

## Vertical Integration in Teaching and Learning Within General Practice: a review of the literature

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### Introduction

Australia has recently seen the development of six new medical schools in response to the current medical workforce shortage. This will result in a substantial increase in the number of medical students over the next few years and will inevitably lead to an increase in the number of medical graduates. The latter is projected to rise to nearly 2500 by 2012, an increase of 81% compared with the number of graduates in 2005, and with a concurrent increase in the number of international medical graduates it is anticipated that within a few years' time there will be a total of about 3000 doctors per year competing for junior doctor training positions (Joyce et al, 2007). Given that medical students, in their higher numbers, will also be seeking and competing for clinical experiences and training over the coming years, it is a reasonable assumption that our teaching hospitals will be stretched to an untenable level in trying to cater for the needs of so many.

Both undergraduate clinical teaching and junior doctor work experience and training have traditionally been predominantly hospital-based. This has begun to change in recent years with an increased emphasis on the importance of community-based educational experiences in the curricula of many medical schools and the introduction of prevocational general practice placement terms for junior doctors in their first two (PGY1 and 2) years (Grace and Bradford, 2007). There is the potential, and arguably the need, for such training within Australian general practices to expand. Accepting the responsibility for a greater share of under- and post-graduate medical education could provide an enormous opportunity for general practice. General practitioners (GPs) could expand their roles to include (or include to a greater extent) teaching, mentoring and being role models for their junior colleagues while their practices could become (or develop further) as sites of vertical integration in the education of medical students, prevocational doctors, vocational doctors (registrars) and fully qualified GPs undertaking continuing medical education. Yet the opportunity will not come without significant challenges also, not the least of which would be the demand on the GP's time to provide teaching and supervision. One way to meet this challenge could be to involve all members of the general practice medical team in the teaching of their peers and juniors and hence share the teaching responsibility (Dick et al, 2007) whilst creating a teaching and learning climate within the practice.

It is now considered important that junior doctors and GPs at all levels should develop teaching and learning skills – this is stressed in the current Australian Curriculum Framework for junior doctors (Gleason et al, 2007) and in the Royal Australian College of General Practitioners (RACGP, 2007 Curriculum).

Adoption of a model of vertical integration within a practice that involves the sharing of teaching responsibilities could help to facilitate this outcome. There are potential benefits and barriers to the expansion of general practice as a site for vertical integration in medical education and my aim in undertaking this literature review is to assess what is known about vertical integration within general practice: the advantages and disadvantages and what can be done to improve its chance of being successful.

## Method

Databases Medline and Eric from 1998-2008 were searched for articles. Key words were: vertical integration; prevocational education; general practice; junior doctors and teaching. In all relevant articles found, reference lists were checked and relevant articles sourced. The articles found were classified as random-controlled trials, descriptive or qualitative studies or literature reviews. Articles were critically assessed with respect to their relevance and the quality of the study undertaken. Those considered to be most relevant and those considered to be of best quality in relation to their study design were included in this review. Some viewpoint articles are also referred to due to their relevance to the topic.

## Results

### *The Suitability of General Practice as a Site for Clinical Learning*

Andresen (2000) argues that all learning involves experience. It would follow then that there is no better way to learn about general practice than to be actively immersed in it. It is already well established that general practice vocational training takes place via an apprenticeship-style model whereby general practice registrars undertake work and training within general practices under the supervision and mentorship of experienced GP supervisors. Medical students have also tended to spend some (limited) time during their courses within general practices in order to learn about primary health care however their clinical teaching has tended to be predominantly hospital-based and focussed (Thistlethwaite et al, 2007). Similarly, prevocational training opportunities for junior doctors have, until recently, been almost exclusively hospital-based (Bradford, 2007). Yet general practice has the potential, and arguably the need, to take on a far greater role in the education and training of medical students and prevocational doctors.

Martin et al (2007), in their qualitative study exploring the experiences and perceptions of prevocational doctors who had completed a rotation in general practice, found that prevocational terms in general practice improved exposure to and familiarity with common illnesses, improved communication skills, afforded a greater opportunity to use diagnostic and management skills, allowed the development of different professional relationships with specialists and allowed junior doctors to learn a range of practical skills. Vickery and Tarala (2003), from analysis of questionnaire and interview responses from

participants in a prevocational GP term program in West Australia, claim that the prevocational doctors unanimously nominated the GP term as one of their best rotations. Whilst the respondents could conceivably have over-represented those who enjoyed their general practice experience, this was nevertheless a notable finding given the 68% response rate amongst the junior doctors. Vickery and Tarala's study found that the benefits of a general practice rotation were reported to be improved knowledge or skills (as judged by self-perception) in areas such as management of chronic disease, preventive health, the appreciation of disease in a contextual sense and in time management. Of interest is that their study also found unanimous support for the prevocational placement program amongst the GP supervisors despite the extra demand that these placements put on their time for supervision and teaching activities.

With regard to medical student education, Gordon et al (2000) report an interesting consensus from an international panel of medical educationalists attending the 1999 Cambridge Conference: namely, that primary care settings are most likely (of potential sites for clinical learning to take place) to fulfil the criteria for effective clinical teaching when considered from the learner's perspective. It was argued that this was because primary care environments such as general practice allowed students to identify more readily with patients, the doctors and with the common medical problems they encountered. It was also felt that general practice offered students a more personalised or tailored teaching approach than was typically achieved in busy teaching hospitals. In their viewpoint article, Thistlethwaite et al (2007) contend that there are specific learning outcomes for medical students which can only be learnt in general practice, examples of which are continuity of care and early and/or undifferentiated presentation of disease. They argue that general practice allows the student to develop communication and consultation skills, to participate in diagnosis and management and to learn about community-based care including in such areas as mental health, population health and preventive care. In a study of the perceptions of GP tutors about the experiences of their medical students, Howe (2000) found that GPs felt that the students gained a greater understanding of the impact of illness on the patients and their families as a result of their general practice attachments.

### *Vertical Integration in General Practice: Creation of a Teaching / Learning Continuum*

#### *(a) The sharing of teaching:*

It is by no means a new concept that junior doctors (in their first two postgraduate years) or registrars undertaking vocational training might be involved in clinical teaching. Teaching by registrars and residents (of medical students and of their more junior colleagues) has been the norm within teaching hospitals for decades and there is abundant literature on the extent of their teaching role, the perceptions of the teaching role by both teacher and learner, and the ways the teaching role may be better supported and

enhanced (Busari et al, 2002; Gleason et al, 2007; Kendall & MacPherson, 2005, Morrison et al 2002 and Bensinger et al, 2004). Yet the phenomena of having junior, prevocational doctors working in general practices is one which is very new and only in selected parts of Australia, remaining untried in many others, and the potential role of these doctors in the provision of teaching within the general practice setting has not yet become established. Even when one considers the GP registrars, whose presence and role within general practice is far more familiar and better understood, involvement in teaching is not commonplace, with many registrars never undertaking this responsibility to any significant extent. It has more traditionally been the GP supervisor (or preceptor) who accepts the role of teacher for GP registrars and/or medical students within the general practice setting. When the onus of teaching falls heavily and disproportionately onto GP supervisors it is reasonable to anticipate that GPs could feel overwhelmed by the prospect of also being asked to accept prevocational doctors (who will have their own educational and supervision needs) into their practices. Yet it is likely that in years to come they will indeed be asked to provide such training positions.

Dick et al (2007) offer their view that vertical integration in general practice can be achieved by sharing teaching and learning responsibilities. They propose a model by which prevocational doctors could work and train in general practices without creating onerous teaching responsibilities for the GP supervisor(s). They suggest, rather, that all members of general practice medical team – from experienced GP to medical student – be involved in teaching to create shared teaching and learning roles across all learner stages. Registrars, for example, would take on responsibility for teaching prevocational doctors and medical students; prevocational doctors would help to teach medical students while the GP supervisors would be involved, to some extent, in the teaching of all 3 groups. The benefits they anticipate from such a model include an improved collegiality between members of a practice, an increased range of experiences by students, junior doctors and GP registrars and the increase in expertise, enthusiasm and satisfaction of those involved in teaching.

The sharing of teaching within a general practice has the potential to create a positive climate of learning. In their qualitative study of medical students' experience in clinical settings, Dornan et al (2007) found that the educational climate of a workplace – determined by the attitude and behaviour of the individual practitioners – effects the student's ability to be "absorbed" into the culture of the practice, to achieve collegial relationships with members of the clinical team and to develop a professional identity. Rosenthal et al (2003) suggest that a culture of education and learning has been an attractive feature for GP registrars working in the Riverland region of South Australia and they also report that the GP registrars were often sought out by the medical students for their assistance and teaching. Howe's (2000) research suggests that a climate of teaching within a general practice had benefits for patients also, as they often received greater attention and more in-detail explanations when students were present. According to Howe, GPs also perceived that the whole practice team benefited from being involved in teaching as result of individual members becoming more aware of how they were behaving.

Glasgow and Trumble (2003), in reporting the findings and conclusions of the General Practice Education and Training working party on vertical integration (in which various stakeholders were asked to contribute their views about vertical integration in the general practice environment), found that perceived or anticipated benefits of vertical integration included the opportunity for a greater sense of collegiality within a practice by having GPs, registrars, prevocational doctors and medical students all participating together in teaching and learning opportunities. It was felt that promoting a teaching-learning continuum within in general practice also enhanced the enthusiasm, expertise and satisfaction of those involved.

Beyond the perceived benefits of creating a positive educational climate within a clinical setting, Gordan et al (2000) contend that teaching is a fundamental obligation of a profession and that graduates at all levels should be encouraged to see that teaching is integral to their role. They argue that setting up a culture of teaching is an investment in the future of good clinical care. This viewpoint is one which has gained momentum and the Australian Curriculum Framework for junior doctors, released in 2007, emphasises the importance of an integrated approach to prevocational learning and teaching (Gleason et al, 2007). Similarly, the current Royal Australian College of General Practitioners Curriculum Statement (RACGP, 2007) highlights the need for GPs to develop educational skills “as an integral part of their professional repertoire”. Medical students, it states, should be equipped with teaching and learning skills which will assist them in their own self-directed learning while teaching skills remain important for the prevocational, vocational and fully qualified general practitioner.

#### *(b) The Benefits of Involving GP Registrars and Prevocational Doctors in Teaching:*

Literature is scarce on the subject of teaching by either GP registrars or by prevocational doctors during general practice rotations. A qualitative Melbourne-based pilot study by Johnson et al (2003) looked at a program of integrating GP registrars as the clinical teachers of medical students. While this study was limited by small sample size, an unrepresentative group of GP registrars as teachers and by fairly minimal teaching contact as part of the program, it is highly relevant in its focus and is thus of interest. Its findings were that the registrars enjoyed their teaching and felt confident in the task. The medical students who participated in the program reported that they found the GP registrars to be more approachable, less time-pressured and more empathic than the GP preceptors. Eighty-one percent of students felt that the registrar had assisted their learning and ninety percent felt that the time they had spent with the registrar had been valuable. In another study, Rosenthal et al (2004) attribute the good academic results of the GP registrars and medical students within their region to the two groups having shared a teacher-learner relationship however the connection between the two events is only conjecture.

In contrast, there is a more substantial body of literature on the subject of residents (and registrars) teaching within teaching hospitals. It is estimated that residents spend as much as 20-25% of their time teaching (Bensinger et al, 2005) and Busari et al (2002) found that residents tend to consider teaching medical students as one of their primary responsibilities. Using observational data, Morrison et al (2002) found that residents fulfil a critical role in the teaching of medical students in clinical and procedural skills, acting as key role models, companions and mentors in the process. In addition, they found that residents who were able and willing facilitated some of the medical students' best learning experiences, possibly because it was considered that residents were better than their more senior colleagues at understanding what students needed to learn. Glasgow and Trumble (2003) refer to this phenomenon as "credibility of teachers" and claim that students like to engage with teachers who are more proximate and therefore are perceived as being more "connected" to the students' world. Similarly, Busari et al (2002), from a qualitative study into residents' perceptions of their teaching role, found that the residents themselves felt that they were well-suited to teach medical students due to their proximity to the students, that they were better able to explain things from a student's perspective and that they were more approachable compared with their more senior medical colleagues.

When considering the potential benefits of teaching for the residents themselves, common themes are the enjoyment of teaching and the enhancement of learning it produces. The residents who participated in Busari et al (2002)'s study believed that teaching stimulated them to keep their own knowledge up to date, as well as enhancing the process of reflection and self-learning. Similarly, the residents in the studies by Morrison et al (2002) and Seely (1999) generally enjoyed their teaching and found that it cemented their own medical knowledge. However, Bensinger et al (2005) argue that the true endpoint for measuring the benefits of involving residents as teachers is the enhanced learning of the students and of the residents, ultimately leading to improved patient care. They acknowledge, however, that measuring such outcomes is challenging and hence most studies rely on self-assessments by residents with regard to confidence levels, clinical competence or skills acquisition and on evaluations by students of effectiveness in teaching. Busari and Scherpbier (2004), in their literature review in relation to teaching by residents, concur with this as they found little direct evidence in the literature to support the contention that teaching improved doctors' clinical competence, but nevertheless found that this was a commonly held belief amongst residents who taught. A couple of studies which did try to quantify learning by teaching were those conducted by Weiss and Needleman (1998) and Seely (1999). The former, in a randomised control study, found evidence of improved knowledge acquisition amongst residents involved in teaching compared with residents who attended a lecture only. The study was limited however by the narrow definition of teaching – the preparation and presentation of a formal lecture. Seely (1999)'s study was an open effect trial looking at the correlation between examination results and a rating of teaching ability of senior surgical registrars. It found a trend towards higher examination scores for those rated as having more teaching ability (by students and junior residents). This may indicate that teaching improves

knowledge but may equally support the theory that more knowledgeable doctors are perceived as being better teachers.

### *(c) The Barriers to Teaching by GP Registrars and Prevocational Doctors*

Many potential challenges and barriers to the involvement of GP registrars and prevocational doctors in teaching exist. Some of these, while being very significant issues, are beyond the scope of this literature review to address. Such issues would include the availability of appropriate infrastructure and resources and the financial arrangements under which prevocational doctors, who are employed by a hospital, undertake rotations at general practices.

A significant barrier to GP registrar teaching, found in the Melbourne study which evaluated a program of medical students being taught by GP registrars (Johnson et al, 2003) was time availability. Time availability was also an issue identified by the residents in the studies by Morrison et al (2002) and Busari et al (2002), as was the importance of having the teaching role acknowledged. Yet one of the most common themes in the literature was the perceived need by residents for training in teaching. Many residents reported that they lacked the appropriate skills to teach medical students effectively (Busari et al, 2002; Morrison et al, 2002; Bensinger et al, 2005; Busari and Scherpbier, 2004). A number of studies have evaluated various teacher training interventions and although such interventions have varied fairly significantly in duration and somewhat in content, the outcomes in terms of resident satisfaction and actual or perceived confidence in teaching have generally been positive (literature review by Bensinger et al, 2005). Bensinger et al's own 7-hour teacher training program received encouraging early feedback while White et al (1997)'s half-day teaching workshop produced observable improvements in the teaching skills of those who attended.

## **Discussion**

It is anticipated that there will be a need for significantly more training positions for prevocational doctors within the general practices in the coming years and that this will be coupled with an ongoing trend towards an increased role for primary health care settings in medical student education and training. This literature review aimed to evaluate the suitability of general practice as a site for the vertical integration of teaching and learning, and to assess the potential benefits and challenges of this new era of medical education.

The literature would suggest that primary health care settings such as general practice are suitable settings for experience-based learning in medicine to take place. Indeed, there is qualitative evidence that some aspects of medicine such as chronic care management, communication skills and holistic care are best learnt in this setting. With regard to teaching, a consistent theme in the literature is that junior (prevocational) doctors and registrars can be effective teachers of medical students and, arguably, that they have some

natural advantage in this role insomuch as they are more proximate in their stage of training and, as a result, are perceived to be more approachable and more understanding of the needs of students. It can reasonably be assumed that the same would apply to their involvement in teaching more junior postgraduate colleagues than themselves although there appears to be little in the literature relating to this aspect of medical teaching. There is, however, much qualitative evidence that prevocational and vocational doctors, including GP registrars, generally enjoy teaching and find that it stimulates their own learning and self-reflection with a resultant improvement in their knowledge and clinical competence.

It would thus seem that a model of vertical integration of teaching and learning in general practice could be a necessity but also a potentially advantageous trend in medical education. A greater involvement of medical students and the introduction of prevocational doctors into general practices do not necessarily need to place an excessive onus, with regard to the provision of teaching, supervision and mentoring, on the GP supervisor. Rather, teaching duties can potentially be shared between all members of the medical team within the practice. Indeed, other members of the team, such as practice nurses and practice managers, could also have a teaching role in such a teaching practice although it was beyond the scope of this review to explore the issue of horizontal integration further.

Although enjoyment and personal benefits from teaching are strong themes in the literature, there were some concerns expressed by prevocational and vocational doctors in relation to their teaching roles that should be heeded if we are to advocate the vertical integration model in general practice. Uppermost amongst these concerns were that time should be made available for teaching, the teaching role should be acknowledged as important, and that training in teaching should be provided. Various teacher training interventions have been reported in the literature and, despite the fact that these interventions differ, most seem to be appreciated and beneficial to some extent.

### **Recommendations for Further Study**

This literature review has revealed some areas which have been well researched, such as the experiences of hospital-based resident doctors who have been involved in teaching. There is a substantial gap in the literature however in relation to teaching by prevocational doctors and GP registrars within primary health care settings. Such information would be of great interest in advancing the cause of vertical integration in general practice. In particular, it would be useful to know more about doctors' and students' perceptions in relation to:

- The usefulness of general practice terms for prevocational doctors
- The usefulness of general practice-based experience and training for medical students

- The benefits for GP registrars of being involved in teaching prevocational doctors and medical students
- The benefits for prevocational doctors of being taught by registrars and of being involved in teaching medical students
- The benefits for medical students of being taught by GP registrars and prevocational doctors
- The benefits for all members of the medical team within a general practice of having an educational climate which encourages ongoing teaching and learning

In order to add to the current literature, I propose to study the development of vertical integration in general practice within my own region of the north coast of NSW which is covered by the GP training consortium North Coast GP Training Ltd. Prevocational terms in general practice have not yet been introduced into this region and thus our GP supervisors will have the advantage of being able to learn from the experiences of practices elsewhere. In my proposal, education about the introduction of prevocational GP terms and advice regarding a model of vertical integration would be provided to both GP supervisors and practice managers at their respective upskilling workshops. Sharing the teaching responsibilities between doctors at all levels of training would be strongly encouraged and the training consortium could assist in facilitating this by providing teaching skills workshops at the commencement of each term or rotation of GP registrars and prevocational doctors.

The proposed qualitative study will aim to assess the views and experiences of all those involved in utilising a model of vertical integration in teaching and learning within their general practices, focussing on the points listed above, using a combination of questionnaires, semi-structured interviews and focus groups.

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