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## "[It's] more than just medicine": The value and sustainability of mandatory, non-clinical, short-term rural placements in a Western Australian medical school

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**Title:** “[It’s] more than just medicine”: The value and sustainability of mandatory, non-clinical, short-term rural placements in a Western Australian medical school

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Donna B Mak was a general practitioner and public health physician in the Kimberley region of Western Australia (WA) for 11 years before chairing the Population and Preventive Health Domain in Notre Dame School of Medicine’s MD curriculum and joining the WA Department of Health’s Communicable Disease Control Directorate.

**“[It’s] more than just medicine”: The value and sustainability of mandatory, non-clinical, short-term rural placements in a Western Australian medical school**

**ABSTRACT (197 words)**

**Introduction:** In 2005, the University of Notre Dame School of Medicine (Western Australia) established a mandatory, non-clinical rural and remote (hereafter termed rural) health placement program delivered in two weeks over two years, largely resourced by voluntary human capital. Our study investigated whether the program: (1) encouraged medical graduates to seek rural employment; (2) enhanced their ability to meet rural people’s health needs; and (3) was sustainable.

**Methods:** A qualitative descriptive study collected data using semi-structured, in-depth interviews with graduates and placement hosts. Data were transcribed, coded and analysed using Framework Analysis to identify key themes.

**Results:** Twenty-eight medical graduates and 15 community hosts participated. The program validated pre-existing interest in, or positively influenced graduates’ attitudes towards, rural practice, and enabled empathy etc and responsiveness when caring for rural patients in urban, as well as rural, health services. Placement hosts unanimously supported the program and contributed social capital, to ensure its sustainability.

**Discussion:** The program influenced a broad spectrum of students over 15 years and reflects a socially-accountable approach to medical education.

**Conclusions:** This study demonstrates the sustainability and value of mandatory short-term community-based placements in improving medical graduates’ responsiveness to the health needs of rural Australians.

## INTRODUCTION

Globally, the population density of medical practitioners tends to be higher in urban areas compared to rural and remote (hereafter, rural) settings (Organisation for Economic Co-operation and Development, 2019). Studies show that lower doctor density is associated with poorer population health outcomes, after controlling for other socio-economic variables (Anand & Bärnighausen, 2004; Shi, Macinko, Starfield, Politzer & Xu, 2005). Additionally, rural patients who elect to travel to urban areas for health care consistently report feeling misunderstood by health providers (Brundisini *et al*, 2013).

Substantial attention has been given to understanding what influences medical students to practice rural medicine after graduation. From a selection of literature, we discerned three key factors. First, students from rural areas are more likely than urban counterparts to practice rural medicine upon completion of their studies. A systematic review of observational studies either following medical students over time, or comparing the characteristics of doctors currently working in urban and rural areas, found that those with a rural background were approximately twice as likely to practice rural medicine (Laven & Wilkinson, 2003). Strategies to increase the number of rural students studying medicine include: offering rural students financial assistance (Anderson & Rosenberg, 1990); engaging rural secondary schools in outreach activities (Rabinowitz, Diamond, Markham & Rabinowitz, 2005); reserving places for rural students (Mathews, Rourke & Park, 2008); pre-admission programs (Landry, Schofield, Bordage & Bélanger, 2011) and rural medical schools (Quinn *et al.*, 2011).

The second factor (entry-level desire to practice rural medicine) is interrelated with the third (undertaking a rural placement during studies). A Western Australian study of 569 medical school graduates linked data from the Medical School Outcomes Database Commencing Medical Students Questionnaire with the Australian Health Practitioner Regulation Agency database on practice location (Playford, Ngo, Gupta & Puddey, 2017). It found that “[f]or students with a rural intention at

the start of medical school, RCS<sup>a</sup> [Rural Clinical School] training increased the likelihood of later rural practice ... For students without a rural intention, however, RCS participation did not significantly affect their practising rurally” (Playford, Ngo, Gupta & Puddey, 2017).

Much of the literature on rural placements focusses on long-term rural placements offered to self- and school-selected students. Less attention has been given to whether mandatory short-term, non-clinical placements (especially early in an undergraduate degree) influences intentions to practice in a rural location, or subsequent work practices. A thorough review of rural outreach programs in medical schools found sixty-two studies, none of which included social accountability as a factor, and only four of which involved rural placements of less than four weeks cumulatively (Johnson, Wright & Foster, 2018; Petrany & Gress, 2013; Wright et al., 2014; McDonnell Smedts & Lowe, 2008; Jones, Bushnell & Humphreys, 2014). Therefore, it is worthwhile examining their contribution to a suite of strategies aimed at improving health care for rural people.

In 2005, the University of Notre Dame School of Medicine (Fremantle, Western Australia) established a rural and remote health placement program (the Program) delivered in two weeks over two years. All students in their pre-clinical years were required to complete the Program that was designed as a foundation for, and complementary to, rural clinical placements in the final two, i.e. clinical, years of medical school in which 25% of students undertake an optional one-year, and the other 75% a mandatory four-week, rural clinical placement.

The Program was largely resourced by rural communities, organisations and individuals (hereafter termed placement hosts) who voluntarily contributed knowledge, labour, accommodation and meaningful non-clinical work for students, i.e. social capital. Social capital is “the web of cooperative relationships between citizens that facilitate resolution of collective action problems” (Brehm & Rahn, 1997). The University paid for travel to and from the placement location, supervising academic and administrative staff (at a ratio of 1:20 students), and costs associated with several days of student

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<sup>a</sup>Rural Clinical School is an Australian government funded program in which 25% of medical students undertake the penultimate year of their medical degree in a rural location. These students voluntarily apply for RCS and are selected by their medical school in a competitive process.

orientation and other university campus-based pre-placement preparatory teaching and learning activities.

The Program's emphasis was for students to live and undertake non-clinical work chosen by their placement host in return for experiential learning about the social, cultural, economic and environmental determinants of health in rural Australia. Placement hosts included Indigenous homelands, pastoral stations, government enterprises, agricultural businesses, charity groups, regional arts organisations, local businesses and schools. Students undertook work such as tutoring school children, preparing programs for broadcast on regional radio, meal preparation, building fences on cattle stations and assisting artists, and these activities facilitated wide-ranging conversations between students and their hosts. Details of the Program and its short-term impacts on medical students and their placement hosts have been published (Toussaint & Mak, 2010; Mak & Mifflin, 2012).

< insert **Figure 1. Map of WA regions**>

The regions included in the Program are depicted in Figure 1 and their features summarised in Table 1. First year students spend four days in the rural Wheatbelt, whereas second year students spend eight days in the remote Kimberley.

< insert **Table 1. Comparison of Wheatbelt and Kimberley: Selected Characteristics**>

In 2015, the Program's Wheatbelt component ceased due to re-prioritisation of University resources at least partly based on information in the 2013 *Review of Australian Government Health Workforce Programs* suggesting that elective long-term rural placements for students pre-disposed to rural practice generated better outcomes in terms of students practising rurally post-graduation. Stated also was that mandating students with no rural health interest to undertake a rural placement could be "counterproductive" to their learning and the rural practice at which they are placed (Mason, 2013; Australian Government Department of Health, 2017). This information was misinterpreted as evidence that short-term rural placements are ineffective and led to a misconception that Rural Health Multidisciplinary Training Program funds could not be used for short-term rural placements. The Kimberley component was unaffected.

In the context of these events, this research was undertaken to investigate whether the Program: (1) encouraged graduates to seek employment in rural settings post-graduation; (2) improved their ability to meet the needs of rural patients in urban as well as rural settings; and (3) could be sustained over time.

## **METHODS**

A qualitative, descriptive study based on data collected from one-on-one semi-structured, in-depth interviews was undertaken. All medical graduates on the University's alumni register who had graduated between 2008 (the inaugural graduating year group) and 2015 (the year before data were collected) were emailed an invitation to participate in the study. Placement hosts in both the Kimberley and the Wheatbelt were identified with the help of University administrative staff and also invited to participate via email. Purposive sampling using a maximum variation sampling strategy was undertaken. Purposive sampling recruits participants who, based on what is known about the target population, are most likely to have, and be able to share, deep insights about the research questions; maximum variation sampling takes into account the small sample sizes typical of qualitative research to recruit a broad range of participants (Polit & Beck, 2010).

Participants were informed verbally and by email that their involvement in the study was voluntary. Informed consent was obtained. To minimise potential for coercion and information bias, data were collected by a highly experienced qualitative researcher (ST) who had not been involved in delivering the University's medical curriculum and had no authority or influence over medical students and graduates, or placement hosts; ST had considerable health and rural research expertise and familiarity with the Kimberley and Wheatbelt regions. The University of Notre Dame's Human Research Ethics Committee (Reference number 013162F) provided approval for the research to proceed.

Data were collected by ST between April and October 2016, using semi-structured interviews that enabled both in-depth inquiry and the substantive identification of examples to demonstrate answers [25]. Demographic data including gender, age, year of graduation, work location and self-reported rural background were collected to provide context. Graduates were asked about their perceptions of

the Program's influence on their career aspirations, rural practice intentions and ability to meet the health needs of rural patients. Volunteer hosts were asked about their involvement with, contributions toward, and perceptions of, the Program, including its continuation or recommendations for change.

Interviews with graduates were mostly conducted by telephone (20/28), with six by email and two face to face because of the geographic distribution of graduates across Australia and their work commitments. Similarly, of the 15 placement host respondents, 12 were interviewed by telephone, and three by email. Interviews ranged from 30 to 60 minutes duration and were audio recorded.

Hand-written notes were taken at the time of interview to record contextual information, impressions and points to return to for follow-up or confirmation. Standard to qualitative data collection, recruitment and interviewing ceased when data saturation was reached, i.e. no new themes emerging (Liamputtong, 2018). Because of the small number of total interviewees resulting in a manageable data collection, ST decided against using a software program to sort the material, leading to manual transcription and thematic analysis of the interview material, a substantive method in the arts and social sciences. She then passed a draft to DLV (another independent qualitative health researcher not involved in delivering the Program) who inductively coded the data according to related questions and sub-themes (as shown in Box 1). A Framework Analysis approach was used enabling the researchers to: (1) familiarise themselves with the full data set by reading transcripts and ST's analyses; (2) develop a coding matrix based on the themes or issues that emerged; and (3) then index the data by identifying consistent quotations and examples that corresponded to the research inquiry's themes (Srivastava & Thomson, 2009).

<insert **Box 1. Coding themes**>

## **RESULTS**

The demographic details of the 28 medical graduate participants are summarised in Table 2. Of the 15 placement host participants, six were based in the Kimberley, and nine in the Wheatbelt.

<insert **Table 2. Characteristics of alumni participants**>

### **Influence of graduates' career decisions**

An emergent theme was that the Program positively influenced graduates' desire to practice rural medicine. Female graduate [1] put it this way: “[the Kimberley experience was] a real trigger for me, for wanting to go back there to live and work ... If I hadn't experienced the placements at uni, I wouldn't have known what either place [Kimberley or Wheatbelt] was like” (female graduate 1). Not dissimilarly, another participant stressed:

*They [the placements] were fantastic and opened my eyes ... I would never have considered going to work in the Kimberley but fell in love with the place and plan to do a six-month registrar position when I can, and hope to do as much work rurally/remotely as possible* (female graduate 2).

Other participants explained that the Program validated their pre-existing interest in rural medicine: “I am very drawn to the rural setting and the placements helped me to realise that I could work there” (female graduate 3).

The experience of placements in two different regions (Wheatbelt and Kimberley) helped some students understand that they could work in some rural/remote contexts, but not others: “I'd find it difficult to live in a town like [X, in the Wheatbelt]. In a way [X] felt more isolated than [Y, in the Kimberley]” (male graduate 1). Another participant stressed the environmental and social diversity which she had become aware of through the Program, “[It] helped me to understand that some rural places are different from others. They're not always the same” (female graduate 4).

Those who were either undecided about, or unlikely to pursue, rural medicine offered a range of justifications including family considerations, lifestyle choices and lack of rural opportunities in their preferred speciality.

### **Responding to needs of rural patients**

Although only six participants were practicing in rural areas at the time of data collection, the majority considered that the Program made them more empathetic and responsive to the needs of rural patients accessing urban, as well as rural, health services as exemplified by one participant: “The

[non-clinical] experience guides my work now ... It comes back to me; it helps me understand rural people's lives" (female graduate 5).

Firstly, participants noted that the Program enabled them to establish rapport with rural patients:

*[O]ne old man I worked with recently said he was from [a Kimberley town] so when I talked to him he was happy that I knew his homeland, that I liked it and had visited. It opened up better communication. I wasn't setting myself apart from him. I wasn't a typical doctor to him (male graduate 2).*

In similar vein, an interviewee who now works in the renal unit of a Perth metropolitan hospital similarly explained, "I can tell people now that I know where they're from and it really helps me do the job and it makes it a better experience for us all" (male graduate 3).

Secondly, the Program generated understanding and appreciation of the complex factors that influence the health of rural patients in a way that university campus-based activities had not; this understanding and appreciation facilitated the development of empathy. For example, one participant stressed that the experience at a remote Kimberley pastoral station, "helped me to realise how hard it is to eat healthily without access to fresh produce" (female graduate 6). Another spoke of the dietary habits she observed while on placement and that she "came to realise that it [health] was more than just medicine" (female graduate 7).

Thirdly, the Program helped to develop understandings about the harshness and vulnerability involved when rural patients had to undertake extensive travel to an urban hospital for medical care they could not receive in their home, another facilitator of empathy: "[Now, when] I see Aboriginal people from the Kimberley in Perth I can see why they're so homesick. All they want to do is go home ... I understand that now" (male graduate 4). In some instances, this empathetic awareness influenced the clinical decisions that interviewees made in relation to rural patients:

*Less than two months into my employment as a doctor in a tertiary hospital in Perth and the patients under my care have already benefited ... The knowledge engendered on the Kimberley trip was particularly pertinent at work ... [T]here was an Aboriginal patient under*

*my care whose treatment goal had recently been altered to be of palliative intent only. She was indeed dying and after communicating with her partner we all agreed that the most sensitive and culturally appropriate case for her ongoing care would be in her own country with her own people ... I knew exactly how important it was to return her soul to her land and to try to do so prior to her death. It is my honest and overarching belief that I may not have appreciated this aspect of care provision without having benefited from the Kimberley trip ...*

(female graduate 8).

Finally, interviewees reported being “more empathetic and respectful” (female graduate 9) not only to rural patients, but also to rural colleagues. Participants reported the need to consider the context in which rural doctors and their patients live and work and the importance of working collaboratively to meet the needs of rural patients: “I think I came away realising that doctors in remote areas are asking new doctors, or urban doctors to ‘be kind to us when we ask you for help’” (female graduate 10), and “I learnt about the local conditions for doctors more than anything. Makes you think when you’re planning from Perth” (female graduate 10).

A minority of participants thought that the Program would be more beneficial if it were longer, or if it had a more explicit focus on health issues: “I loved it, but because we were out bush all the time I developed little understanding of Kimberley life, people’s health needs” (male graduate 6). For one participant, the benefits were not immediately tangible but “a few years on I definitely draw on the positives ... [W]hen Aboriginal people come to [urban hospital] I better understand the conditions they’re from and how doctors in a remote area are trying to work” (female graduate 10).

### **Collegiality**

An unexpected finding, described by graduates irrespective of their interest in rural practice, was the bonds forged between students because they all undertook the Program, and at the same time. These bonds formed the basis of valued professional and personal networks that were sustained post-graduation. Graduates described deep, productive conversations with peers whom they hardly knew before undertaking the Program:

*The Kimberley was the highlight of my degree. It was the place but it was also that we were all required to participate ... A real bonding experience for us all (male graduate 4)*

*One of the best things was the experience itself, of being there and learning about things with other students ... most of all it meant the students got to know each other ... Like [other medical school/s] doesn't have this sort of thing so students as future doctors don't really know each other to follow-up and connect when you're practicing medicine (male graduate 5).*

### **Program sustainability**

The sustainability of the Program is contingent on the ongoing cooperation of placement hosts. Those who participated in the interviews were unanimously supportive of the Program and had either no or few suggestions for improvement (namely, extending the length of placements, expanding local networking and publicity about the Program, involving students in a few health-related social activities, and arranging more follow-up from students).

A common motivation was the belief that exposing medical students to rural life might attract more doctors in the future: “We are happy to host students again. I think that even if no more than one out of ten students decide to work in the outback for a while it is worthwhile to continue” (Kimberley host 1). Other societal benefits cited by hosts included the opportunity to inspire local youth and redress negative stereotypes about rural life:

*The student visit showed our young people what could be done; it opened up ideas about doing medicine and anything else. That was the best thing from the Program and that's what we miss [after the Program was ceased]...They brought the world to us ...*

*It's a great program because the students can get to see how a rural community ticks. [We're] so often badly portrayed, as though we're all sitting down depressed/doing nothing with a bit of straw sticking out of our mouth. The Program helps the students to "scratch under the surface" (Wheatbelt host 1).*

The students' contributions to the rural workforce were also valued: "It was great to have the two students who were here help out; we're so under-resourced" (Kimberley host 2). Obvious in these comments, as others, is the two-way value that the Program came to represent.

Hosts also spoke positively of the opportunity to network and socially interact with new people from diverse backgrounds. One participant described how the Program "brought some extra life into the community" (Wheatbelt host 2). Another noted that "it was good to have some interesting people in town, some of the students were from overseas, so it was an enjoyable visit for the town" (Wheatbelt host 3).

Graduates, including those who had had some negative experiences during their placement, such as feelings of isolation in an unfamiliar setting, and those with no interest in rural practice, were also unanimous regarding the importance of the Program being continued: "It's a highly beneficial program and it would be a great loss if it goes ... I have friends who study med [not at Notre Dame] and their knowledge and interest [in rural/remote health] by comparison is so much less" (female graduate 9).

## **DISCUSSION**

Study findings indicated that short-term, non-clinical rural community-based undergraduate placements resourced largely by social capital validated pre-existing rural career intentions or positively influenced graduates' desire to pursue rural medicine, and improved the ability of doctors to address the needs of rural patients in urban contexts. These findings are consistent with those from a study of Victorian medical students' experiences of engaging in 11-day placements in rural areas (Wright *et al.*, 2014). Additionally, there is sufficient social capital to sustain the Program, which depends on the participation of placement hosts in tandem with dedicated funding from the appropriate agencies. Graduates' reasons for not pursuing rural practice (despite an interest in the area) were consistent with those from a New Zealand study, such as social and family obligations, wanting to specialise, and difficulties finding rural work for their partners (McKillop, Webster, Bennett, O'Connor & Bagg, 2017).

This study's limitations include selection bias (i.e. participants who had positive Program experiences being more likely to be a research participant) and social-desirability bias (i.e. participants altering their responses to match the views of the researcher). However, our findings are consistent with the results of a questionnaire completed by 94% (n=95) of students participating in the Program in 2011 (Mak, Watson & Hadden, 2011). The potential for social-desirability response bias was minimised by employing experienced qualitative researchers not affiliated with the Program to collect and analyse data.

Our study demonstrates the potential value of short-term, non-clinical mandatory placements as part of a suite of complementary rural workforce initiatives. Such a finding is significant in the context of the *Review of Australian Government Health Workforce Programs* which argued that encouraging students “who have no interest whatsoever in rural health [to undertake a rural placement would be] counterproductive and only serve[s] to place unnecessary strain on rural clinical training capacity” (Mason, 2013). There is an evident risk in this suggestion, however, as it could lead to the view that longer-term elective placements attract only those who have a pre-existing interest in rural medicine; the opportunity to influence a broader spectrum of students is consequently lost, as noted by Eley, Young, Wilkinson, Chater & Baker (2008):

The reality is that students who are intent on a rural career from an early stage are still a minority and will never fill all available vacancies. Therefore, we need to continue to ‘open the eyes’ of *all* our students to a rural medicine career.

Another advantage of medical curricula mandating short term rural placements in addition to offering elective long term clinical placements is to prevent future doctors ruling out a rural career on the basis of one rural experience that is not necessarily generalisable to other rural locations (Zadoroznyj, Brodrigg & Martin, 2014). The geographical vastness and regional diversity of Western Australia means that some rural communities have developed distinct socio-cultural and economic identities and lifestyles. Our results show that, by undertaking short placements in both the Wheatbelt and the

Kimberley regions, some students came to realise that they could work in certain rural locations but not others. Programs based on multiple, mandatory short-term placements therefore have the potential to enable students to make better-informed career choices especially, as our interview data show, when placements are not clinically based.

Our study also demonstrates that there are other benefits associated with short-term rural placements of a kind that opens up rural ways of knowing and learning, and not only about medicine. While such benefits may be difficult to quantify they nevertheless add an intrinsic value to Program participants, placement hosts and rural health care consumers. These benefits include the opportunity for rural people to advocate for themselves, improved understanding of rural patients and doctors by urban doctors, providing role models for rural youth, increased cultural competency, the formation of social bonds, and personal development, most especially in relation to empathy and understanding of local conditions and values. There is an increasing recognition of the need to recognise such intangible social benefits when evaluating health interventions (Neumann, Jacobson & Palmer, 2008; Putland, 2008).

The Program's benefits to Wheatbelt hosts is evident in the fact that, after the Program ceased in 2015, they formed a coalition with a rural health workforce agency and a primary health care commissioning agency to garner sufficient financial and in-kind support to re-establish the Program in an expanded format in 2018 with two medical schools and seven Shires, increasing to eight Shires in 2019 and 10 Shires in 2020 (Anonymous, 2017; Rural Health West, 2019). The re-established Program is a tangible product of rural communities' social capital and the University's social accountability ("a participatory process in which citizens are engaged to hold politics, policy makers and public officials accountable for the services they provide" (Danhoundo, Nasiri & Wiktorowicz, 2018)). By working collectively, and in partnership with interested stakeholders, rural hosts were able to overcome external barriers and ensure the continuation of a workforce development program which they not only valued, but also voluntarily contributed to for reasons of immediate, as well as longer-term, local community benefit. This is consistent with a socially-accountable approach to medical education which is associated with graduates who are "more likely to stay in rural areas and serve

disadvantaged communities, and were often more skilled than students from more traditional schools to meet the needs of underserved communities” (Reeve *et al*, 2017).

The value of community-based, non-clinical placements to the holistic education of health professionals has also been recognised by the Western Australian Department of Health’s Nursing and Midwifery Office; in late 2017 the Department initiated an expansion of its Global Health Alliance Western Australia scholarship to include clinical placements in the east Kimberley where nursing students are accommodated with local families recruited in partnership with a community service club (rather than in commercial or staff accommodation) so they can learn first-hand about the social and other determinants of health and how to live in a rural/remote community (Western Australian Government Department of Health, 2019). This is consistent with Dube, Schinke & Strasser (2019)’s observation that in the context of rural health training placements, the broader rural community is a crucial partner and “essential to the participants’ [students’] development of a sense of belonging”.

## **CONCLUSIONS**

Few studies have been conducted of the influence on medical graduates of mandatory short-term rural placements where students are required to undertake non-clinical work with local communities and organisations during undergraduate study. Mandatory short-term rural placements in non-clinical settings– (1) can be implemented with relatively low investments of financial resources and curricular time; (2) can influence individuals who may not otherwise elect to undertake a rural placement or consider rural practice; (3) equip graduates in both rural and urban clinical settings to be empathetic and responsive to the needs of rural patients in urban, as well as, rural settings; and (4) are consistent with a socially-accountable approach to medical education. While additional research is needed to demonstrate the cost-effectiveness of mandatory short-term placements, it is argued that short-term placements can influence students’ attitudes to rural and remote settings, and therefore to rural medicine. Moreover, cost-effectiveness analyses of short-term placements must go beyond quantifying the number of doctors who work in rural areas, to include assessment of the immediate and intrinsic value rural residents place on the opportunity to advocate for themselves and their communities through interpersonal interactions with medical students.

**Practice points:**

- Short-term, non-clinical, mandatory rural placements implemented in partnership with rural communities, families and organizations are consistent with a socially-accountable approach to medical education.
- These placements require relatively low investments of financial resources and curricular time; can influence individuals who did not enter medical school with rural practice intentions; enable all medical students to experience rural life in a variety of locations; and equip graduates in both rural and urban clinical settings to better provide patient-centred care for rural residents.
- Rural residents see immediate and intrinsic value in the opportunity to advocate for themselves and their communities through interpersonal interactions with medical students.

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**Figure 1:** Map of WA regions



**Table 1:** Comparison of Wheatbelt and Kimberley regions of WA, selected characteristics (Rural Health West a, 2018; Rural Health West b, 2018)

<b>Selected characteristics</b>	<b>Wheatbelt</b>	<b>Kimberley</b>
Approximate distance of largest town from WA capital city (Perth)	96 kilometres (Northam)	2,213 kilometres (Broome)
Size	154,051 square kilometres	424,517 square kilometres
Population (2010)	77,227	35,706
Proportion of population identifying as Indigenous	5.1%	45%
Number of hospitals	4 (all public non-tertiary)	6 (all public non-tertiary)

## Box 1: Coding themes

- A. Intention to practice rural medicine
  - a. Established intention
  - b. Reinforced intention
  - c. No intention / unsure
- B. Responding to needs of rural patients in urban and rural practice
  - a. Rapport
  - b. Understanding of conditions
  - c. Understanding of patient experiences accessing urban care
  - d. Understanding of services
- C. Collegiality
- D. Sustainability
  - a. Attitude to continuation
  - b. Motivation
  - c. Improvements

**Table 2: Characteristics of medical graduate participants**

<b>Background details</b>	<b>Number of participants (n=28)</b>
Gender <ul style="list-style-type: none"><li>• Female</li><li>• Male</li></ul>	12 16
Age <ul style="list-style-type: none"><li>• 20-29 years</li><li>• 30-39 years</li><li>• 40-49 years</li></ul>	5 20 3
Year of graduation <ul style="list-style-type: none"><li>• 2008</li><li>• 2009</li><li>• 2010</li><li>• 2011</li><li>• 2012</li><li>• 2013</li><li>• 2014</li><li>• 2015</li></ul>	3 3 2 4 0 4 5 7
Pre-Program rural experience <ul style="list-style-type: none"><li>• None</li></ul>	16

• Little	8
• Limited	4
• Extensive	1