Generalism and Community Based Learning

Beyond specific preclinical or clinical measures, various evidence-based pedagogical techniques have been proposed to integrate rural health within the medical curriculum. The most prominent of these is a shift away from organ or disease-centred approaches towards "generalism", a model inspired by the Northern Ontario School of Medicine (NOSM) [41]. This model, developed to improve the "social accountability mandate" of medical graduates to provide for the substantial rural and

remote populace of Northern Ontario, involves five curriculum themes (including specific focus on “northern and rural health” and “social and population health”), simultaneously integrating medical sciences, behavioural sciences, clinical sciences, humanities, and social sciences within the same course.[42,43] Generalism differs from horizontal integration by combining both preclinical and clinical aspects of education with a specific focus on rural health, thereby providing students with clinical skills necessary to become rural generalists [42].

A secondary curriculum model integrated within the NOSM is distributed community engagement learning (DCEL). This model relies on multiple clinical placements and direct learning from regional communities through technologies like video conferencing. Rather than implementing horizontal integration seen in traditional medical curricula, no clear distinction is made between preclinical and clinical stages; in first year, all students undertake a 4-week integrated community experience project in an Indigenous community, and third year involves a mandatory clerkship in which students live and study in 12 large rural or small urban communities for an entire year. Moreover, a community focus is given to placements, with students expected to, for example, visit schools while on placement in First Nations communities. Whilst the DCEL curriculum is not appropriate for all medical schools, given the success of the program in increasing rural retention, certain aspects such as the large community engagement focus could be effectively integrated within Australian rural health medical curricula [42].

Vertical Integration

Vertical integration is a form of medical education which integrates preclinical, clinical and sometimes doctors-in-training education [44], differing from horizontal integration where the three are distinctly separate. An example of such integration in rural health curricula is the Riverland Parallel Rural Community Curriculum (PRCC) of Flinders University. This curriculum integrates students into rural clinical environments early in their medical education, involving active inclusion of students in continuing professional development events (normally reserved for graduates), senior training sessions such as simulations of medical emergencies and direct involvement into patient care teams or with rural generalists [45]. Students are therefore able to improve their skills in examination, diagnosis, and management plan creation, as well as observe the nature of medical work in rural environments.

This vertical integration in the PRCC has proven to be a highly effective form of rural health curricula. Most tangibly, rural retention rates from the program are high, with 73% of graduates commencing rural health training pathways following graduation [45]. Moreover, the program has been reported to increase student-patient interactions, improve patient perception of student interactions, increased practitioner engagement with medical education and relieved workload on individual rural practitioners [46].

Regional Training Hubs

Regional Training Hubs are a component of the Integrated Rural Training Pipeline for Medicine and are implemented for medical teaching through the Rural Health Multidisciplinary Training program [47]. There are 27 hubs in total, with three major domains of identifying students to gain rural doctors, enable training at regional and rural sites, and to support clinicians currently working in regional and rural areas [48]. Regional training hubs facilitate medical students with rural intent to complete more of their medical training in regional and rural areas, increase access to rural training opportunities for both students and doctors, and enhance regional training capacity through this collaboration [49]. The regional training hubs have the ability to strengthen existing relationships between Medical Schools and regional and rural

areas [49]. Furthermore, in the times of increasing use of technology and online conferencing [50] in medical education, the Regional training hubs can facilitate activities towards students, especially preclinical students, that identify regional medical workforce needs [49].

The influence Regional training hubs can implement on a rural health curriculum demonstrated in ANU/South East NSW Training Hub Communication Strategy [51] that has seen more non-rural stream students apply for rural positions. The relationship between the Hub and Medical School starts with communication to students from the first year, and includes a rural immersion week in second year [51]. Flinders Northern Territory Regional Hub provides Student to Internship Transition Workshops [51], with the University of Adelaide Eyre Peninsula and Spencer Gulf [47] Regional Hub combining for Monthly Clinical Teaching Journal Clubs. There is a vast array of curriculum possibilities with the combination of hubs and Medical schools, although most of the resources are currently allotted to doctors in training over medical students [51].

Tools and Technology

Simulation Based Learning

A possible tool to prepare students for rural practise or placements is to provide clinical simulations of common medical scenarios. Simulation training is the use of any tools or technologies that emulate real-life situations to provide learning opportunities to students. Simulators serve to provide a controlled learning opportunity to facilitate the same cognitive and behavioural responses as real world clinical settings. The implementation of simulators to rural health curricula provides access to ongoing skills training in areas such as trauma, operating rooms, critical care, obstetrics and disaster management in rural contexts. [52] One notable example of this technology in the medical fields is by Monash University School of Rural Health in Mildura and Bendigo, in which students “participate in fortnightly sessions (each of two hours duration) using high-fidelity SimMom, SimBaby and SimNeonate” and “practice newborn resuscitation, paediatric interventions, and obstetrics procedures” which reinforces theoretical learning. [53]

Rural clinical simulation can provide many advantages to students: The simulator room allows high fidelity and replicability of rural hospital environments, overcoming the problem of the low frequency of actual critical incidents in rural operating theatres and emergency departments. Routine procedures can be repeated intensively, and uncommon but serious problems presented at will. This allows inexperienced practitioners, or those who practice specific procedures relatively infrequently, to gain increased exposure. Audiovisual recording, replaying and self-critiquing of performance further reinforces the learning outcomes [54]. The ability to replay scenarios allows students to better reflect on the consequences of their actions or inactions within a safe environment, providing a potentially very powerful learning experience. The behavioural skills learnt during simulation-based training are also generalisable, and therefore pertinent to the nature of routine and emergency rural health practice. [54]

While the quantity of research investigating the relationship between simulation training and rural preparedness specifically is low, the existing evidence does suggest simulations are effective in improving medical student’s preparedness for rural practise [54,55] For instance, to prepare third year medical school students for a nine-month rural placement, the University of Minnesota College of Medicine developed a rural clinical skills day. On this day, the third-year students were exposed to several simulated patients with varying cases. The evaluation of this simulation training after the nine-month placement by the students and faculty were “overwhelmingly positive” as it allowed these students to develop a preliminary understanding of complex skills through hands-on experience. [55]

Videoconferencing and Telehealth

Video conferencing is an essential component in rural health curricula alongside traditional teaching methods. [56] It allows quality medical education that would otherwise be prohibitive because of time, travel and financial constraints. Video conferencing reduces professional isolation and provides students on rural placements with both academic and social support, as well as continued professional development. [56]

In addition to video conferencing as a teaching tool, the involvement of students in telehealth consults has also proven to be beneficial. A US based study highlighted how through telehealth, medical students could learn how to maintain a strong patient–doctor relationship, protect patient privacy, promote equity in access and treatment, guide patients through self-examination and seek the best possible outcomes while using telemedicine platforms. Incorporating telehealth into medical curricula can expose medical students to relevant telemedicine technologies and also increase their understanding of the complex ethical, regulatory, and legal issues related to their use, which is becoming increasingly common in rural settings [57-59].

References

- [1] Ogden J, Preston S, Partanen R, Ostini R, Coxeter P. Recruiting and retaining general practitioners in rural practice: systematic review and meta-analysis of rural pipeline effects. *Med. J. Aust* [Internet]. 2020 [cited 2021 Sep 04];213(5):228-236. Available from: <https://www.mja.com.au/journal/2020/213/5/recruiting-and-retaining-general-practitioners-rural-practice-systematic-review> DOI: 10.5694/mja2.50697
- [2] National Rural Health Alliance. Demography [Internet]. ruralhealth.org.au. 2011 [cited 18 May 2021]. Available from: <https://www.ruralhealth.org.au/book/demography>
- [3] Bowling J, Chiapa-Scifres, A.L. Enhancing a Rural Medicine Curriculum with Public Health Content UNT Health Science Centre American Association of Colleges of Osteopathic Medicine; 2014 [Available from: https://www.aacom.org/docs/default-source/2014-annual-conference/enhancing-a-rural-medicine-curriculum_j-bowling.pdf?sfvrsn=0
- [4] Prout S, Lin I, Nattabi B, Green C. 'I could never have learned this in a lecture': transformative learning in rural health education. *Adv in Health Sci Educ* [Internet]. 2014 [cited 2021 Sep 04];19:147-159. Available from: https://link.springer.com/article/10.1007/s10459-013-9467-3?fbclid=IwAR15IGvH3xw40vR_h3sKmLjRMH4es42cDHNj6qtIN_brDDcH6bwMa0VXoA DOI: 10.1007/s10459-013-9467-3
- [5] O'Sullivan B, McGrail M, Russel D, Chambers H, Major L. A review of characteristics and outcomes of Australia's undergraduate medical education rural immersion programs. *Hum Resour Health* [Internet]. 2018 [cited 2021 Sep 04];16(1):8. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5793366/> DOI: 10.1186/s12960-018-0271-2
- [6] Zimitat, Craig. A curriculum framework for rural medical education. *International Journal of Child Health and Human Development* 2011;4(1):55-62.

[7] McAuliffe T, Barnett F. Perceptions towards rural and remote practice: A study of final year occupational therapy students studying in a regional university in Australia. *Aust. Occup. Ther. J* [Internet]. 2010 [cited 2021 Sep 04];57(5):293-300. Available from: <https://onlinelibrary.wiley.com/doi/10.1111/j.1440-1630.2009.00838.x> DOI: 10.1111/j.1440-1630.2009.00838.x

[8] Williamson M. A Change in Students' Perceptions of Peer and Faculty Attitudes to Rural Medicine following the Introduction of a Rural Health Rotation. *Int. J Family Med* [Internet]. 2014 [cited 2021 Sep 04]; Available from: <https://pubmed.ncbi.nlm.nih.gov/25243087/> DOI: 10.1155/2014/124708

[9] Williamson M, Gormley A. The new rural health curriculum at Dunedin School of Medicine: How has it influenced the attitudes of medical students to a career in rural general practice?. *NZ. Med. J* [Internet]. 2003 [cited 2021 Sep 04];116(1179):U537. Available from: https://www.researchgate.net/publication/9077587_The_new_rural_health_curriculum_at_Dunedin_School_of_Medicine_How_has_it_influenced_the_attitudes_of_medical_students_to_a_career_in_rural_general_practice

[10] Australian Medical Council. Standards for assessment and accreditation of primary medical programs. 2012, [cited 2021 Sep 04], Available from: https://www.amc.org.au/wpcontent/uploads/accreditation_recognition/primary-medical-education/Standards-for-Assessment-and-Accreditation-of-Primary-Medical-Programs-by-the-Australian-Medical-Council-2012.pdf. 15 Feb 2021.

[11] Playford D, Nicholson A, Riley G, Puddey I. Longitudinal rural clerkships: increased likelihood of more remote rural medical practice following graduation. *BMC Medical Education*. 2015;15(1)

[12] Greenhill J, Richards J, Mahoney S, Campbell N, Walters L. Transformative learning in medical education. *J Transform Educ*. 2017;16(1):58-75.

[13] Dixon J, Welch N. Researching the rural-metropolitan health differential using the 'social determinants of health'. *Aust J Rural Health*. 2000;8(5):254-260.

[14] Malatzky C, Bourke L. When the social meets health in rural Australia: confronting the disconnect. *Health Sociol Rev*. 2017;26(2):190-203

[15] Bell E, Walker J, Allen R, MacCarrick G, Albert E. Nonclinical rural and remote competencies: can they be defined? [Internet]. Royal College of Surgeons in Ireland; 2010 Available from: <https://hdl.handle.net/10779/rcsi.10786145.v1>

[16] Bourke L, Sheridan C, Russell U, Jones G, DeWitt D, Liaw ST. Developing a conceptual understanding of rural health practice. *Aust J Rural Health* 2004;12:181-6

[17] Hays R. Integration in medical education: what do we mean?. *Education for Primary Care*. 2013;24(3):151-152.

[18] Geffen L, Saunders N, Sefton A. Australian Graduate Medical schools. *Medical Journal of Australia*, 1994; 160:393 – 394

[19] Hays R, Sen Gupta T. Ruralising medical curricula: the importance of context in problem design. *Australian Journal of Rural Health*. 2003;11(1):15-17.

[20] Daly M, Perkins D, Kumar K, Roberts C, Moore M. What factors in rural and remote extended clinical placements may contribute to preparedness for practice from the perspective of students and clinicians?. *Medical Teacher*. 2013;35(11):900-907.

[21] Bailey, J., Pit, S. Medical students on long-term rural clinical placements and their perceptions of urban and rural internships: a qualitative study. *BMC Med Educ* 20, 188 (2020). <https://doi.org/10.1186/s12909-020-02103-7>

[22] Prout, S., Lin, I., Nattabi, B. et al. 'I could never have learned this in a lecture': transformative learning in rural health education. *Adv in Health Sci Educ [Internet]*. 2014 [cited 4 September 2021];19:147-159. Available from: <https://doi.org/10.1007/s10459-013-9467-3>

[23] Dunbabin J, McEwin K, Cameron I. Postgraduate medical placements in rural areas: their impact on the rural medical workforce. *Rural and Remote Health*. 2006.

[24] Birden H, Wilson I. Rural placements are effective for teaching medicine in Australia: evaluation of a cohort of students studying in rural placements. *Rural and Remote Health*. 2012.

[25] Department of Health. Review of Australian Government Health Workforce Programs: Health Education Strategies for Rural Distribution. 2013 [cited 2021 Sep 04], Available from: <https://www1.health.gov.au/internet/publications/publishing.nsf/Content/work-review-australian-government-health-workforce-programs-toc~chapter-4-addressing-health-workforce-shortages-regional-rural-remote-australia~chapter-4-health-education-strategies-rural-distribution>

[26] Department of Health. Rural Health Multidisciplinary Training (RHMT) Program Framework 2019-2020 [cited 2021 Sep 04], Available from: [https://www1.health.gov.au/internet/main/publishing.nsf/Content/75C46070F19CFF15CA257F7A000EC248/\\$File/5.%20Rural%20Health%20Multidisciplinary%20Training%20\(RHMT\)%20Program%20Framework%202019-2020%20-%20PDF%20version.pdf](https://www1.health.gov.au/internet/main/publishing.nsf/Content/75C46070F19CFF15CA257F7A000EC248/$File/5.%20Rural%20Health%20Multidisciplinary%20Training%20(RHMT)%20Program%20Framework%202019-2020%20-%20PDF%20version.pdf)

[27] Department of Health. Independent Evaluation of the Rural Health Multidisciplinary Training Program. 2020. [cited 2021 Sep 04], Available from: [https://www1.health.gov.au/internet/main/publishing.nsf/Content/6D694D865D7A1726CA2584E90077F238/\\$File/Independent%20Evaluation%20of%20the%20Rural%20Health%20Multidisciplinary%20Training%20Program.pdf](https://www1.health.gov.au/internet/main/publishing.nsf/Content/6D694D865D7A1726CA2584E90077F238/$File/Independent%20Evaluation%20of%20the%20Rural%20Health%20Multidisciplinary%20Training%20Program.pdf)

[28] Cosgrave, C. Factors determining a 'high-quality' student clinical placement experience in rural public health services. Findings from a Victorian study. 2018 [cited 2021 Sep 04], Available from: <https://goingruralhealth.com.au/wp-content/uploads/UoM-High-Quality-rural-placement-Report.pdf>

[29] About the NRHSN [Internet]. National Rural Health Student Network. [cited 2021 Sep 3]. Available from: <https://www.nrhsn.org.au/get-involved/about-us/about-the-nrhn/>

[30] TEDDY BEAR HOSPITAL [Internet]. Teddy Bear Hospital MUMUS. [cited 2021 Sep3]. Available from: <http://teddybearhospitalmonash.mumus.org/>

[31] Australian Government Department of Health. Budget 2021-22 Health Portfolio Budget Statements 2021 [Available from:

<https://www.health.gov.au/sites/default/files/documents/2021/05/budget-2021-22-portfolio-budget-statements-budget-2021-22-health-portfolio-budget-statements.pdf>.

[32] Young L, Kent L, Walters L. The John Flynn Placement Program: Evidence for repeated rural exposure for medical students. *The Australian journal of rural health*. 2011;19:147-53.

[33] Palanna K, Wellman D. John Flynn Placement Program National Post-Placement Report 1 July 2019 - 30 June 2020. Health Workforce Queensland. 2020.

[34] Eklom B. Inequities in research engagement between rural, remote and metropolitan health care providers [Internet]. Org.au. [cited 2021 Sep 3]. Available from: http://www.ruralhealth.org.au/15nrhc/sites/default/files/C7-1_Eklom.pdf

[35] Barclay L, Phillips A, Lyle D. Rural and remote health research: Does the investment match the need?. *Australian Journal of Rural Health* [Internet]. 2018 [cited 3 September 2021];26(2):74-79. Available from: <https://onlinelibrary.wiley.com/doi/full/10.1111/ajr.12429>

[36] Department of Health. Regional Training Hubs. 2019. [cited 2021 Sep 04]. Available from: <https://www1.health.gov.au/internet/main/publishing.nsf/Content/regional-training-hubs>

[37] O'Sullivan B, Cairns A, Gurney T. Exploring how to sustain 'place-based' rural health academic research for informing rural health systems: a qualitative investigation [Internet]. *Health Research Policy and Systems*. 2021 [cited 3 September 2021]. Available from: <https://health-policy-systems.biomedcentral.com/articles/10.1186/s12961-020-00608-7>

[38] Blair M. 2003. Training and education as a means of increasing equity in child health teaching of undergraduates. *Pediatrics* 112(3):747-748

[39] Watts L, Parker L, Scicluna H. Rural Ethics Ward Rounds: Enhancing medical students' ethical awareness in rural medicine. *Australian Journal of Rural Health*. 2013;21(2):128-129.

[40] Sanson-Fisher R, Williams N, Outram S. Health inequities: the need for action by schools of medicine. *Medical Teacher*. 2008;30(4):389-394.

[41] Strasser R, Hogenbirk J, Minore B, Marsh D, Berry S, McCready W et al. Transforming health professional education through social accountability: Canada's Northern Ontario School of Medicine. *Medical Teacher*. 2013;35(6):490-496.

[42] Strasser R, Lanphear J, McCready W, Topps M, Hunt D, Matte M. Canada's New Medical School: The Northern Ontario School of Medicine: Social Accountability Through Distributed Community Engaged Learning. *Academic Medicine*. 2009;84(10):1459-1464.

[43] Reeves J, Blakeman T, Freeman GK, Green LA, James PA, Lucassen P, et al. Generalist solutions to complex problems: generating practice-based evidence - the example of managing multi-morbidity. *BMC Fam Pract* [Internet]. 2013 [cited 2019 May 27];14:112.

[44] Winjen-Meijer M, van den Broek S, Koens F, ten Cate O. Vertical integration in medical education: the broader perspective. *BMC Med Educ* [Internet]. 2020 [cited

2021 Sep 04];509(2020):20. Available from:
<https://bmcmmededuc.biomedcentral.com/articles/10.1186/s12909-020-02433-6> DOI:
doi.org/10.1186/s12909-020-02433-6

[45] Rosenthal D, Worley P, Mugford B, Stagg P. Vertical integration of medical education: Riverland experience, South Australia. *Rural and Remote Health* [Internet]. 2004 [cited 2021 Sep 04];4(1):228. Available from:
<https://www.rrh.org.au/journal/article/228> DOI: 10.22605/RRH228

[46] Worley PS, Kitto P. A hypothetical model of the financial impact of student attachment on rural general practice. *Rural and Remote Health*. 1. [Online], 2001: 83. [cited 2021 Sep 04], Available from: <http://rrh.org.au>

[47] University of Newcastle, Department of Rural Health. North west NSW Regional Training Hub. [cited 2021 Sep 04]. Available from:
<https://www.newcastle.edu.au/faculty/health-medicine/department-of-rural-health/regional-training-hub>

[48] UNSW Medicine. Regional Training Hubs. 2012. [cited 2021 Sep 04]. Available from: <https://rcs.med.unsw.edu.au/regional-training-hubs>

[49] Torda A, Velan G, Perkovic V. The impact of the COVID -19 pandemic on medical education. *Medical Journal of Australia*. 2020;213(4):188.

[50] Federation of Rural Australian Medical Educators. RTH Presentations. [cited 2021 Sep 04]. Available from:
<https://ausframe.org/wp-content/uploads/Virtual-Meeting-16-17-Sept-2020-RTH-Presentations-rs.pdf>

[51] KBC Australia. Independent Evaluation of the Rural Health Multidisciplinary Training Program [Internet]. 2021 [cited 2021 Oct 01]. Accessed from
[https://www1.health.gov.au/internet/main/publishing.nsf/Content/6D694D865D7A1726CA2584E90077F238/\\$File/Final%20Report%20-%20Rural%20Health%20Multidisciplinary%20Training%20\(RHMT\)%20Program%20-%20Evaluation.pdf](https://www1.health.gov.au/internet/main/publishing.nsf/Content/6D694D865D7A1726CA2584E90077F238/$File/Final%20Report%20-%20Rural%20Health%20Multidisciplinary%20Training%20(RHMT)%20Program%20-%20Evaluation.pdf)

[52] Ypinazar V, Margolis S. PRELIMINARY REPORT Clinical simulators: applications and implications for rural medical education. *Rural and Remote Health* 2006 [Internet]. 2021 [cited 2021 Sep 04];6(2):527. Available from:
<https://www.rrh.org.au/journal/article/527>

[53] Clinical Simulation Centre Mildura [Internet]. *Rural Health*. 2021 [cited 4 September 2021]. Available from:
<https://www.monash.edu/medicine/srh/simulation-learning2/simulation-centre>

[54] McDonald J. Simulation Training for Rural Health Practitioners: a Transformative Approach [Internet]. 6th National Rural Health Conference Canberra. 2021 [cited 2021 Sep 04]. Available from: https://www.ruralhealth.org.au/papers/6_G_1_1.pdf

[55] Halaas G, Zink T, Brooks K, Miller J. Clinical skills day: preparing third year medical students for their rural rotation. *Rural and Remote Health*. 2007;.

[56] Moore M, Bolte K, Bennett P. Innovative training for rural medical students. *The Clinical Teacher*. 2012;9(4):238-242.

[57] Seymour-Walsh A. Adapting to a new reality: COVID-19 coronavirus and online education in the health professions [Internet]. Rural and Remote Health. 2020 [cited 2021 Sep 04]. Available from: <https://www.rrh.org.au/journal/article/6000>

[58] Birden H, Page S. Teaching by videoconference: a commentary on best practice for rural education in health professions [Internet]. Rural and Remote Health. 2005 [cited 2021 Sep 04];5: 356. Available from <https://doi.org/10.22605/RRH356>

[59] Jumreornvong O. Telemedicine and Medical Education in the Age of COVID-19. Wolters Kluwer Public Health Emergency Collection [Internet]. 2020 [cited 2021 Sep 04];. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7489227/>

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