A tale of three hospitals: solving learning and workforce needs together

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ABSTRACT

- Major developments in medical education in Australia include increasing the numbers of students and educating more students within the community and in regional, rural and remote settings.
- Rapid growth of student numbers and the rural orientation of the James Cook University medical school course has meant that northern Queensland had to deal with these issues earlier than other regions.
- One solution has been to transform some rural hospitals into teaching health services.
- Two hospitals that have successfully made this transformation, and another on its way, suggest that important factors include local commitment to quality clinical services, medical and academic leadership, coordination of local resources, community support, and strategic links between key organisations.
- Transformation to a teaching health service involves senior doctors functioning as true consultants with cascading supervision as in the traditional consultant–registrar–resident model. As both clinical and teaching capacity develops, the workforce may stabilise, infrastructure and teaching culture are established, and long-term recruitment and retention strategies emerge.
- Applying these models in other rural and community settings may make it possible to manage the increased training capacity and address workforce needs without compromising the educational experience — indeed, it may be enhanced.

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Northern Queensland has been in the vanguard of trends to regionally based medical education in Australia. The first new Australian medical school in over 20 years was established at James Cook University (JCU) in 2000, producing its first graduates in 2005.[1] JCU's 6-year undergraduate program is entirely regional, involves at least 20 weeks of clinical placement per student in small communities, and has an emphasis on rural, remote, Indigenous and tropical health.[2,3] With medical student numbers doubling nationally, and many new medical schools having been established since 2000, educators are looking to develop new clinical teaching sites and opportunities.[4,5] Evidence supports the success of the "rural pipeline", recruiting rural students through rurally based education into postgraduate training.[6] Academic performance of rurally based students remains strong, and interest in rural careers and regional internships is rising.[7,8] However, increased demand for rural teaching placements has not yet been accompanied by increases in the rural workforce and the capacity to train students.

Before the establishment of the JCU medical school, northern Queensland had an existing vertically integrated training system for general practice and rural medicine, and an established network of teaching practices.[9] Since 2000, the region has had to rapidly accommodate increasing numbers of medical students in a health system simultaneously facing the challenges of meeting the clinical demands of a growing population in the context of a national health workforce shortage.

Two rural hospitals, in Atherton and Proserpine, have provided notable leadership in meeting the challenges of increasing teaching capacity. Other hospitals, such as Cooktown Hospital, are developing similar models. The locations of the three hospitals (Atherton, Proserpine and Cooktown) are shown in Box 1, and a comparison of their features is shown in Box 2. We believe the local experiences of the health care providers at these rural hospitals in evolving their clinical services into a "teaching health care system" are instructive. In this article, we describe the development of these services, their impact on capacity to teach and deliver health care services, and the long-term implications for workforce, planning and policy at these sites and elsewhere.

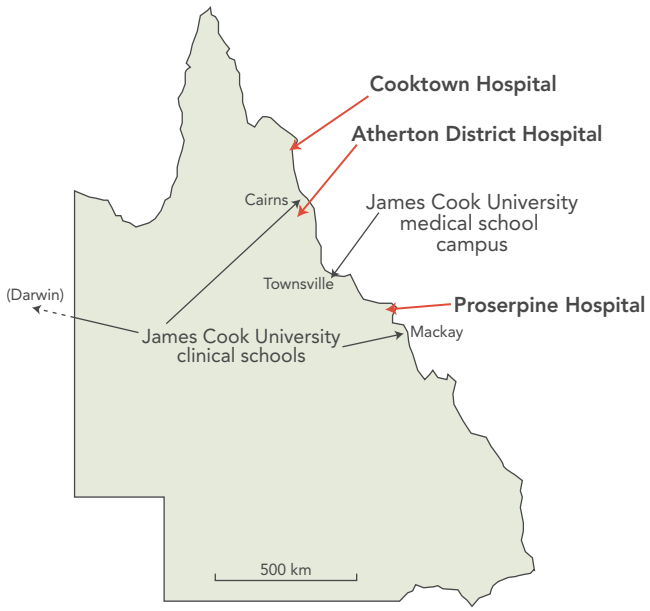
Scrubbing — skill acquisition by students on rural clinical placement. ◆

Rural clinical placements at James Cook University

Medical students at JCU are predominantly school-leavers, and most are from non-metropolitan backgrounds. In their early years, they are based in Townsville, but in Years 5 and 6, they attend clinical schools in Mackay, Townsville, Cairns and Darwin (in the Northern Territory). All students are given early clinical exposure and undertake 20 weeks of rural placements.[10] The three rural placements during the course offer a broad choice of locations and different sequenced learning objectives, including experiencing rural health care (Year 2), clinical skills and pathology (Year 4), and taking more responsibility for clinical care in the Year 6 rural internship.[3,10]

On the basis of previous experience, and of formal evaluations performed for the Rural Undergraduate Support and Coordination

1 Locations of the three rural hospitals, and the James Cook University medical school campus and clinical schools



(RUSC) program,[11] JCU medical school identified three key elements of successful rural clinical placements: student accommodation and teaching space, committed clinical teachers, and an appropriate caseload. Each leg of this "three-legged stool" is considered critical — if any one is missing, the placement will "fall over". As student placements were developed, infrastructure was progressively secured while academic staff provided preceptor support.

Insights into the three rural hospitals

The rural hospitals in Atherton and Proserpine have successfully implemented models allowing them to increase their teaching capacity, and case studies of these two hospitals are provided. A glimpse of Cooktown Hospital's journey toward becoming a rural teaching facility is described in a brief personal perspective by its Medical Superintendent (Box 3).

Case study — Atherton District Hospital

The Atherton District Hospital has a long history of having skilled, enthusiastic rural doctors committed to the community and to teaching. More recently, excellent clinical care, medical leadership and coordination of local resources enabled the development of a functional generalist rural hospital with quality staff focused on collaborative education, audit and excellence in clinical care within the local community.[13] This led a transition to a stable workforce with high rates of staff retention.

During the 1990s, the reform of general practice training and establishment of new Australian Government rural health programs, including RUSC and Rural Health Support, Education and Training,[5] enabled the development of local practical relationships between key organisations, including Queensland Health, the regional general practice training provider (Tropical Medical Training), JCU, the local Division of General Practice, local government, and practising rural doctors. The provision of administrative support, together with clinical backfill (external funds provided to cover the clinical duties of the Medical Superintendent while he undertook teaching and administrative roles) facilitated development of Atherton Hospital's teaching capacity. A practical, apprenticeship-style vertical teaching cascade was gradually developed. This evolved to include:

- high school mentoring;
- placements for JCU students in multiple years;
- placements for students from other medical schools (includes elective, John Flynn Placement Program, and bonded students);
- interns, general practice registrars and rural generalist (ie, vocationally trained doctors skilled in primary care, procedural and extended skills, emergency medicine and public health) trainees;
- overseas-trained doctors; and
- rotating medical registrars.

A pragmatic approach blended education, service delivery and workforce with sustainable lifestyle. Staff accepted the program as an investment in succession planning, safe rostering and work–life balance. Many of Atherton Hospital's Senior Medical Officers job-share flexibly — an innovative retention strategy.

This vertically integrated approach emphasised a "can do" attitude and efficient management. An informal local consortium brought together political will and collaboration from stakeholders with common vision, and commitment from the local community, council, hospital staff, the local health service, academics, JCU, and the regional general practice training provider. This allowed integration of ideas and maximisation of resources with the use of key local organisations as vectors. These organisations partnered with Queensland Health to secure federal funding for an onsite dedicated teaching facility, known locally as "the Whitehouse" (it was the former Medical Superintendent's residence). The Medical Superintendent and hospital management, nursing and allied health staff supported the teaching of students, enabling changes in rostering and structured service delivery around audit, teaching and quality improvement. Administrative support, joint academic appointments between the university and the health service, and flexible funding allowing backfill allowed the system to grow and mature. Importantly, rural doctors led this reform locally, with vital support from individual clinicians, the local division of general practice, and education providers.

The overall aims have been met: there is a safe, sustainable roster maintaining health care services and retaining well trained, credentialled generalists. Safety and governance is assured with credentialled advanced practice generalists with full vocational status in both private and public practice. Use of federal and state rural workforce initiatives have been maximised. A "culture of learning" exists, with preceptor numbers and capacity to teach increasing, students returning in later years and as junior doctors, and learners becoming teachers. The community continues to support, engage and benefit from a well staffed rural hospital — examples include the way the local council owns and manages the student accommodation, council involvement on the Rural Clinical School advisory committee, and patients' ongoing support for the health service.

Case study — Proserpine Hospital

Proserpine Hospital developed a teaching facility as a secondary outcome of building a robust, quality health service. A community consultation in 1988 showed that the community wanted access to specialist services. This was part of a region-wide strategic plan-

2 Comparison of three rural hospitals that are or are becoming teaching health services

	Hospital		
	Atherton District	Proserpine	Cooktown
Population			
Current	24 545	18 610	4928
1989	18 000	11 500	1500
No. of births per annum	280	238	4
Hospital activities	Inpatient care* Emergency and primary health care Low-level obstetrics Day surgery (endoscopy, chemotherapy) Visiting specialist clinics (8) Allied health service Other medical clinics (10)	Inpatient care* Emergency and primary health care Visiting specialist clinics (6) Visiting allied health clinics (2) Other medical clinics (5)	Inpatient care* Emergency and primary health care Visiting specialist clinics (13) Visiting allied health clinics Outreach medical clinics (3)
No. of beds			
General inpatient*	65	25	12
Specialised	8 renal dialysis	6 day surgery	4 renal dialysis, 10 aged care
Chairs		8 (2 chemotherapy)	
Full-time equivalent doctors	1 medical superintendent 1 physician 0.5 surgeon 4 rural generalist SMOs 1 training registrar, medical 1 SMO (provisional — training) 2 interns	1 medical superintendent 3 rural generalist SMOs 1 provisional fellow 2 interns	1 medical superintendent 3 SMOs 2 physician assistants 1 RMO
Student placements per annum	JCU Year 6: 80 student-weeks JCU Year 4: 256 student-weeks JCU Year 2: 4 student-weeks Other: 20 student-weeks	JCU Year 6: 80 student-weeks JCU Year 4: 64 student-weeks JCU Year 2: 8 student-weeks Other: 8 student-weeks	JCU Year 6: 32 student-weeks JCU Year 2: 16 student-weeks Other: 20 student-weeks
Dedicated weekly teaching hours by hospital staff	4	4	3

SMO = senior medical officer. RMO = resident medical officer. JCU = James Cook University. Student-weeks = total of number of students multiplied by the number of weeks that each student completes. Other = students from medical schools other than JCU.

* General medical and surgical. ◆

ning exercise for the health service — largely conducted by the members of the health team (including one author, D J F), 10 focus groups were established for a range of topics. The service capability to meet this need was negotiated with the community and health department (which is a reversal of the usual arrangement where local staffing and budget determines service provision). Capacity to attract specialist health services was developed as general practice patients were increasingly treated in the community, and the community was kept informed through a regular newspaper column. The hospital developed the support structures needed for a growing health service, recruiting medical, administrative and operational staff, and appropriate allied health services. Three further areas were considered essential for growth — pathology, robust information technology, and radiology. Proserpine Hospital was the first Australian rural hospital with onsite computed tomography (acquired in 2007), leading to huge improvements in local diagnostic capability and, integrated with the private sector, a projected profit by the financial year 2010–11.

As infrastructure developed, the hospital established further services, including basic surgery, obstetrics and gynaecology, as well as extended services, including paediatrics and dermatology. Rural generalists were recruited. These doctors provided many services, and worked closely with visiting specialists, thereby enhancing their own skills. Good working relationships were developed with local general practitioners and referral hospitals to improve communication, coordinate patient care and meet local continuing professional development needs.

The rural generalists undertook teaching roles for the increasing numbers of students and registrars attracted to this growing facility. A culture was established valuing teaching as part of basic

3 Personal perspective — Cooktown Hospital

I arrived in Cooktown in 1997 as a medical student with a John Flynn Scholarship. My term there had an incredible impact on me, both personally and professionally. As a result, I undertook internship in Cairns, and then took up a Senior Medical Officer position in Cooktown in 2003, working alongside a supportive and skilled Medical Superintendent.

The original attraction to the variety of medicine, spanning acute and primary health care, in a challenging geographical location — the essence of rural medicine — developed into a lifelong relationship. Subsequently, I completed vocational training and returned to Cooktown permanently in 2007. The opportunity to develop the hospital and its services has allowed growth of the medical workforce, and expanded investment in medical education.

My personal experience is a testament — now a commitment — to the benefit of early positive supported exposure to rural medicine. Cooktown now has two additional Senior Medical Officers, an intern rotating from Cairns (referral centre connection and support cannot be understated), James Cook University students in Years 2 and 6, and students from other medical schools as capacity permits. Cooktown is participating in the Physician's Assistant Pilot Program,[12] and continues to grow as a rural teaching facility.

Natasha Coventry, Medical Superintendent

working life. Clinicians' teaching strengths and weaknesses were identified. For instance, discussion among the group revealed strengths in particular areas, such as clinical science (eg, pathology) and basic clinical skills, and preferences for teaching procedural skills or providing instruction at the bedside. Appropriate portfolios were developed with central accountability to meet both clinical and educational commitments. For example, one staff member assumed major responsibility for teaching clinical skills and pathology to Year 4 students, and there was some divide between undergraduate and postgraduate responsibilities. These allocations were not exclusive, but provided a point of contact for students, and for university and hospital staff.

Attractive housing was established for students and registrars, with support from federal government grants, the health service, educational institutions and the community. Learners were welcomed, given appropriate responsibility (such as taking patient histories, performing physical examinations and writing up records, following up abnormal results and making some clinical decisions under supervision), and made to feel part of the team. Close relationships with educational institutions ensured that the teaching workload was carefully monitored, with gradual growth over time to ensure appropriate supervisory workloads and a quality learning environment.

The past 20 years has seen Proserpine Hospital develop from being a one-doctor to a seven-doctor hospital, and from a general practice outpatient service to an acute teaching hospital with many visiting services and onsite obstetrics and surgery. As clinical services and staff numbers have grown, so has capacity to teach — the hospital regularly hosts medical students in Years 2, 4 and 6 on 4–8-week placements, junior doctors (including interns), and registrars. The hospital's high profile and reputation for clinical and teaching excellence has aided in recruitment and retention of medical staff, ensuring a sustainable service.

Discussion

Boosting the capacity of the clinical training pipeline in regional Australia is an urgent policy imperative, given the doubling of medical graduate numbers and potential impact of rural training on the rural medical workforce. These insights into the three rural hospitals illustrate ingredients for success in transforming small service hospitals into sustainable teaching, learning and research facilities.

Senior doctors in these hospitals function as consultants, supervising junior doctors and students in an extension of the traditional teaching hospital consultant–registrar–resident model. This vertical teaching model can solve the paradox of the most skilled, motivated and experienced clinical teachers generally having the least time to teach.

Each institution has energetic medical leadership, strong community support and partnerships with the local university. Local coordination, professional support and commitment have brokered strategic linkages between key organisations. Sustainability is assured by recruiting appropriate staff into a growing system, developing administrative support and academic appointments while maintaining flexibility with roles and funding to allow backfill and creative delegation of tasks (including clinical and management tasks, and undergraduate or postgraduate teaching). The third leg of the three-legged stool, student accommodation and teaching space, is the final key to ensuring a sustainable local teaching service.

As a result of these developments, the workforces in these hospitals are stabilising, infrastructure and teaching culture is established, and they are attractive to students, junior doctors and Fellows. The transformation to a vertically integrated teaching health care service brings net gains to the system. Students' vitality, energy and enthusiasm invigorate staff. Senior students can contribute to the workforce ("service learning") and develop a sense of belonging in the team. Student engagement is vital to this process. Close connections with the central campus ensure thorough preparation for their placement, they appreciate the opportunities and facilities available, and return positive evaluations. In turn, they enthuse, encourage and inspire their mentors and subsequent students.

Further investment is needed, but if models like these are replicated widely, we believe Australia will be better placed to manage the bulge in demand for clinical training while also addressing workforce needs. Sustaining the pipeline from positive

rural experiences for medical students through to completion of rural generalist training may well see learning and workforce needs solved together.

Competing interests

None identified.

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