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PROJECT REPORT

The Northern Territory Medical Program - growing our own in the NT

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ETHICS APPROVAL

This is a scholarly work not involving human participants, other than the authors. No ethics approval was sought.

ABSTRACT:

Context: The Northern Territory (NT) is characterised by major health inequalities. A high proportion of the population is Indigenous, with poor socioeconomic conditions and a high burden of disease. The small NT population – 1% of the total Australian population – is dispersed over one-sixth of Australia's land mass. Given this very low population density and the geographical isolation of many small communities, access to services is often difficult. Medical workforce recruitment and retention have been persistent problems. Prior to 2011, NT residents who aspired to study medicine had to leave the NT. This was the only Australian state or territory that did not have the capacity for students to complete an entire medical degree within the jurisdiction.

This article describes the development, implementation and outcomes of the Northern Territory Medical Program (NTMP), which commenced in Darwin in 2011. This was a major development of the Flinders University distributed program, which aimed to develop the medical workforce for the challenging NT environment.

Issues: Based on evidence regarding the importance of selection in achieving rural workforce outcomes, and a national priority to graduate more Indigenous Australian doctors, NT residents and Indigenous applicants to the NTMP were prioritised in the selection process. Aspiring doctors would not now have to move interstate to study. The curriculum of Flinders University, based in Adelaide, South Australia, would be contextualised to the NT. The NTMP was developed and implemented in collaboration with Charles Darwin University, the major university in the NT.

Lessons learned: Some of the lessons learned may be useful to others contemplating the delivery of a distributed program that includes a full medical program in a remote area. These include:

1. Leadership at the highest levels of the university is crucial.
2. Expect faculty turnover and avoid single person vulnerabilities.
3. Actively engage local clinicians.
4. Ensure a strong focus on new or alternative selection processes that are able to predict progression.
5. Provide preparatory skills and support for students, especially Indigenous students, with non-science backgrounds.
6. Appreciate and accommodate the community and family pressures experienced by some Indigenous students.
7. Anticipate that the first pioneering cohort of students will not be typical of future cohorts, and work with them to adapt the curriculum, teaching and selection methods.
8. Whilst exemplary telecommunications are needed, some elements of the curriculum will be able to be delivered far better locally than at the larger campus.
9. Do not underestimate the level of student and staff support required both locally and centrally. Develop a 'network' rather than a 'hub and spoke' model.
10. The network may include multiple dispersed placement sites, requiring infrastructure, staffing and ongoing support.
11. The 'new kid' will mean the 'older sibling' will change for the better and use the small size and agility to explore innovations.
12. Focus on the goals. We wanted to contribute to improved economic, social and health outcomes for NT residents by developing an appropriately prepared medical workforce, thereby eliminating the need to recruit doctors from interstate and overseas, and by graduating more Indigenous doctors – potential medical leaders for Australia.
13. Build your expectation for success based on past successes in innovation. Flinders University was able to build on its experience in developing the first 4-year medical program in Australia.

Keywords:

Australia, Indigenous health, medical education, social accountability.

FULL ARTICLE:

Context

In December 2014, a group of eight medical students graduated in Darwin. This would not be remarkable were it not for the fact that they were the first ever to have completed their entire medical degree based in the Northern Territory.

This article describes the development, implementation and outcomes of this initiative. The authors reflect on lessons learned that may be useful to others contemplating the delivery of a distributed program that includes a full medical program in a remote area.

Background

The Northern Territory (NT) is characterized by major health inequalities[1]. A high proportion of the population is Indigenous, with low socioeconomic status and a high burden of disease. The relatively small NT population – 1% of the total Australian population – is dispersed over one-sixth of Australia's land mass. Given this very low population density and the geographical isolation of many small communities, access to services is often difficult[2]. Medical workforce recruitment and retention has been a persistent problem for the NT. Prior to 2011, NT residents who aspired to study medicine had to leave the NT. This was the only state or territory that did not have the capacity for students to complete an entire medical degree within the jurisdiction.

In 1997, under the leadership of Medical School Dean Professor Nick Saunders and Vice Chancellor Ian Chubb, Flinders University partnered with the NT Department of Health to create the Northern Territory Clinical School (NTCS), which enabled up to 24 students from Flinders University, based in Adelaide, South Australia, to undertake the final 2 years of a graduate entry medical program in the NT. Flinders created a subquota of up to 10 places for NT residents, who were then required to attend the NTCS in their final 2 years.

Led by the first Clinical Dean, Professor Alan Walker, the NTCS was an important development. Academic results were outstanding[3]. Whilst the experience of living in the NT could be challenging, students almost universally reported a rich, varied, hands-on clinical experience supported by experienced and committed consultants. Many of the students chose to work in the NT after graduation[4]. Despite its success and some improvements in medical workforce recruitment, NT residents were still obliged to leave the NT to attain a medical qualification, and medical recruitment remained a problem.

Opportunity

During the 2007 national election, Flinders University discussed extending the NTCS to support the delivery of the entire 4 years of the medical course in the NT with the then Shadow Minister for Health, Nicola Roxon. There was also strong interest in increasing the number of Indigenous doctors to address Indigenous health inequalities as part of the Closing the Gap policy[5]. We worked with the NT Government to develop a business case, commissioning Mr Michael Lewenberg from Monash University to undertake an independent feasibility study from an academic perspective, and engaging the consulting firm Acil Tasman to undertake a financial and social impact study which formed the basis for a business case for the full NT Medical Program (NTMP).

In 2008, Ms Roxon, then the Minister for Health, announced the Health and Hospitals Fund, which was to be utilised as part of a nation-building infrastructure stimulus package following the global financial crisis. Using the two previous studies, Flinders University worked closely with the NT Government and Charles Darwin University to develop proposals for both the required infrastructure and recurrent costs of the NTMP. The success of these bids was announced in the May 2009 budget.

Concept

The NTMP was conceived to contribute to improved health outcomes in the NT using the following paired principles:

- Flinders University would deliver only one medical program with one set of outcomes and one set of assessments.
- The Flinders University curriculum would be adapted to provide different pathways for students to achieve those outcomes in the NTMP, leveraging the remote, tropical, desert and Indigenous context of the NT.
- The NTMP would be designed to prepare and encourage graduates to work in the challenging NT environment.
- The NTMP would qualify graduates to practise anywhere in the world.
- Wherever possible, students in Darwin would have face-to-face teaching.
- Wherever necessary, duplication of resources between Adelaide and Darwin would be avoided by using online and synchronous videoconferencing technology.

Issues

Based on evidence regarding the importance of selection in achieving rural workforce outcomes[6], and a national priority to graduate more Indigenous Australian doctors, Flinders and the NT Government agreed that students should be selected by a specific NT process using four ordinal categories. First priority were Indigenous NT residents, followed by non-Indigenous NT residents. Then followed Indigenous Australians living outside the NT and lastly other Australian or New Zealand citizens. All students would receive a fee-free, industry-sponsored place, and would be bonded by the NT Government for 2 years after graduation (this subsequently became 4 years).

As part of a broader agenda to enable secondary school graduates to stay in the NT, there were two entry points. The first pathway was a standard entry into the 4-year Bachelor of Medicine Bachelor of Surgery ('BMBS' – and later MD program) for applicants with an undergraduate degree. The second pathway was for secondary school graduates to enter a Bachelor of Clinical Science

(BCS)/BMBS double degree. This 6-year pathway (the first year of the BMBS counted as the third year of the BCS) was developed as a joint degree with Charles Darwin University. Each pathway was allocated 12 places.

A key aspect of the development of the NTMP was collaboration with Charles Darwin University in order to build local institutional capacity. Charles Darwin University was the site of one of the major medical program buildings, and a Bachelor of Medical Sciences program was also developed to expand Charles Darwin University's offerings and to feed into the medical program.

Implementation

An NTMP governance committee was established by Flinders University, Charles Darwin University and the NT Government. This comprised the highly supportive vice chancellors of Flinders University and Charles Darwin University, Professors Michael Barber and Barney Glover, respectively, and the NT Department of Health CEO, Jeff Moffet. It met quarterly to consider strategic and contractual issues.

The hands-on development was managed by the NTMP Project Development Task Force. This large group comprised Flinders University academics from the NT and South Australia, senior staff from Charles Darwin University and the NT Government. The taskforce was chaired by the Dean of Medicine, Professor Paul Worley, met monthly via videoconference, and had multiple subcommittees taking carriage of specialist areas such as infrastructure, IT, curriculum and selection. Because whole-body dissection was part of the BMBS, new legislation (*Human Tissue Transplant Amendment Act 2010*) had to be enacted by the NT Parliament to enable the use of cadaveric specimens.

The NTCS Clinical Dean, Professor Michael Lowe, was instrumental in the conceptualisation and funding acquisition, and returned to full-time clinical practice during the development phase. A new Associate Dean, Professor Sarah Strasser, was recruited from Canada to lead the implementation in 2010. She returned to Canada in 2013 and Professor John Wakerman was recruited to lead the program.

Early in the planning process Flinders University engaged with Indigenous stakeholders, including the Australian Indigenous Doctors Association, to create an Indigenous Entry Stream. Dedicated Indigenous staff, including an Elder on campus, were recruited to provide academic, pastoral and financial support to Indigenous students. The Indigenous Entry Stream, a third pathway, consisted of an assessment of application with references, grade point average, interview and, if these requirements were met, completion of a short, on-campus preparatory course.

The need to contextualise the curriculum and engagement with NT clinicians also led to the development of a broad-based NT Curriculum Development Committee, which has continued to lead the ongoing development of the curriculum.

Outcomes

The first cohort of students commenced in January 2011, a short 20 months from the announcement of the funding for the program. As in commencing cohorts of other new programs, the mean age of the first cohort was relatively high, and time since first degree was longer than the Adelaide cohort. The majority did not have science backgrounds[7]. With BCS students entering the MD from 2013, the mean age has fallen and science literacy has increased. Examination scores post-2011 are statistically indistinguishable between Darwin and Adelaide cohorts.

There were 10 Indigenous students in the first cohort. Many of these students struggled with the demands of studying medicine. One student completed the program in the minimum time, others took longer and some ultimately did not graduate. The difficult experience for many of the Indigenous students in this first cohort and ongoing student feedback and performance resulted in an iterative recalibration of the Indigenous Entry Stream selection process. The initial Indigenous Entry Stream Preparation for Medicine Program was a 2 week residential with final assessment and a 50% pass threshold. This developed considerably over 4 years to a 2-week residential with tutorials, group work, lectures, clinical and practical work emulating a short intensive experience similar to year 1; assessed oral presentations, project reports, program journal and professional behaviour; a written examination composed of both multiple-choice and short-answer questions with 65% pass mark; and satisfactory performance in an online, 12-week Flinders University Extended Learning in Science program and written examination.

Eight students graduated in 2014 from a starting cohort of 24 – 22 in 2015 and 19 in 2016. The first cohort has completed the obligatory return of service period and 75% (6/8) remain in the NT. All others are currently working as junior doctors in the NT. Progression rates have stabilised and we expect a steady state of about 24 graduates per year. Of the 144 students enrolled in the NTMP from 2011 to 2016, we have recruited 20 Indigenous students of whom 14 have been NT residents, and seven have graduated. We have selected 117 non-Indigenous NT residents and seven non-Indigenous students from outside the NT. Whilst absolute numbers of Indigenous students over this short period have been small, 14% of entrants and 14% of graduates have been Indigenous. This proportion compares favorably to any other medical school in the country. We currently employ 11 Indigenous staff, who support the NTMP.

In 2016, Clare Chandler received national recognition as the Rural Student of the Year, selected by the Rural Doctors Association of Australia. Dr Tessa Finney-Brown, a 2015 graduate, was awarded the NT Junior Doctor of the Year. Faculty in the NT are being recognised through university promotion, national teaching awards, NHMRC grant success, and through substantial community engagement.

The NTMP has had profound effects on the university. The vastly enlarged geographical footprint of the university resulted in a change of name from 'Flinders University of South Australia' to 'Flinders University'. At the time of the development of the NTMP,

Flinders School of Medicine did not record or transmit lectures. NTMP funds were used to install recording and streaming equipment in Adelaide and Darwin and update web capacity. Courses such as anatomy already used a lot of technology and could be adapted to teach simultaneously across sites (with cadaveric specimens and demonstrators at both locations). Other courses such as histology depended upon glass slides and microscopes and needed to be updated to electronic teaching resources and methods.

Planning curriculum delivery in Darwin and constructing infrastructure necessitated the development of curriculum maps and improved coordination of different parts of the curriculum. Videoconferencing at this time was not web-friendly and there were enormous difficulties in transmitting some materials, which in turn led to occasional disengagement of students and staff. Investment in the NTMP led both locations to build state-of-the-art infrastructure for teaching and communicating.

Student feedback has helped to drive curriculum delivery. This has evolved over time from a reliance on videoconferencing (which requires a specific set of teaching skills) out of Adelaide to a 'flipped classroom' approach with increased streamed and recorded lectures, and face-to-face teaching. Some whole-of-class videoconferenced sessions relating to Indigenous, remote and public health are being taught by experts from Darwin. As a result of the NTMP, the Flinders MD curriculum has increased its content in these disciplines for all students.

Lessons learned

What have we learned that may be useful to other universities contemplating delivery of a full program in remote sites?

1. Governance support and leadership at the highest level are crucial to provide the policy framework and permissions, and to have empowered managerial autonomy to form the required specialist and project management teams. In particular, the vice chancellors of the two universities had a strong relationship and were highly supportive of the NTMP partnership.
2. Expect faculty turnover and avoid single person vulnerabilities.
3. Actively engage local clinicians and ensure that clinician teachers, who may be used to teaching more-senior students, understand the expected level of knowledge and skills of first- and second-year students.
4. Ensure a strong focus on new or alternative selection processes that are able to predict progression, especially in the context of initial enthusiasm of both staff and applicants.
5. Provide preparatory skills and support for students, especially Indigenous students, with non-science backgrounds.
6. Appreciate and accommodate the community and family pressures experienced by some Indigenous students, which may affect timely completion.
7. Anticipate that the first pioneering cohort of students will not be typical of future cohorts and may have slower progression, and work with them to adapt the curriculum, teaching and selection methods.
8. Plan, implement, support and monitor modes of delivery with great care. Expect that elements of the curriculum will be able to be delivered far better than at the larger campus, and others will need greater adaptability from both students and staff. Be transparent about this from the outset, seek regular feedback, and have systems to ensure action follows.
9. Do not underestimate the level of student and staff support required both locally and centrally. Work towards a 'network' mentality rather than a 'hub and spoke'.
10. The network may include the development of multiple dispersed placement sites (such as Alice Springs, Katherine and Nhulunbuy), requiring infrastructure, staffing and ongoing support.
11. Recognise and celebrate that the 'new kid' will mean the 'older sibling' will change for the better and use the small size and agility to explore innovations.
12. Focus on the goals. We wanted to contribute to improved economic, social and health outcomes for NT residents by developing an appropriately prepared medical workforce, thereby eliminating the need to recruit doctors from interstate and overseas, and by graduating more Indigenous doctors – potential medical leaders for Australia.
13. Build your expectation for success based on past successes in innovation. Flinders University was able to build on its experience in developing the first 4-year medical program in Australia[8].

In conclusion, timing is crucial. In creating the NTMP, we grasped the opportunity offered by a federal minister and government officials passionate about rural, remote and Indigenous health; two vice chancellors willing to be courageous and collaborative; the NT

Government and health service leadership and clinicians committed to quality and sustainability; and staff and students prepared to be creative and move out of their comfort zones. These circumstances don't often coincide, but when they do it is possible to 'change the game' forever.

Paul Worley is the Australian National Rural Health Commissioner, an independent statutory officer. The views expressed in the submitted article are those of the authors and do not represent an official position of the Commonwealth Department of Health or Australian Government.

Disclaimer

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