

Chapter 4.1.2

OPTIMISING RURAL MEDICAL LEARNING

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Introduction

Approaches to rural medical education can be characterised in many ways. One significant dichotomy is the tension between *all* students receiving some rural experience versus providing *some* students with a longer encounter. Shorter terms provide a snapshot of rural practice and allow students who have had little or no previous rural experience to become acquainted with, and hopefully inspired to continue with, rural practice. The longer longitudinal clerkships,¹ on the other hand, usually involve twelve-month placements and are usually targeted at students with a rural background or students who have an expressed interest in rural practice. This chapter concentrates on the shorter rural exposure and how to maximise the benefit of this experience.

Prior preparation prevents poor performance is a truism in many fields. It is particularly so for student immersion in rural areas.

In preparation for rural medical education, the emphasis is often on the orientation to the town and practice and how to provide appropriate and culturally sensitive care in rural communities (1). While this is important, having the skills to provide a service (even if at student level) and to become part of the rural health care team is also a vital part of preparation. While adequate preparation is self-evident as a prerequisite to those fully qualified for independent practice, it is just as true for those on the continuum of training for rural practice. Making the students confident and competent for rural practice ensures that the skills applied are more automatic, rather than cognitive.

¹ A clerkship – or rotation or block – is a structured clinical learning opportunity which forms part of academic requirements that have to be met.

Learning sites

Rural placements are good places to learn (2) as they provide the student with a high workload, a wide variety of presentations, treatments and interventions, and a more 'hands on' experience whereby students develop greater procedural competence (3). With workforce shortages, rural preceptors² (supervisors) are busy and often lack the time to do the initial preparatory teaching, especially in the more tactile psychomotor skills. These skills are best taught in small groups with the use of simulators, simulated patient models or animal models (4). The rural practice then provides the environment for these to be refined, rather than learned.

Like all learning environments, universities provide varied experiences which are compounded by students having different learning styles. There is therefore a need to ensure a reliably uniform experience for students, as well as to be familiar with the characteristics of adult learners (5). It is important that students feel assured that their skills are sufficient and will hold them in good stead for the present and future learning environments; that they have both the competence and confidence to face a challenging learning environment and to get the most out of it.

It is also important for the busy preceptor to be able to do what they do best, which is to develop and fine tune the students' skills in the clinical environment (6).

What's the evidence?

Many studies have looked at what influences students to take up a career in rural practice. Factors that influence future careers include selection, rural background, financial and lifestyle considerations, community-based teaching and the curriculum (7-10).

Most rural doctors are from urban background (11). Jones et al (12) found that intentions towards generalist practice influenced intentions to take up rural practice. These intentions may be well formed from an early stage in some students, but they evolve more slowly for many students as many students have no experience of rural life or rural practice. This is true of the majority of medical schools.

² The term 'preceptor' is defined as 'an experienced practitioner who teaches, instructs, supervises and serves as a role model for a student for a set period of time, in a formalised programme'.

In shorter rural experiences, Tolhurst et al (11) found that, while exposure to rural practice depended on the interaction between student and location factors, this exposure provided students with knowledge of rural locations and helped them to identify a suitable rural location for practice. This exposure generated an interest in rural practice among urban background students and may increase the number of students who become interested in rural practice and who decide eventually to enter rural practice. Research also indicates that exposure to rural medicine placements in the pre-clinical years is a key predictor in medical graduates choosing a career in rural medicine (13,14,15).

Over recent years, almost all governments worldwide have increased medical student numbers. While some of this has been sufficiently supported, much of this has meant placing a strain on the ability of preceptors to cope (16). While the foundations of medical practice are vitally important, most doctors will attest to need for clinical experience to consolidate, contextualise and complement this learning. The quality of this environment is vital to future practice and in the decision of students with regard to future careers.

Many universities have required short exposures comprising of only days or weeks. In Australia for instance, the scheme such as the John Flynn Placement Programme allows repeated short exposures. The Rural Undergraduate Support and Co-ordination Programme (RUSC) is an initiative developed and funded by the Department of Health and Ageing in order to expose medical students to short placements to encourage them to adopt a career in rural practice. RUSC programme policy mandates that medical students undertake a minimum of four weeks structured residential placement (17).

While there is considerable evidence that longer exposures are more likely to lead to future rural practice, there is little evidence to suggest the gradation of rural intent with time. The authors' experience, confirmed anecdotally with others in rural practice, is that most students become confident members of the rural health team by four to six weeks. This would seem to be the minimum term length for effective skills improvement.

An illustrative anecdote:**University of Queensland's Rural and Remote Medicine rotation**

Third year medical students of the M.B., B.S. programme (four-year postgraduate course) at the University of Queensland whose studies are supported by the Australian government are required to undertake the 'Medicine in Society Stream A: Rural and Remote Medicine' rotation (RMR). During this rotation students are immersed in rural practice for a six-week placement, usually in a rural general practice or rural hospital.

The aim of the RMR is to provide a safe, high quality experience of rural medicine for all domestic third year medical students. It is one of five rotations within the academic year, and approximately 70 students participate per rotation. While the rotation is a valuable learning experience, the preceptors have noted that students' skill levels varied widely, particularly early in their first clinical year (doing rotation one and two).

Because it was recognised as vitally important that students be adequately prepared and 'work ready' for the rural placement (18), a structured orientation programme, comprising lectures and procedural workshops, was held in three locations (Rockhampton, Wide Bay and Toowoomba) in the first week of the RMR. This enabled skills practice and ensured student concerns and expectations about what they can or cannot do were allayed.

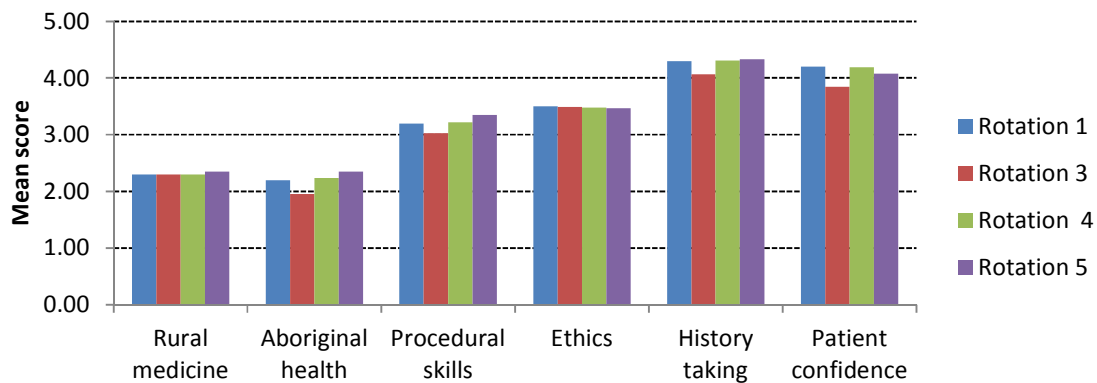
Reviewing the RMR orientation programme

Over the years, the orientation programme and the clinical placement has been systematically reviewed and revised in response to student and preceptor feedback.

In 2012, approximately 300 third year medical students who were enrolled in the Medicine in Society rotation Stream A: Rural and Remote Medicine completed two questionnaires (with the exception of those in rotation 2, where students were asked to complete an evaluation for the whole of Medical school instead). One questionnaire was completed at the end of the orientation programme - for which there was an 89% response rate - and the other at the completion of the rural placement - which had a 84% response rate. Raw scores on the original five-point scale (1 = 'not at all' to 5 = 'very much') were converted to mean item scores.

Students in each of the rotations were asked in the orientation programme questionnaire to indicate their level of experience in, or exposure to, six aspects of medical practice prior to this orientation week (Figure 1). For each of the rotations the students' levels of exposure to all aspects was very similar, despite increasing clinical experience as the academic year progressed. The consistently low level of experience/exposure to rural medicine, aboriginal health and procedural skills emphasised the need to ensure that the rural medicine orientation programme intensively prepared the students on these aspects for their rural placement.

Figure 1:
Indication student level of experience in, or exposure to, six aspects of medical practice



During the orientation programme students participate in a number of lectures and workshop sessions. These sessions were initially determined in consultation with practicing rural preceptors, with a view to identifying aspects of rural medicine in which students need to have a level of proficiency. This is important as the busy rural preceptors take a predominate role in teaching students: 47% of students received the most teaching attention from their main preceptor, while 25% were taught by secondary preceptors. The remainder of the teaching was being carried out by other staff.

The teaching effectiveness of the presenters and perceived usefulness of the orientation programme sessions were measured respectively after orientation and at the end of the placement. Table 1 presents the overall rotation mean usefulness scores for each session, with a higher mean indicating greater perceived value of a session.

Table 1:
**Comparison of orientation and placement programme
 questionnaire results**

Orientation sessions	Orientation Program			Placement Program		
	n	% rated each item as either some, very or extremely valuable	Mean	n	% rated each item as either some, very or extremely valuable	Mean
Introduction to rural and remote medicine rotation	234	76.9	3.82	269	82.2	3.07
Rural communities and rural medicine	235	80.9	3.87	270	81.9	3.07
Introduction to Indigenous health	237	80.6	4	268	70.1	2.98
Resuscitation of critical ill / injured patient	234	89.7	4.15	269	92.6	3.74
Applied trauma management	235	89.4	4.18	270	94.1	3.75
Tropical & rural diseases	236	89.8	4.22	269	88.1	3.58
Toxicology	220	84.5	4.02	262	86.6	3.39
Dermatology	232	82.8	4.06	269	93.3	3.75
Musculoskeletal workshop	237	85.7	4.16	266	87.2	3.51
Interpret x-ray	177	65.7	3.63	251	83.3	3.45
Interpreting ECGs	229	77.3	3.91	268	86.6	3.51
Excision/Suturing	237	92.8	4.39	269	97	4.41
Insertion chest drains	237	93.7	4.38	269	81.5	3.97
Insertion of intraosseous	235	96.2	4.43	269	81	3.47
Surgical scrubbing	190	69.5	3.76	267	82.4	3.5
Insertion IDC	210	81.4	4	270	84.8	3.48
Plastering technique workshop	224	93.8	4.36	267	91.8	3.49
Airway Management	234	89.3	4.27	270	94.8	3.82
Basic Life Support /Advanced Life Support	220	91.2	4.25	269	94.4	3.86

The orientation programme results (columns 1-3) demonstrate that the students rated the presenters of the orientation programme sessions very highly.

Over time, and in response to poorer earlier results, the focus of the programme was changed where possible to hands-on workshops and interactive sessions. These took into consideration that as adult learners the students would want to be able to apply whatever knowledge and skills they gained in order to build a bridge between the skills laboratory learning and the real life patient setting (19). The 2012 results highlight the success of this modification.

Retrospective review of orientation

The retrospective review of orientation sessions after the placement was also evaluated in relation to preparing them for their rural placement.

Column 7 in Table 1 above presents the mean scores for each overall session with a higher mean indicating greater perceived value of a session in preparing them for the rural placement. While the results are less impressive than the preparatory score this may in fact reflect that the skills had not been able to be utilised in the rotation placement. Students mentioned that it was “difficult to remember specific workshops seven weeks ago; it was a good week however” and that “the things I found less useful were just because I was not exposed to these things during my placement”. Also I “didn't get to do much of these on my placement but they were valuable to learn / revise” and “some of the sessions such as tropical disease and indigenous communities were not particularly relevant to my placement”.

Column 6 in Table 1 shows the proportion of students who across these collapsed categories rated each item as either *some*, *very* or *extremely valuable* as preparation for placement. Qualitative data indicated that students considered that “[t]he orientation was very useful in preparing me for my rural rotation”. It was “[w]ell organised and interactive” and “[g]reat procedural skills and genuine advice was given to students about the rural perspective”. Another student commented that they “had the opportunity to resus a snake bite victim so I found orientation very helpful”.

Students were asked if they were able to apply the learnings from the orientation programme while on their placement. Using a scale of 1 (*strongly disagree*) to 5 (*strongly agree*), categories were then collapsed into D = *disagree*, U = *undecided* and A = *agree*. Eighty one per cent of students across the collapsed categories of *agreed* and *strongly agreed* indicated that these sessions were useful.

After their clinical placement, students were asked to indicate their level of agreement with statements about learning outcomes for the rural rotation, using the same 1 – 5 scale. Mean item scores were determined for each statement and are detailed in Table 2 below.

Table 2:
Indicated level of agreement with
statements about learning outcomes for the rural rotation

Learning Outcomes	Mean
I was given clear guidelines regarding what was expected of me (e.g. learning objectives, assessment)	3.55
I developed increased confidence in my clinical ability	4.27
I gained an appreciation of the greater depth of clinical responsibility inherent in rural practice	4.22
I gained an understanding of the significance of professional ethics among rural doctors, particularly in relation to confidentiality in the local community	4.00
I practiced my procedural skills	4.40
I acquired experience in consultation skills	4.33
I gained experience in the diagnosis and management of common rural health practice problems	4.05
I observed the diversity of conditions seen in rural practice	3.92
I increased my knowledge of Indigenous culture and the impact of Indigenous heritage on health	2.83
I gained an understanding of the clinical reasoning required to balance the benefits of transfer with the benefits of local treatment	4.05
I developed an understanding of inter-professional health care and services in the rural environment	4.02

Over each of the rotations, students constantly agreed with the following statements:

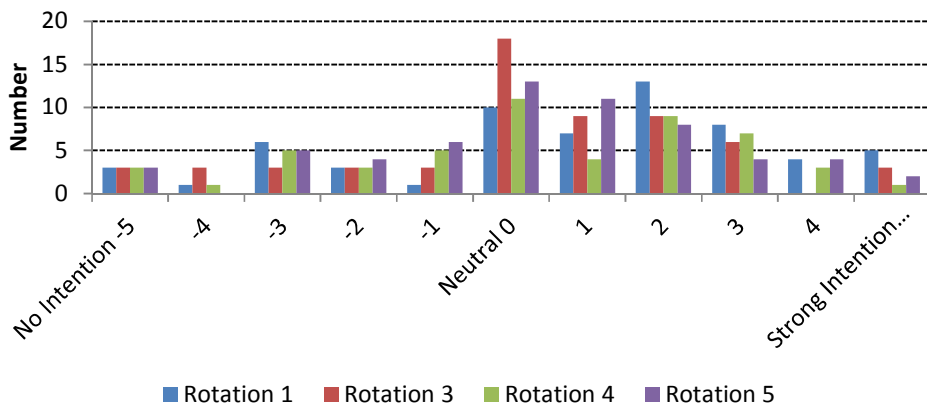
- *'I practiced my procedural skills'* (mean score range 4.59-4.25);
- *'I gained an appreciation of the greater depth of clinical responsibility inherent in rural practice'* (mean score range 4.52-4.09); and
- *'I developed increased confidence in my clinical ability'* (mean score range 4.45-4.07).

The mean scores for these statements for the four rotations have consistently been over 4.00.

Reviewing the effect on rural intent

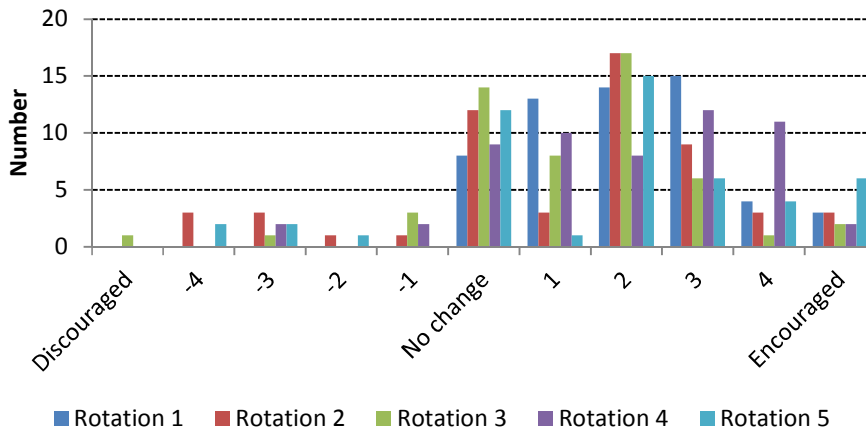
Prior to their rural placement, students were asked to indicate their present level of intention to pursue a medical career in a rural or remote location, using a scale of -5 = 'no intention' to +5 = 'strong intention', with a midpoint of 0 = 'not sure' - and were invited to comment. Figure 2 shows the distribution of student responses across the 11 original categories highlighting quite a number of students with either a neutral or negative intention.

Figure 2:
At the present time what is your level of intention in pursuing a medical career in a rural or remote location sometime in the future?



Students were then asked to indicate how the rural placement had altered their intention to pursue a medical career in a rural or remote location. The original scale was -5 = 'discouraged' to +5 = 'encouraged', with a mid-point of 0 = 'no change'. Figure 3 shows the distribution of student responses across the 11 original categories.

Figure 3:
How did the Rural Medicine placement alter your intention to pursue a career in rural or remote locations?



Over the five rotations, 193 of 270 students indicated that they were, to varying degrees, encouraged to pursue a medical career in a rural or remote location. There was no change in the intention of 55 students, however, while a few students (n=22) indicated that the placement had to some degree discouraged them from pursuing a career in rural medicine.

As indicated above, one limitation of this study is the use of intention to take up rural practice rather than actual behaviour as the outcome variable. This is the best available surrogate until the longitudinal data are available to enable us to monitor the relationship between early stated intentions, medical education experiences, and actual behaviour (12).

Practice pearls

What to do

- All students should have a rural term.
- Longitudinal placements for a select few miss the students who don't know what they are missing.
- Prepare students for all rural terms, no matter how long.
- Prior preparation for shorter terms is essential.
- Make the rural term a key procedural term in the medical school curriculum.

- Ensure that the skills taught are relevant to the rural environment.
- Psychomotor and procedural skills are key components.
- Target what preceptors want taught.
- Orientate to rural culture not just indigenous culture.
- Challenge the stereotypes.
- Rural role models important.

What not to do

- Don't have terms shorter than four weeks.
- Don't assume teaching capacity is static – find innovative ways to build it.
- Avoid context-free teachers.
- Avoid too many lectures.

Broader applicability

Rural short-term placements have become the poorer cousin of extended rural placements. With evidence that longer placements are more likely to lead to retention, these have been seen as a better use of resources. The longer placements have also been seen as a commitment by students to a rural intent and a future rural career. Many students are attracted to extended rural placements by the reports of more one-to-one teaching and incentives such as free accommodation. Preceptors are attracted to these students because they stay for longer and are embedded into the rural team.

On the other hand, shorter terms offer all students a chance to experience rural practice in a similar way to the way they experience other specialties. This can open their eyes to this form of practice and its benefits. Shorter terms can place a higher teaching workload on preceptors but it can be seen that prior preparation to placements enables the student to become more quickly a member of the local team and is effective educationally and in terms of attracting future workforce.

Conclusion

By targeting what is required for rural practice and incorporating what preceptors want taught in the orientation programme the University of Queensland, Discipline of Rural and Remote Medicine has provided a very useful educational component of the curriculum and had positive effects on student's attitudes to rural practice.

Short placements need adequate student preparation in not only cultural aspects but in practical skills if they are to be successful. While there are considerable gaps in longitudinal evidence supporting the effectiveness of Australian undergraduate rural curricula, short-term placements that are designed to increase the numbers of medical students choosing rural practice (20) can be effective.

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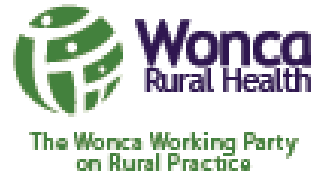
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