# A case for more year-long internships outside metropolitan areas?

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## ABSTRACT

***Objective:*** To determine whether medical graduates who spent their intern year at a non-metropolitan hospital were more likely to practise outside metropolitan areas on completion of training than were interns in metropolitan hospitals.

***Design:*** Retrospective follow-up of doctors who held year-long internships at a non-metropolitan hospital and interns from metropolitan hospitals.

***Setting:*** Ballarat Base Hospital (BBH) (Rural, Remote and Metropolitan Area [RRMA] rural zone) and hospitals in Melbourne and Geelong (RRMA metropolitan zone).

***Participants:*** 57/63 (90%) Victorian medical graduates completing internships at BBH between 1989 and 1997 and 126/126 (100%) sex-matched metropolitan interns, chosen at random.

***Main outcome measures:*** Practice location in 2002.

***Results:*** More BBH interns were practising as GPs outside metropolitan areas (44%) than metropolitan interns (13%) (difference, 31%; 95% CI, 17%–45%). The proportion of interns in specialist practice outside metropolitan areas was small for both groups — zero and 3%, respectively (difference, −3%; 95% CI, −6% to 0). None of the specialist training posts held by interns were outside metropolitan areas. Of BBH interns entering general practice, 41% (95% CI, 24%–58%) did so in the local health region.

***Conclusions:*** Regional interns are a good source of non-metropolitan GPs, especially locally. Prospective studies to determine the precise influence of regional internships on eventual practice location, and whether more such posts would lead to more graduates entering non-metropolitan practice, would be worthwhile.


MJA 2004; 180: 106–108

A RECENT REPORT found that, per capita, there are still significantly fewer general practitioners and specialists outside metropolitan areas.[1] To encourage doctors to practise in non-metropolitan areas, many intern positions offered by metropolitan hospitals include a rotation, usually of only a few months, to a non-metropolitan hospital.[2]

For many years, Ballarat Base Hospital (BBH) has been offering year-long non-metropolitan internships, and has been the chief provider of such internships in Victoria. We hypothesised that more BBH interns choose to practise in non-metropolitan areas on completion of their training than do interns at metropolitan hospitals in Victoria. Our study was undertaken to determine whether this hypothesis was correct.

## METHODS

The proportion of doctors practising in non-metropolitan areas in 2002 was determined retrospectively for a group of Victorian medical graduates who had completed their entire internships at BBH (category 3 in the Rural, Remote and Metropolitan Area [RRMA] classification [Box 1]) between 1989 and 1997, and for a comparable group who had completed internships at hospitals in Melbourne or Geelong (RRMA categories 1 and 2).[3]

### *Selection of interns*

Until recently all internships in Victoria were offered initially to eligible graduates from the medical schools associated with each hospital, through a process that matched the preferences of the newly graduated doctors with those of the hospitals.[4] Victorian graduates allocated internships at hospitals in Melbourne or Geelong by this matching process formed a suitable reference group for Victorian graduates allocated intern positions at BBH.

### *Time period of study*

Doctors who completed internships before 1989 could not be included in the study, because past records of all Victoria's interns and the hospitals to which they had been allocated were only available back to 1989. As the duration of training is at least 4 years for GPs and 7 years for specialists, doctors who completed internships after 1997 were also excluded from our study.

### *Interns' practice location in 2002*

The type and location of the interns' practices in 2002 were found by searching the CD-ROM version of the *Medical Directory of Australia*.[5] For doctors unknown to any of the authors, verification that they were at the location given in the Directory in March 2002 was obtained from the practice, hospital and/or doctor. Practice locations were categorised using the RRMA classification (Box 1).[3]

### *Statistical analysis*

About 60 BBH interns were appointed through the matching process between

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**1: Rural, Remote and Metropolitan Area (RRMA) classification[3]**

The seven RRMA categories are:
1. Capital cities (metropolitan zone)
2. Other metropolitan centres (metropolitan zone)
3. Large rural centres (rural zone)
4. Small rural centres (rural zone)
5. Other rural areas (rural zone)
6. Remote centres (remote zone)
7. Other remote areas (remote zone)

1989 and 1997. Choosing twice that number of metropolitan interns was feasible and increased the effective sample size from 60 to 80.[6] If the proportion of metropolitan interns entering non-metropolitan practice was between 5% and 50%, that number of interns enabled a difference of 25%–50% to be detected as significant ($P < 0.05$, two-tailed test) with at least 80% power.[6]

For each sex and year, a sample of interns equal to twice the number of BBH interns was chosen using a random number table from among those at hospitals in Melbourne and Geelong.

The statistical significance of the difference between the proportion of interns from BBH and metropolitan hospitals entering non-metropolitan practice was assessed using the large-sample normal test.[7]

## RESULTS

Between 1989 and 1997, BBH employed 79 interns. Sixteen had been appointed outside the matching process, making 63 interns (42 men and 21 women) eligible for our study. A comparison group of 84 men and 42 women were therefore selected at random from the male and female interns at metropolitan hospitals. We were able to ascertain the 2002 practice details of 38 (90%) of the male and 19 (90%) of the female interns from BBH, and those of all of the metropolitan hospital interns. The six BBH interns who could not be traced were excluded from the analyses, leaving 38 men and 19 women.

Box 2 compares the proportion of BBH interns practising or training in non-metropolitan areas (RRMA categories 3–7) in 2002 with the proportion of metropolitan hospital interns. BBH interns were more likely to be practising or training in non-metropolitan areas than were metropolitan hospital interns (46% v 17%, $P < 0.001$). This was true of both males (45% v 17%, $P < 0.001$) and females (47% v 17%, $P = 0.019$).

In particular, BBH interns were three times more likely to be practising as GPs in non-metropolitan areas than were interns from metropolitan hospitals (44% v 13%, $P < 0.001$). This was true of both males (42% v 12%, $P < 0.001$) and females (47% v 14%, $P = 0.009$). However, only a small proportion of interns from either BBH or metropolitan hospitals were practising as GPs in RRMA categories 2, 6 or 7.

None of the BBH interns were practising as specialists in non-metropolitan areas. Even among metropolitan hospital interns the proportion practising as specialists in non-metropolitan areas was small, only 3% (95% CI, 0–6%). None of the accredited training posts held by the interns were outside metropolitan areas. This was true of both BBH and metropolitan hospital interns.

Of the 32 BBH interns who were practising as GPs, three (9%) were practising outside Victoria, while 13 (41%; 95% CI, 24%–58%) were practising in Ballarat or elsewhere within the rural health region in which Ballarat is located (Grampians Region). Thus, the BBH interns were an important source of local doctors.

Although the 16 interns who were appointed to BBH outside the matching process had to be excluded from the study, they were also more likely to practise as GPs in non-metropolitan areas than interns from metropolitan hospitals. Ten (83%) of the 12 unmatched male interns and all four unmatched female interns were followed up: five (36%) were practising as GPs in non-metropolitan areas, compared with 13% of the metropolitan hospital interns ($P = 0.08$).

**2: Proportion of Ballarat Base Hospital interns ($n = 57$), compared with metropolitan hospital interns ($n = 126$), practising or training in non-metropolitan areas in 2002. Data are number (%) with 95% CIs**

| Location in 2002 (RRMA category)* | Ballarat Base Hospital interns | | | Metropolitan hospital interns | | |
|---|---|---|---|---|---|---|
| | Male ($n=38$) | Female ($n=19$) | Total ($n=57$) | Male ($n=84$) | Female ($n=42$) | Total ($n=126$) |
| *In general practice, specialist practice or in training (specialist, general practice or undifferentiated)* | | | | | | |
| 1–2 | 21 (55%)† | 10 (53%) | 31 (54%) | 70 (83%)† | 35 (83%) | 105 (83%) |
| | 39%–71% | 31%–75% | 41%–67% | 75%–91% | 72%–94% | 76%–90% |
| 3–7 | 17 (45%) | 9 (47%) | 26 (46%) | 14 (17%) | 7 (17%) | 21 (17%) |
| | 29%–61% | 25%–69% | 33%–59% | 9%–25% | 6%–28% | 10%–24% |
| *In general practice* | | | | | | |
| 1 | 4 (11%) | 2 (11%) | 6 (11%) | 20 (24%) | 12 (29%) | 32 (25%) |
| 2 | 1 (3%) | 0 | 1 (2%) | 1 (1%) | 0 | 1 (1%) |
| 3 | 7 (18%) | 5 (26%) | 12 (21%) | 2 ( 2%) | 3 (7%) | 5 (4%) |
| 4 | 4 (11%) | 1 (5%) | 5 (9%) | 4 (5%) | 1 ( 2%) | 5 (4%) |
| 5 | 5 (13%) | 3 (16%) | 8 (14%) | 4 (5%) | 2 (5%) | 6 (5%) |
| 6–7 | 0 | 0 | 0 | 0 | 0 | 0 |

*See Box 1 for explanation of categories 1–7. † Includes two doctors at metropolitan hospitals overseas.

## DISCUSSION

Our study confirmed our hypothesis for general but not specialist practice. BBH interns were three times more likely to enter non-metropolitan general practice, many locally. However, 13 BBH interns had entered specialist practice or training, but none had done so outside metropolitan areas.

Our study's objective was limited to confirming the hypothesis. Being a cohort study, where internships were not assigned by lot, and retrospective, it could not provide reliable information about the precise influence of the year-long internships on eventual practice locations. BBH interns may have already decided on rural practice before their intern year. Nevertheless, the internship would still have played an important role if it affirmed that decision. For some, it may have revealed rural practice as a new career option. The proportion of unmatched interns entering non-metropolitan practice who did not choose BBH initially supports this. In Canada, students from rural communities are more likely to choose rural internships.[8] However, follow-up of the 1992–1994 intakes to Melbourne University found no such difference between students with non-metropolitan and metropolitan home towns.[9]

The particular strengths of our study were its high follow-up rates and power to detect any differences between BBH and metropolitan interns. The six missing BBH interns did not affect the findings. If all entered metropolitan practice, the proportion of BBH interns practising in non-metropolitan areas (41%) would still be greater than for metropolitan hospital interns (13%) ($P < 0.001$).

Although BBH was the main provider of non-metropolitan internships in Victoria, involvement of one hospital and state raises questions about whether the findings can be generalised. The observations that more than 40% of BBH interns were practising in non-metropolitan areas, and as GPs, concur with similar observations on doctors completing rural internships and residencies in Canada and North America.[10-12] A North American study also found that 50% of doctors who entered rural practice after a residency in a rural community did so in the county of their residency.[11]

The findings have some immediate implications. Regional interns are a good source of non-metropolitan GPs, especially locally, and non-metropolitan communities should be doing all they can to encourage interns aspiring to become rural doctors. More advanced training posts in non-metropolitan areas, as are being established under the Advanced Specialist Training Posts in Rural Areas (ASTPRA) program, may encourage regional interns to also enter specialist practice outside metropolitan areas. Lack of these posts is a known impediment to non-metropolitan practice.[13] Thirteen of the 55 hospitals (24%) that offered internships for 2003 were outside metropolitan areas.[2] However, their internships comprised only 9% of all internships available. Even if they only affirm decisions already taken, checking that the current number and location of non-metropolitan internships are meeting the demand from graduates interested in rural or remote practice would seem worthwhile.

A long-term prospective cohort study, if not a randomised controlled study, will be needed to determine the precise influence of non-metropolitan internships on eventual practice location. Such a study is justified by our data. A cohort study could collect information about factors affecting the choice of a non-metropolitan internship and the subsequent choice of non-metropolitan practice for both metropolitan and non-metropolitan interns. Information about whether pre-set training objectives were being met could also be collected. The duration of either study could usefully be extended to examine retention of GPs in non-metropolitan areas, which is believed to be associated with rural exposure during residencies in North America.[14]

If it could be proved that non-metropolitan internships do influence the recruitment and retention of doctors outside metropolitan areas, then there might be a case for redistributing internships in Australia. However, issues around clinical experience, training standards and funding will need to be considered.

## COMPETING INTERESTS

None identified.

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*(Received 2 May 2003, accepted 29 Oct 2003)* ❑