Factors driving James Cook University Bachelor of Medicine, Bachelor of Surgery graduates’ choice of internship location and beyond

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Abstract

Objective: To identify the main reason James Cook University (JCU) Bachelor of Medicine, Bachelor of Surgery graduates chose their internship location and first four practice relocations.

Design & participants: This cross-sectional study invited 261 JCU medical graduates to participate in an email or telephone survey.

Main outcome measures: Graduates’ main reason for choosing internship location and up to four subsequent relocations, post-graduate specialty training undertaken and practice location (either metropolitan or non-metropolitan) for graduates’ internship year and current practice year (2012).

Results: Respondents (n = 175; response rate = 67%) reported personal factors as the primary driver for choosing their internship location, with 33% returning to ‘near their family/home town’, and 21% staying in the town they were based in Years 5 and 6. Professional reasons dominated for subsequent relocations, particularly ‘long-term career ambitions’. Fifty-nine of the 175 (34%) JCU graduates had undertaken their internship in a metropolitan location (Australian Standard Geographical Classification Remoteness Area 1), while 80 (46%) currently (in 2012) practised in a metropolitan location. Internship location was not associated with later specialty training, but current metropolitan practice was associated with Surgical or Paediatrics training (P = 0.007 and P = 0.063, respectively), while current non-metropolitan practice was associated with General Practice and Rural Generalist training (P = 0.010 and P = 0.001, respectively).

Conclusions: Personal decisions take precedence over professional career decisions for why JCU medical graduates chose their internship location, but subsequent relocations are driven by career ambitions, usually around specialty training requirements. These findings support establishing more post-graduate training opportunities in non-metropolitan settings for Surgical and Paediatric specialties as a retention strategy for a rural medical career.

KEY WORDS: medical graduate, movement, recruitment, rural, specialty training.

Introduction

There has been much recent investment to bolster the recruitment and retention of medical graduates in rural Australia, as maintaining an adequate medical workforce in rural and remote Australia has been challenging for many years. Strategies shown to improve rural career intentions of medical graduates involve establishing regionally based medical schools and rural clinical schools, the targeted selection of students with a rural background and providing significant, positive rural experiences during undergraduate training.1,2,3

James Cook University (JCU), located in Townsville, North Queensland (NQ), was the first of Australia’s ‘new’ regional medical schools, established with a mission to address the health needs of the medically underserved population in Northern Australia.4 This 6-year undergraduate program oriented its selection processes to attract applicants from rural, remote and Indigenous backgrounds via targeted recruitment of high school students. Staffing profile, curricula experiences and student placements were all aligned with the school’s mission. The program is distributed across the NQ region with the majority of the curriculum in the first 3 years delivered in Townsville, and students attached to clinical school sites in the larger regional towns of Cairns, Townsville, Mackay and Darwin in years 4–6. Students also undertake a minimum of 20 weeks of rural placements throughout the course.
The JCU medical school has been producing graduates since 2005 in a growth phase of medical education that has seen both the number of medical schools and the number of medical students – particularly those with a rural background – doubling nationally. To accommodate this growing number of medical graduates, internship places have been increased across the nation, including NQ. All Australian graduates need to complete an internship in an approved hospital before achieving unconditional registration status as a junior doctor and progressing to vocational training. Internship posts are of 12 months in duration, usually starting in January in the year following graduation, and are available in tertiary hospitals able to offer supervised rotations in the three mandatory rotations of medicine, surgery and emergency medicine, as well as other ‘non-compulsory’ disciplines. Regionally based specialist training and general practitioner (GP) training programs have also been recently established to assist the transition of regional junior doctors into early vocational training without having to relocate to a metropolitan tertiary hospital. The NQ-based Northern Clinical Training Network (NCTN) is an example of one such initiative.

An exit survey undertaken on all final year JCU medical student cohorts since 2005 found 88% of the 292 participants intended to practise outside of an Australian capital city. However, undergraduate medical programs such as JCU produce graduates who may be only 23–24 years old. Hence there is a risk that these recruitment strategies ignore the likelihood of life decisions taking precedence over positive rural career intentions, in particular, if important life decisions occur in a metropolitan training environment. Yet, the literature reports only a single qualitative study by the University of Queensland Rural Clinical School (UQRCS) that examines why medical graduates choose their internship location and make up to four subsequent relocations. Given the significant workforce implications of the graduates from JCU and the other new medical schools, it is important to understand in detail the reasons graduates choose to work in particular locations.

Methodology

Design

The JCU MBBS program has produced eight graduate cohorts from 2005 to 2012. This cross-sectional study collected data from respondents among the first five graduating cohorts (2005–2009) who had previously given their consent to be contacted. Ethical approval for the study was obtained from the JCU Human Research Ethics Committee (approval # H1804).

Consent for further contact was obtained from an annual exit survey of Year 6 students, which has been conducted since 2005. This exit survey included a page requesting students to provide their personal contact details (email and mobile phone) as part of a JCU longitudinal tracking project on graduate outcomes. Overall, 261 of the total 347 graduates in the first five cohorts gave their consent to be contacted for further
studies, such as the present study. A JCU School of Medicine Facebook page was also created specifically as a convenient and accessible medium to connect with alumni.

Data collection
A survey was administered to all 261 graduates who had given their consent either over the telephone, or online via Surveymonky or Facebook. The survey asked respondents for their name, and to make free-form comments of what was their ‘main reason’ for choosing where they undertook their internship, and for choosing any subsequent post-internship relocation. Free-form text was provided for up to six subsequent moves from internship practice location. A final question asked about post-graduate specialty training began or completed.

Data analysis
The variety of responses given as the ‘main reason’ for choice of internship location and the first four potential relocations after internship were later grouped ‘a priori’ by the researchers into either ‘personal’ or ‘professional’. Only the first four relocations were analysed, as few graduates had relocated five or six times. Personal reasons, as cited specifically by the respondents, included: near family/home town; consideration of partner/partner’s work; lifestyle (‘liked the city’, ‘close to beach’); travel/adventure (‘change of scenery’, ‘locum work’); and, familiarity with the hospital and town as previously based there (as JCU medical students undertake their final two clinical training years in either Townsville, Cairns, Mackay or Darwin).

Professional reasons cited by the respondents were those pertaining to particular work-related aspects. The researchers classified professional reasons into short-term work-related factors, long-term career ambitions, rural scholarship requirements, or due to the ballot. Short-term work related factors were those in which the relocation provided some immediate benefit to the graduate: availability of a better position, the perceived better reputation of the hospital and/or the likelihood of good clinical experiences or support, with graduates giving specific reasons such as: ‘big hospital experience’, ‘my mentor from 6th year worked there’ and ‘greater supervision’. Long-term career ambitions were those where the relocation provided exposure to a specific speciality, or allowed training in that speciality; ‘speciality training requirements’ was a fairly standard reason given by graduates in this category. For the main reason dictating their location of internship practice location, a number of participants also cited rural scholarship commitments, or being balloted to a particular location other than their first preference. Table 1 presents these nine main professional and personal reasons for graduates selecting their internship practice location and subsequent relocations.

Defining internship and current practice location rurality
Location of practice – city or town the graduate was practising in for both internship year and currently (2012) – was identified by linking the survey data to the longitudinal tracking database via graduates’ names. The practice city/town for both internship year and for 2012 was then categorised into ‘metropolitan’ (RA 1), or ‘non-metropolitan’ (RA 2–5), based on the Australian Standard Geographical Classification Remoteness Area (ASGC-RA) index.9

Statistics
All data were coded numerically and entered into the computerised statistical package IBM SPSS Statistics 20 (Windows, Version 20.0. Armonk, NY: IBM Corp.). Frequency analyses described the main reasons for the JCU medical graduates choosing their internship location and up to four subsequent relocations, dichotomising by gender.

For the bivariate analysis, specialty training variables were created by categorising graduates into whether or not they had undertaken training in any of the seven most common post-graduate specialty choices: GP, Rural Generalist Pathway, Adult Internal Medicine (and subspecialties), Surgery (and subspecialties), Paediatrics, Obstetrics and Gynaecology, and Emergency Medicine. Bivariate relationships between specialty training and both internship practice location and current practice location were assessed using $\chi^2$ or Fisher’s Exact test, as appropriate (Table 2). Statistical tests were considered significant when the $P$-value was <0.05.

Results
A total of 175 JCU MBBS graduates responded to the survey from a possible 261 who had reached at least postgraduate year 3 (PGY3) and who had provided current email or telephone details to be contacted for further studies (response rate = 67%). Of these, 35 (16%) graduated in 2005, 32 (15%) graduated in 2006, 37 (17%) graduated in 2007, 36 (16%) graduated in 2008 and 35 (16%) graduated in 2009 (and thus were at the end of their PGY3 when the study was undertaken). One hundred and twelve (64%) respondents were female, and 164 (94%) began the JCU medical course within 3 years of finishing high school. Of the 175
### TABLE 1: Main reason for 175 JCU MBBS graduates (2005–2009) choosing their internship location and up to four subsequent relocations

<table>
<thead>
<tr>
<th></th>
<th>Main reason for Internship choice</th>
<th>Main reason for graduates' 1st move</th>
<th>Main reason for graduates' 2nd move</th>
<th>Main reason for graduates' 3rd move</th>
<th>Main reason for graduates' 4th move</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
</tr>
<tr>
<td>1. To be near family/back to hometown</td>
<td>20 (32%)</td>
<td>38 (34%)</td>
<td>5 (10%)</td>
<td>6 (8%)</td>
<td>3 (11%)</td>
</tr>
<tr>
<td>2. Partner</td>
<td>4 (6%)</td>
<td>13 (12%)</td>
<td>2 (4%)</td>
<td>10 (13%)</td>
<td>3 (11%)</td>
</tr>
<tr>
<td>3. Enjoy the town's lifestyle and/or physical environment</td>
<td>5 (8%)</td>
<td>8 (7%)</td>
<td>-</td>
<td>6 (8%)</td>
<td>-</td>
</tr>
<tr>
<td>4. Travel/adventure</td>
<td>7 (11%)</td>
<td>9 (8%)</td>
<td>7 (15%)</td>
<td>8 (10%)</td>
<td>-</td>
</tr>
<tr>
<td>5. Familiarity with town and hospital as previously based there in Years 5 &amp; 6</td>
<td>15 (23%)</td>
<td>22 (20%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total (personal)</strong></td>
<td>51 (81%)</td>
<td>90 (80%)</td>
<td>14 (29%)</td>
<td>30 (38%)</td>
<td>6 (21%)</td>
</tr>
<tr>
<td>6. Short-term work related factors (e.g., good work experiences, mentor present, available job)</td>
<td>4 (6%)</td>
<td>9 (8%)</td>
<td>9 (19%)</td>
<td>11 (14%)</td>
<td>1 (4%)</td>
</tr>
<tr>
<td>7. Long-term career ambitions (e.g., specialty training and specialty position)</td>
<td>7 (11%)</td>
<td>7 (6%)</td>
<td>25 (52%)</td>
<td>38 (48%)</td>
<td>21 (75%)</td>
</tr>
<tr>
<td>8. Rural scholarship requirements</td>
<td>-</td>
<td>3 (3%)</td>
<td>-</td>
<td>1 (1%)</td>
<td>-</td>
</tr>
<tr>
<td>9. Ballot requirements</td>
<td>1 (2%)</td>
<td>3 (3%)</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td><strong>Total (professional)</strong></td>
<td>12 (19%)</td>
<td>22 (20%)</td>
<td>34 (71%)</td>
<td>50 (63%)</td>
<td>22 (79%)</td>
</tr>
<tr>
<td><strong>Total number of graduates choosing an internship practice location, and total number of graduates moving 1, 2, 3 or 4 times post-internship</strong></td>
<td>63</td>
<td>112</td>
<td>48</td>
<td>80</td>
<td>28</td>
</tr>
</tbody>
</table>
graduates who responded, 47 (27%) had not moved from their internship location.

Overall, the main factor behind choosing internship location was personal (80%), with ‘to be near family/home town’ (32% and 34%, respectively) and ‘familiarity with the hospital & home town’ (23% and 20%, respectively), the two most frequently cited reasons given by both men and women (Table 1). Professional reasons were relatively minor considerations for choosing internship location in both sexes.

In contrast, the top two reasons for the graduates’ first move was professional in both sexes – ‘long-term career ambitions’ (52% and 48%, respectively for male and female), and ‘short-term work’ related (19% and 14%, respectively for male and female) (Table 1). ‘Travel/adventure’ was the most frequently cited personal reason why male and female graduates moved their first time (15% and 10%, respectively). The most commonly cited main reason in both sexes for moves 2, 3 and 4 was again ‘long-term career ambitions’ (Table 1). Female graduates often cited personal factors for later moves (‘to be near family/hometown’, ‘partner’ and ‘travel/adventure’), but these were rarely mentioned by male graduates.

Fifty-nine of the 175 (34%) JCU medical graduates spent their internship year practising in a metropolitan (ASGC-RA 1) tertiary hospital. By the current year (2012), 80 of the 175 (46%) JCU medical graduates were practising in a metropolitan tertiary hospital. The bivariate analysis shows certain specialty training choices were associated with graduates’ 2012 practice location (metropolitan or non-metropolitan), but not their initial internship location (Table 2). For example, Surgical and Paediatrics training was associated with a current (2012) metropolitan practice ($P = 0.007$ and $P = 0.063$, respectively), while General Practice and Rural Generalist Medicine training was associated with current non-metropolitan practice ($P = 0.010$ and $P = 0.001$, respectively).

**Discussion**

These results provide an interesting insight into the decision-making process of medical graduates during their early careers. JCU MBBS graduates usually choose their internship location for broadly personal rather than professional reasons – wanting to return near to family and friends after having studied away for 6 years, and familiarity with the hospital or town because they had previously studied there. After internship, career-related reasons then play the greatest role in choosing practice location. Eley and colleagues similarly found that the two primary drivers influencing early career relocations were personal/family reasons and specialty training requirements.
CHOICE OF INTERNSHIP LOCATION AND BEYOND

Wanting to be near their home town and friends/family is most likely due to the JCU medical program strategy of selectively targeting students from the local NQ region, and the young age of most JCU medical graduates. Many students enter the 6-year JCU undergraduate program directly from high school, so more than 90% graduate while in their early twenties.

As the JCU MBBS course is decentralised across northern Australia, 5th and 6th year students based in one of the four largest regional towns of Townsville, Cairns, Mackay or Darwin. Each of these communities has a population in excess of 70,000 and a relaxed tropical lifestyle. By being based in these communities for 2 years, students would become familiar with both the town and the hospital, and obviously many feel comfortable enough with the personal and professional aspects of that community to undertake their internship there. These early findings suggest that this strategy of dispersed medical education is successful in encouraging graduates to choose a ‘regional’ internship location in NQ. This statement is supported by the School’s tracking of their 2013 interns, which shows tertiary hospitals in regional NQ have a significant proportion of JCU medical graduates. For example, The Townsville Hospital has 28 ex-JCU interns out of a total 61 available internship places (46%); Cairns Base Hospital has 15 ex-JCU interns out of 38 places (40%); and Mackay Base Hospital has 7 ex-JCU interns out of 20 places (35%). Other studies have shown rural residencies increase the likelihood of medical graduates practising in a rural location.10,11 This study, however, supports decentralised undergraduate training as both a strong recruitment and retention strategy for a rural medical career, given that approximately one quarter of all participating JCU medical graduates had not yet moved from their internship practice location despite all having reached at least their PGY3 year.

With each successive move following internship, professional reasons – particularly longer term career ambitions – play the greatest role in choosing practice location. This is to be expected, as not only do career directions become clearer as graduates choose to follow specialty paths, but graduates also become accepted onto various training programs that either stipulate the location of the training (e.g. Rural Generalist Pathway), or are more likely to require graduates move to metropolitan centres (e.g. Surgery, Paediatrics and Radiology).

Therefore, as many JCU medical graduates, mostly in their mid to late twenties, are having to move to either major urban centres or other locations to undertake their chosen specialty training program, there is a good possibility that they will stay there post-training as they become acclimatised to city life, or find a life partner from the city, or their children begin schooling in the city, or for any other personal reason that make it difficult to uproot and return to a rural location. As this study shows many JCU graduates (especially female) do not move regularly, then the provision of post-graduate training opportunities in regional settings, in particular, for Surgical and Paediatrics specialties, appears to be a significant rural recruitment strategy yet to be implemented in the Australian context.

This is important evidence arguing for the development of additional training places and pathways in a range of disciplines through initiatives such as the Northern Clinical Training Network.6 Appropriate policy to support development of pathways in a range of generalist disciplines is essential if workforce maldistributions are to be addressed and non-metropolitan Australia is to benefit from the increase in supply of medical graduates.

While this study shows male JCU medical graduates choose their internship location roughly for the same reasons as female graduates, it appears men move more often after internship and then nearly always for long-term career reasons, while women who move after internship do so for personal reasons almost as much as professional reasons. It may be that that choice of internship location for many graduates – both male and female – is driven by a desire for a supportive, familiar environment during this challenging period. Not only would additional skills, experience and confidence come with graduates completing their early postgraduate years, but likely also a clearer understanding of the specialty they intend to pursue – leading to a greater likelihood of moving for specialty training requirements.

Understanding the differences in motives between the genders regarding choice of practice location may also lead to more targeted approaches for recruiting a rural medical workforce; in particular, specialist training opportunities in Surgery and Paediatrics for men and partner work opportunities for women. It is also interesting that travel and adventure is a significant factor in deciding where to practise in the early career years for both male and female JCU graduates. More emphasis on travel and adventure aspects of rural and remote practice may increase recruitment of Australian medical graduates to these areas.

Limitations

While many of the findings may have resonance with similar medical undergraduate courses, a significant limitation of this study is that the findings are specific to JCU medical graduates. The nature of the JCU MBBS program – an undergraduate course that selects students with a rural background – is not representative of all medical graduates across Australia. In addition, while no difference in age was noted between responders
and non-responders, proportionally more female JCU medical graduates participated in the current study (64%) than are present overall in the first four cohorts (58%); therefore, the possibility of response bias cannot be excluded. While these study findings are interesting, more mid- and later-career data are needed from JCU graduates before we can draw firm conclusions.

Conclusions
Understanding the main motives of medical graduates as they choose their location of practice is the first step in taking a more targeted approach to recruiting a rural medical workforce. These early findings suggest that male JCU graduates relocate significantly more than female graduates, suggesting that targeted strategies should take gender into consideration. This study also suggests that providing placements across NQ for the final two clinical years has seen an increase in JCU medical graduates staying on for internship (and likely later on), given the convenience and their familiarity with the area. Similarly, as speciality training programs appear to be the main driver for early career moves following internship, then it is vital postgraduate training opportunities are provided in regional settings as a retention strategy, in particular for Surgery and Paediatrics, to ensure medical graduates with rural career intentions are not lost to city life because training opportunities are lacking outside of metropolitan centres.

Acknowledgements
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References
6 Northern Clinical Training Network. [Cited October 2013]. Available from URL: http://www.nctn.net.au