

Integrated rural placements maximise medical student learning

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Background

The James Cook University Bachelor of Medicine Bachelor of Surgery (MBBS) program offered through the College of Medicine and Dentistry is a six-year full time undergraduate program of study which places a special emphasis on rural, remote and Indigenous health and tropical medicine and the health of under-served populations. Students undertake a minimum of 20 weeks of rural placement during their study: four weeks in Year 2, eight weeks in Year 4 and eight weeks in Year 6.

The sixth and final year of the course is a 'student intern' year during which the students take an active role in the health care team to which they are attached. This has particular relevance in rural practice where small well integrated teams work closely together and where the 'student interns' are able to become key members of the team. Since its inception, the Rural Internship has received positive evaluations from students who have stated that their confidence levels grew significantly while working at the rural site due to increased self-efficacy and transformative learning experiences^{1,2}.

Correctives

The exit written and clinical exam for the MBBS program is held at the end of Year 5. This ensures that students in the final year of the program are able to focus fully on developing the skills of interns during the clinical rotations they undertake in Year 6, whilst having predominantly work place based assessments

There are a few students each year who pass the Year 5 exams but who have identified weaknesses in a particular discipline area eg medicine or surgery or general practice. These weaknesses are identified through combining student performance data in Year 5 from their assessment during each clinical placement undertaken in the year, with their performance in the Year 5 exams.

Students who have passed the Year 5 integrated exams and have been identified with particular weaknesses in one or more disciplines are allowed to progress to Year 6 but are required to undertake a 'corrective' term in the area/s of weakness. The corrective term takes place in the student's elective term. An individual learning plan is developed with students undertaking the corrective and each student is supervised by an experienced clinician from the appropriate discipline. The correctives are usually undertaken at the students' home Clinical School in the public hospital facility.

Integrated correctives

In 2014 a trial of integrated correctives was undertaken in selected rural sites. The integrated corrective was designed when it was noted that several students achieved poorly in the clinical assessment across several of the Year 5 disciplines of medicine, surgery, child and adolescent health, reproductive and neonatal health, mental health and general practice. It would be impractical to design correctives across these discipline areas in a large hospital setting. The aim behind the trial was to determine whether students undertaking integrative correctives in rural settings could gain the skills and confidence across a number of discipline areas.

Sites chosen

Sites were selected based on having experienced clinical teachers, other health students from a range of disciplines, and students at varying stages of their training including undergraduate, intern, junior doctor and registrar. This fitted the concept of a teaching health service as described by Sen Gupta, Murray, Beeton, Farlow, Jukka and Coventry³.

The sites selected were Cooktown (1 student), Innisfail (3 students), Atherton (1 student), Mareeba (1 student) and Proserpine (1 student). Students were matched with the rural site depending on the timing of their integrated corrective and availability of a position at the site.

Student transport needs were also considered. All students were housed rent free in university owned accommodation.

Students

Seven (7) students were asked to undertake an integrated corrective term of either four (2 students) or eight weeks (5 students). There were five female and two male students. Four of the female students were international students for whom English was not their first language.

Outcomes

Student reported outcomes

Following completion of Year 6, the seven (7) students were asked to complete an evaluation of the integrated rural corrective. Students were asked about their confidence levels before and after the corrective, what skills they had gained or improved during the integrated corrective, how they had been able to use these skills in subsequent clinical work during Year 6 and their positive and negative experiences associated with the integrated corrective. Five (5) students completed the evaluation and the results below are based on these 5 students' responses.

Skills gained or improved

Students were asked about development of competencies across the six disciplines, which underpin the Year 5 curriculum. These are medicine, surgery, child and adolescent health, reproductive and gynaecological health, mental health and general practice.

Students identified the acquisition of or improved competency in the following procedural skills:

- cannulation
- venesection
- setting fractures
- taking sample of peritoneal fluid (1 student)
- suturing
- injecting local anaesthetic
- bag and mask ventilation
- laryngeal mask insertion.

Improved interpretation of investigations were reported for reading X-rays and interpreting ECGs. Two students reported learning about FAST scans and one reported learning how to assess a patient with possible cervical spine injury, while another stated that she had gained skills in undertaking Mini Mental State examination and interpretation.

Enhanced preparation for internship was noted with all students reporting improved communication skills with both patients and other members of the health care team, including consultants and registrars at distant locations. History taking and physical examination skills improved and all stated that they noticed they were better able to prepare more effective patient management plans. One student noted an improvement in being able to prioritise the workload on the wards.

The rural location helped students gain an appreciation of the role of the physical and social environment on patients. One student noted an improved ability in "building rapport with patients with different backgrounds, cultural identities and social circumstances". Another student noted gaining the ability to "develop a patient specific management plan taking social and geographical factors into account".

Discipline specific skills gained were noted by all students and are outlined in the following table.

Table 1 Students reported increased competency across discipline areas

Medicine	Surgery	Mental health	General Practice	Obstetrics and gynaecology	Paediatrics
Management of leptospirosis	Improved preparation of patients for transfer to major hospital for surgery	Management of acute depression	Improved communication especially in informing patients about treatment options and involving patients in the decision making process	Management of prolonged labour	Differential diagnosis of a febrile child
Management of organo-phosphate poisoning	Improved post-surgical care	Management of delirium in the elderly	Knowledge about PBS scheme	Management of placenta abruptio	Management of asthma
Improved antibiotic choices	Writing up fluids	Improved patient referrals	How to order authority drugs	Management of placenta accrete	Newborn check
Improved differential formulation	Writing up appropriate analgesia	Better communication skills with patients with mental health issues	Liaising with allied health for holistic management of chronic conditions	Women's health checks	Communication with children and their guardians
Remembering medication doses		Communicating more empathically and effectively	Creating management plans for patients with rheumatic conditions	More effective history-taking and examination in various cases of obstetrics and gynaecology esp PV bleeding	Improving observation skills
				Addressing menstruation related issues	Working out fluid management
					Working out paediatric drug doses
					Assessing a sick child
					Assessing developmental status and delay

Confidence levels

Students were asked to rate their confidence before and after the integrated corrective in a range of areas. They reported increased confidence levels in the areas outlined in the following table.

Table 2 Students reporting increased confidence

Practice area	Number reporting increased confidence (n=5)
History taking	2
Examination skills	3
Formulating differential diagnoses	3
Formulating management and treatment plans	5
Communicating with patients and families	1
Using procedural skills (unspecified)	2
Applying medicine knowledge to patients	2
Applying surgery knowledge to patients	2
Applying mental health knowledge to patients	1
Applying general practice knowledge to patients	3
Applying reproductive and neonatal knowledge to patients	3
Applying child and adolescent knowledge to patients	2

In addition students were asked an open question about changes in confidence levels. All students reported improved confidence levels. They gave examples of how their confidence had changed and reported that seeing patients on their own was a major factor. One student stated, "I am someone who gets more confident the more I do something so that the more I saw patients on my own the more confident I became."

Another reported, "I was more confident managing cases on my own as most often rural was really busy and sometimes there was only one senior doctor available. Hence, I had to see a patient and

present his/her case to the senior medical officer who often gave me the green light to proceed with managing the case on my own. It was a daunting experience at first but definitely taught me to be more confident and careful with the way I dealt with cases and to adopt a systematic and safe approach.”

Other changes in confidence related to improved ability to see patients presenting to the Emergency Department (ED) first. This confidence continued as they undertook other clinical work as part of Year 6. Two students reported that the clinical rotation following their corrective term was in the ED of their major teaching hospital and they reported increased ability to see patients on their own and undertake routine procedures such as cannulation and blood sampling.

One student reported that “the ability and confidence to take a history, focussed and relevant examination, do full workup and formulate a management plan and then present it to the Reg or consultant was definitely improved due to the Integrated Rural Corrective.” This improved confidence in presenting patients was reported by several of the students and included ringing distant medical teams to discuss patients. “Another example is the confidence I have of performing phone calls to specialists regarding the management of patients, either for ortho/trauma or for renal patients.”

The other three students reported that the clinical assessment skills they had developed were useful in the following Year 6 placements. One reported improved ability to interpret ultrasounds and noted that her enhanced confidence improved assessment of patients in subsequent placements.

Value of rural location for corrective

Students were asked whether the integrated corrective was useful for them. All reported it as a valuable experience and identified the support of the rural staff as being one of the most positive aspects of the experience. One student noted, “Staff tend to invest more time into your training, for example one of the mid-wives invited me to an obstetric course that was been run at the hospital”. Being treated as an “essential” part of the medical team boosted students’ confidence and was seen as one of the positive aspects of the experience.

The students also seemed surprised at how well they were able to perform and several noted that taking a proactive approach was positive for them. These comments came from students who had been able to keep a low profile in the major teaching hospitals. Having a level of independence and trust from their supervisors was important. Several noted that being the first to see patients presenting to the hospital was important as they gained both skills and confidence by taking this role.

The variety of clinical settings in the rural location and the diversity of patients seen had a role in widening their experience. One wrote that she “practised history taking, examination and procedural skills and found I was okay with them”. This student had exhibited very poor skills when undertaking the OSCE and had reported her anxiety in being assessed. Her confidence levels were quite low prior to the integrated corrective.

The overall experience of the students is best portrayed by this student’s observation. “The idea to send me to a rural location for the corrective was definitely the best thing to have come out of the corrective. The doctors tend to throw you into the deep end and very quickly you learn to swim. I’ve said this several times and it still does not lose its potency, ‘I learn in one week on rural placement that I learn in 8 weeks in [major teaching] Hospital’.”

Academic supervisor reported outcomes

In their final year of the MBBS program students who had been allocated a rural integrated corrective term met at regular intervals with the Academic Advisor before, during and after their corrective. At the pre-corrective meeting students were observed to be pensive, looked downcast, stated they felt they were failures and were embarrassed about doing the corrective term. Students also reported lack of confidence about clinical skills and patient communication and expressed fear about not knowing what to do and about becoming an intern.

At the mid-corrective meeting, which was usually a telephone meeting, their communication was more positive. They talked about knowledge and skills they had mastered and the tone of their voice was

more positive. They described how they had developed better processes for history taking and patient management as well as managing their own learning needs.

When they attended for the post corrective briefing with the Academic Advisor their behaviour and demeanour was noticeably positive. They were excited about what they had learnt, could articulate how their skills and knowledge had developed and all stated the corrective “was the best thing I have ever done” or was “the best thing for my learning”. As well as improving skills which had been assessed as weak, there was an obvious change in their level of confidence towards becoming an intern. They now felt confident they had refined the skills to manage the intern role. Students also were challenging their learning needs and becoming proactive about doing tasks and becoming self-directed in their learning. Instead of passive learners they were now active participants.

Observations of these students, combined with their feedback and reflective statements, before and after the Rural Integrated corrective, indicated this type of remediation is beneficial for:

- increasing student confidence
- increasing student clinical competence
- increased procedural skills
- continuous patient interaction
- improved, timely and focussed history taking
- ability to become part of a team
- 1:1 expert supervision and teaching
- increased pro-active behaviour from the student
- asking questions when they don't understand
- readiness for internship in terms of clinical skills and confidence

For international students improvement is also reflected in increased confidence and skill in communication –they express a more confident tone, improved English fluency and clarity of appropriate expression.

This improved confidence is not quite as obvious with students who do not complete a rural integrated corrective but complete their corrective in a single discipline area.

Clinical supervisor reported outcomes

The supervisors all reported that students' performance improved across all dimensions during the corrective placement. One stated that the students “lifted their game”. Several supervisors mentioned the increased level of scrutiny that students are under on the rural rotation. “This student was part of a team and had to contribute. The SMOs in charge of teaching and mentoring the student took their job seriously and cared that she would improve. She could not hide in the rural hospital environment. Being part of a team meant that she had responsibility to make sure the team functioned well in their management of the patients. She had to contribute by clerking the patients and contributing to the shared wisdom of the health care team.” Another supervisor described this scrutiny in a supported environment as “placing [student] where she could flourish”. The supervisors referred to the role of the whole rural health care team in contributing to identifying a student's weaknesses and helping them address them. For example one student spoke so rapidly that staff and patients reported difficulty understanding her. One junior doctor arranged tutorials where the student was coached in verbal communication skills. The supervisor, academic staff and the student all noted that her communication skills improved by the end of the corrective.

Challenges

As with any pilot program there were a few teething problems. Students reported difficulties in achieving all the assessment tasks set for the corrective. They were required to perform two mini-CEX and one case presentation to their supervisor weekly. Finding the appropriate supervisor available for these three activities each week was challenging.

Lessons learned

The rural integrated corrective was a valuable experience for the seven students who undertook the pilot program in 2014. It enhanced their confidence and they gained skills and experience across a range of disciplines while in the one site. There were challenges in organising these additional rural placements for Year 6 students. The rural sites are already taking large numbers of students and while supervisors were willing to take on additional students, it will be important to monitor the impact of the additional workload if any future integrated correctives are to be organised.

Conclusion

This pilot intervention has shown the benefits of attaining and consolidating key clinical competencies and improving confidence for medical students with identified knowledge and skill weaknesses. It has highlighted that rural clinical placements provide excellent learning environments for students, a fact noted in other studies^{4,5}. These students do not need to be in large tertiary hospitals to improve their skills and confidence. In fact, the smaller rural hospital may offer more opportunities for learning and hands on practice – a fact that was identified in an earlier study⁵. The rural context requires students to integrate their clinical knowledge rather than viewing the patient from a specific discipline perspective as is often the case in tertiary hospitals. It allows students to synthesise information and generalise their knowledge and skills to different patients with a variety of age, cultural, socio-economic and occupational backgrounds. Rural placements are appropriate for and perhaps even exceptional placements for students requiring remediation and preparation for internship.

References

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Presenter

Dr Teresa O'Connor provides academic and pastoral support to the MBBS students at James Cook University. She has a strong health background, working in clinical nursing and health management for many years and latterly in nursing and medical education. She lived and working in rural areas of Queensland and South Australia for over 25 years. Her interests are in providing appropriate support for students, particularly those who are challenged academically or personally by their chosen courses. She has a strong commitment to ensuring quality graduates who are able to maintain patient safety and professional standards. She has postgraduate qualifications in Education, Counselling and Public Health.