

## Chapter 4.1.1

### EXCELLENCE IN 'BUSH MEDICAL SCHOOLS': THE VALUE OF RURAL EDUCATION

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#### Introduction

It was said in my home town of Glasgow that the quality of care in general practice was inversely proportional to the distance to the nearest teaching hospital. Certainly it has always been noted that practitioners who work in rural and remote areas develop knowledge and skills which are widely admired. However it was only when shortages of such skilled physicians<sup>1</sup> began to appear that such people and places became regarded as a source of medical education.

This chapter will describe how medical education in rural and remote locations in Western Australia began, in a very short time, to provide an equivalent quality of undergraduate medical education to that provided by elite specialist teaching hospitals. It is hoped that the lessons learned in this exercise will encourage the development of the CLERC approach (Clinical Learning Embedded in Rural Communities,) where the key approach is not the transfer of excellence from the centre to the periphery, but the recognition that academic excellence is possible in all settings, provided that appropriate support is provided.

#### What's the evidence?

Whenever there is a departure from the usual strategies for undergraduate medical education, great care is taken to ensure that the new approach results in no harm to the student in terms of their performance compared to those who were educated traditionally. Establishing a rural curriculum is, however, much more than merely adding to the geographical possibilities in teaching. The ultimate point of the exercise is to ensure that graduating students seek a future career in rural medicine - making statistical differences in marks between rural and urban cohorts

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<sup>1</sup> A 'physician' here is another term for 'doctor' or general practitioner, while in countries like South Africa and Australia, a 'physician' is a specialist in internal medicine.

insufficient evidence for the success of such a venture. However, both the quantitative and qualitative nature of the evaluation carried out for the first five years of the CLERC method do suggest that the principles followed have promoted promising trends in the approach.

### ***Evidence about process***

The setting up of the West Australian model and its evaluation has been fully described elsewhere (1,2). Five years of action research and constant comparative analysis were used to identify components that had contributed to quality delivery of teaching and learning effectiveness at multiple sites which had considerable clinical and environmental diversity. The conclusion was that good quality sites had the following characteristics:

1. 70% of each week as clinical time;
2. a structured, clearly articulated and disciplinary focused academic programme;
3. a modified problem-based learning programme;
4. students who learned clinically in pairs, and
5. a generalist, rather than specialist, focus.

### **The human factor: anxieties and difficulties**

Initially there had been great anxiety in the student body, even where the students were highly motivated to join the new programme (3). In the 2003 evaluation, the main source of the anxiety arose from concerns that the teachers in the rural sites would be unable to deliver an equivalent programme to that given on the main campus. This anxiety disappeared by the second year and a later evaluation four years on (4), showed that, while the students were generally satisfied with the programme, in some sites both students and teachers felt some frustration, largely because of the intimacy of the relationship. Students were now complaining of getting too much formal tuition! One student stated

*“It bugged me a lot . . . getting a lot of formal teaching, between 12 and 15 hours a week - and I didn't think we were getting much out of the scattered approach to the content and so I felt I was just waiting to get out to see the patients.”*

There were also issues arising from living together.

*“First thing he does in the morning is turn on the TV, it sends me crackers.”*

The teachers had left behind the romantic attachment to teaching and had begun to voice the same attitudes to students as might be heard in the base medical school.

*“It’s been very interesting, a few learning curves and a few problems ... some of the students are a challenge ... In general they are always late, often miss sessions, don’t turn up to clinical sessions and despite repeatedly asking, things are not done. In tutes they are quite disruptive, loud, a bunch of high school kids on camp ... There are two or three bordering on psychological problems which has made me feel quite down at the end of the week. They are quite belligerent.”*

The reality is that teaching and learning in a remote rural community is qualitatively different from the established norms. The clear intention of the programme was to establish longitudinal clinical clerkships<sup>2</sup> in areas of workforce shortage and difficulty - all of which were a long way from the base campus - so it is not surprising that the students had some difficulties. Likewise expecting academic staff cope with these highly charged issues - when only five of the 29 staff had any experience of undergraduate teaching - was a big ask. It was a difficult journey at times, as well as a satisfying one (5). Argyris has stated that ‘[o]ne of the major difficulties of action science rests in the defensiveness of human beings; their ability to produce self-fulfilling and self-sealing systems of action and justification, often with patterns of escalating error’ (6).

## **Evaluation**

Qualitative evaluation can be difficult, especially where such faculty and student difficulties are identified. Qualitative issues were identified in the 1997 evaluation of the Dundee Ready Education Environment Measure (DREEM) (7) – a survey containing 50 validated questions, trialled across multiple cultures and countries and found to be valid (8).

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<sup>2</sup> A clerkship – or rotation or block – is a structured clinical learning opportunity which forms part of academic requirements that have to be met.

Other qualitative issues demonstrated included the following:

- Students had a preference for long rather than short rotations (9).
- There were no significant differences in students' perceptions of their learning environment in the teaching of obstetrics and gynaecology between the tertiary hospital, combined programmes involving a tertiary and secondary metropolitan hospital, rural sites with a population of more than 25 000, and rural sites with a population less than 25 000 people. In the rural sites, total DREEM scores were not influenced by the presence or absence of a resident specialist obstetrician/ gynaecologist (10).
- Learning was more than marks (11) i.e. the rural experience was experienced as offering a lot more than the city training. Students moved from theoretical knowledge (knowing what they were taught) to a new way of experiential knowing that had consequences for their subsequent learning, clinical behaviour and attitudes.
- Three major reasons for coming to the Rural Clinical School of Western Australia (RCSWA) were identified (12), with most students giving more than one reason. Over 80% of the students reported that they expected to receive broader and better clinical and academic learning opportunities in the rural setting. Three-quarters of the students chose the RCSWA in order to have the chance to have a year experiencing rural life, while one third of the students came for personal development and increased life experience.

### ***Evidence about outcome***

From 2002 to 2007, 245 students enrolled for a whole academic year in the programme and 243 (99%) completed the course in the rural site. One student relocated to the city because of family illness and only one student left the School in mid-year. Two students failed the end course assessment and both repeated the year successfully, one in the same rural site.

There were many concerns expressed as to whether students at smaller sites, where specialist staff were non-resident, would have a less fruitful academic environment and thus perform worse in the end-course assessment. A study was carried out to assess whether this was the case (13). From 2003 to 2006, the students from the metropolitan site and the rural sites sat the same end-course assessment. The overall marks for rural students showed a statistically significant difference from metro students as shown in Table 1. There was no significant difference in the marks between larger and smaller sites but students at small sites were more satisfied with their educational experience than those at the larger sites.

**Table 1:  
Comparison of student examination marks  
according to site size and location, 2003-2006**

Site	Number of students	Final Mark (%)	Rural v Metro P value
Metro	342	71.0	
Large rural (>20K)	68	72.3	<0.05
Small rural (<20K)	48	72.4	<0.05

### Recruitment to rural practice

Evidence of an increase in the recruitment of rural clinical school graduates to rural practice is the main outcome against which the considerable investment should be judged. Two studies had indicated early promise of success.

An analysis of the 2003 and 2004 cohorts (14) showed RCSWA graduates were three times more likely to take rural internship positions as their metropolitan colleagues. The same study of ongoing postgraduate contact with the RCSWA cohort has identified that 23 of 28 graduates had chosen to undertake at least some time in the country during their PGY1–3 years<sup>3</sup>.

<sup>3</sup> This is an Australasian convention for the first three postgraduate years after graduation i.e. PGY1, PGY2, PGY3.

A further paper (15) followed nearly 500 graduates by name through to their PGY1 and PGY2 workforce decisions. It examined postgraduate work after an undergraduate clinical year spent in the RCSWA, compared with six weeks Rural Undergraduate Support and Co-ordination (RUSC)-funded rural experience in a six-year undergraduate medical course. Rural background, sex and whether they were holding a Rural Australian Medical Undergraduate Scholarship (RAMUS) were taken into account. The study found that participation in the RCSWA programme was associated with significantly more postgraduate year one rural work than RUSC placement alone (OR = 1.5, CI 0.97–2.38). The RCSWA workforce effect increased at postgraduate year two (OR = 3.0, CI 1.6484 to 5.5935 relative to RUSC). Rural-origin practitioners who chose the RCSWA programme were more likely than other rural-origin practitioners to take rural rotations in both postgraduate years. RAMUS holders' choice in relation to the RCSWA programme predicted later rural work.

A recent study has been published (16) of graduates from the University of Western Australia (who were in Year 5 of medical school between 2002 and 2009) which compares the current work location (March–June 2013) of those who participated in the RCSWA (RCSWA graduates) and those who did not (controls). The location of 1,017 eligible graduates (91,1%) could be traced. Of 258 RCSWA graduates, 42 (16,3%) were working rurally compared with 36 of 759 controls (4,7%). Of 195 RCSWA graduates from urban backgrounds, 29 (14,9%) were working rurally compared with 26 of 691 urban background controls (3,8%). Of 63 rural-background RCSWA graduates, 13 (20,6%) were working rurally, compared with 10 of 68 rural-background controls (14,7%).

## **Practice pearls**

### ***Key issues***

#### *Efficient delivery of a generalist curriculum*

The circumstances leading to the setting up of the West Australian model were unique in that the founding head was a senior generalist academic who had held Chairs in three countries but who had returned to full-time rural practice for three years. Working in that environment, he came to realise that rural practice was as fertile and fulfilling an academic environment as a teaching hospital. The translation of the traditional modular fifth year curriculum at the University of Western Australia presented an opportunity to exploit the unique setting in the clinical education of the students.

In the first instance it was decided to plan a parallel curriculum using the same subjects and methods as the central campus, but weaving the individual modules into a year-long course. The disciplines taught were internal medicine, paediatrics, women's health, general practice, musculoskeletal medicine and oncology. A pilot 14-week course with seven students commenced in 2002 with general practice and women's health agreeing to combine their courses.

From 2003 to 2007, all the courses were taught at rural and remote sites across the state of Western Australia. Students lived and worked in ten different sites in groups of three to ten, with some sent as far as 2 400 km and others only 200 km. The host towns range from 4 500 to 36 000 in population. Strong leadership was required to ensure that all courses were taught at the remote sites. A total of 245 students completed the clerkship.

After four years, with the addition of students from a new medical school, this was changed to an integrated curriculum in rural and remote medicine, which both schools recognise as equivalent to their urban curriculum. The teaching was based around clinical work according to a 7+3+1 formula – i.e. in one week the students were expected to work 11 half days of which 7 were clinical sessions, 3 were teaching sessions and 1 was personal administration.

#### *Faculty development of locally resident health professionals*

It was originally intended that there would be four sites, based in locations with large hospitals, but there are now 13 sites, some of which have quite small populations.

All sites have local co-ordinators with university appointments at the level of associate professor or above. Quarterly co-ordinator meetings allowed discussion and feedback on curriculum but there is local autonomy on delivery, according to local conditions. Most co-ordinators are generalists but a minority are specialists.

#### *Student selection, welfare and supervision*

All students were selected through interviews involving co-ordinators. Interest in rural health and evidence of preference for self-directed learning were factors.

Students were accommodated free of charge in households of three to six. Those with cars could have them transported to sites. Four-wheel drive vehicles were available and driving instruction was given. All sites had internet connections and cell phone rentals were subsidised.

Integration in the local community was encouraged through sporting groups and local part-time employment.

#### *Quantitative and qualitative evaluation*

Because we were teaching the same clinical curriculum as was taught on the main campus, it was important in the beginning to benchmark the process with the city-based departments. As a result, the students returned to the Medical School to sit the same examinations as their colleagues for the first four years. We also followed the same assessments as the discipline-based courses.

At the same time we were fortunate in having a qualitative evaluation of each student and co-ordinator which identified, indeed uncovered, issues which might not normally be described. This process has been fully described by Denz-Penhey and Murdoch (4). Eventually this costly exercise was replaced by the completion of the Dundee Ready Education Environment Measure (DREEM) which was found to identify the same issues more efficiently.

#### *Support for the process from institution and community*

There was universal support for the CLERC programme from the host institution, largely because the initiative was well funded and because it came at a time when student numbers were expanding which meant that directing students to rural teaching did not come at any cost to individual discipline teaching. The communities were equally supportive because the model was seen not only as a way of recruiting doctors for the future but as a way of attracting personnel and therefore improving present health services.

***What to do***

- Select sites carefully and ensure that there is enough clinical activity to support the curriculum.
- Ensure buy-in from health services, local health professionals and communities.
- Look after the students and provide them with comfortable low-cost accommodation and telephone and internet access.
- Ensure that local co-ordinators are trained and fully aware of the medical school curriculum.
- Encourage visits and internet contact from central specialist teachers especially in the first year of operation.
- Benchmark curriculum and assessment content against the parallel course.

***What not to do***

- Don't have less than three students at each location.
- Don't allow frequent absences from the rural site.
- Don't tolerate claims from central specialist disciplines that there are topics which cannot be taught outside a large hospital.
- Don't allow fly-in/fly-out teachers or students.

**Discussion and conclusion**

The CLERC programme in the RCSWA has provided an educationally effective high quality model for teaching and learning health sciences in rural and remote Western Australia. The programme provides an integrated method with a broad case-based teaching model underpinned by strong educational technology, a unified assessment system, and a developing academic expertise that is in contact not only within the two universities that contribute students, but also into the wider national and international educational circles. Its academic results speak for themselves. CLERC is demonstrated to be academically excellent in teaching essential medical knowledge and skills, as well as enthusing students about their clinical experience.

The programme moves from strength to strength as it is embedded in local communities, including those of Aboriginal people whose role as teachers and assessors is still being explored. The intellectual capital being established in this 'bush medical school' is ready to exponentially spread into pre-vocational, collegial and postgraduate education, with substantive health department endorsement. This will progress through its own undergraduate students who are requesting country

practice placements as graduates, and through doctors who are eager to join the teaching and learning team.

The main remaining questions concern the broader applicability and implementation of what is admittedly an expensive form of medical education. Recently Walsh has drawn attention to the increased costs in travel and accommodation, tutor support, information technology and pastoral support which such programmes undoubtedly involve. However he points out that if such strategies succeed in attracting more medical graduates to work in rural areas, 'it is likely that the initial investment in the programme would be returned many fold' (17). The fact that we have demonstrated an effect in attracting graduates of our programme to return in greater numbers to rural and remote Australia makes us confident that this investment has been a wise one.

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