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Training doctors in general practices: A review of the literature

Centre for Equity and Primary
Health Research in Illawarra and Shoalhaven

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- build research capacity in primary health care and equity; and
- contribute to teaching in these areas

The Centres for Primary Health Care & Equity are committed to intervention research that will impact on policy and practice.

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Executive Summary

In an environment of increasing community-based curricula for undergraduate medical students and the push for more vertically integrated general practice training and education, research and discussion focuses on the question of whether GPs and their practices are willing and able to accept student and registrar placements. Teaching capacity has been explored under various themes such as physical and financial resources, and teacher skills to address initial fears that general practice is an inadequate training environment. Other topics addressed in the literature include the capacity of rural and remote general practice to provide medical student and registrar placements and the impact of patient consent and satisfaction on the success of practice-based training. The satisfaction of medical students and general practice registrars with education and training carried out in the general practice setting is also of broad interest.

The research suggests that GPs obtain a number of rewards from practice-based training of both medical students and general practice registrars. Intrinsic rewards such as improved morale and increased enjoyment of the practice of medicine are significant factors affecting the GP willingness. However, GPs face a number of challenges in becoming trainers and developing training practices, which may deter them from accepting student and registrar placements. Some of the most significant challenges identified by GPs include increased workload, especially for training medical students, and financial strain on the practice.

Introduction

Doctors have traditionally undertaken much of their training in hospitals but this approach is changing for a number of reasons. The number of hospital beds has reduced over recent years and average lengths of stay are shorter. Patients are often hospitalised only for the most acute stages of their illness and it is difficult to observe a whole illness episode from inside the hospital. An ageing population suffering a range of chronic diseases is cared for in the community and represents a high and increasing proportion of the burden of disease. The development of new medical schools across Australia means that there are likely to be insufficient hospital placements and a shortage of medical staff able and willing to supervise the influx of students.

On a positive note there is some evidence to suggest that medical students may experience better learning opportunities in community settings and in particular in attachments to general medical practices.

The vocational training of GPs has included substantial placements in general practices and a proportion of GPs have been supervisors and trainers for a number of years. Most GPs however have had limited contact with medical students and such contact has commonly taken the form of short placements of days or weeks. These GPs are now being asked to become supervisors of GP registrars and of medical students and to provide lengthy placements in their practices. This causes some difficulties within the Australian context of largely fee for service practice in which as the old saying goes “time is money”.

This literature review is the basis of a study funded by Coast City Country Training (CCCT) Ltd, a GP training agency, to identify successful models used by GPs who act as supervisors for GP registrars

and medical students. CCCT is responsible for GP vocational training in the Illawarra and Shoalhaven, the Australian Capital Territory and the Riverina in New South Wales. This review examines published, peer reviewed, literature on practice-based education and training of GP registrars and medical students in Australia and comparable countries.

The search strategy is outlined below and a summary of the literature is provided in the appendix.

Search Strategy

The search for literature began using the Medline, Meditext and PQD5000 databases. These databases were initially chosen because they include publications covering a broad range of medical and related topics. Initial search terms were broad and included “general practice”, “training”, “registrars” and “medical students”. Results were limited to literature from the last 10 years. Where too many irrelevant results were returned the results were limited to those containing key words in the document title. Following the initial searches other search terms were introduced including “learning”, “teaching”, “practice based”, “community based”, “interns/internships”, “trainees/trainers” and “supervisor”.

Other databases were searched including the Australasian Medical Index which includes articles on all aspects of health and medicine, most of which are not indexed for MEDLINE. The APAIS Health database was also searched because of its emphasis on the legal, social, economic and ethical aspects of health.

Some of the key journals identified through the database searches were searched individually. These included the Medical Journal of

Australia, Medical Education, British Medical Journal and Australian Family Physician.

A number of websites were searched for literature including 'grey' literature. These included Australian College of Rural and Remote Medicine (www.acrrm.org.au), Australian General Practice Training (www.gpet.com.au), Australian Medical Workforce Advisory Committee (www.healthworkforce.health.nsw.gov.au/amwac/amwac/), National Rural Health Alliance (www.ruralhealth.org.au), Primary Health Care Research and Information Service (www.phcris.org.au), Royal Australian College of General Practitioners (www.racgp.org.au), Primary Health Care Research, Evaluation and Development (www.generalpractice.adelaideuni.org). The Google Scholar internet search engine was also used to locate relevant material. Further articles and relevant documents were identified by looking at the reference lists of key articles located from the searches above.

Structure of review

The literature addresses a number of key themes that are outlined below:

- Are GPs willing to act as trainers and supervisors in their practices?
- Do GPs have the appropriate ability and skills to be trainers?
- Do practices have the infrastructure and resources to support placements?
- Are patients happy to be seen by students and registrars?
- Are students and registrars satisfied with their training experience?

There is obviously some subjective influence in the ordering of these elements but the literature suggests that if GPs are willing and enthusiastic, some of the other factors can be overcome. Evidence has been drawn from a number of countries with different health services that have important similarities and differences to the Australian context. The source of papers is mentioned in the text and summarised in the appendix.

Are GPs willing to act as trainers and supervisors in their practices?

Vocational training of GPs in Australia and in many other countries follows an 'apprenticeship model' of training, where the registrar is taught through close observation and teaching from a dedicated supervisor. This model allows the registrar to be fully integrated within the practice and contribute to its productivity. Medical student placements, on the other hand, often occur on a very short-term basis, where the student is taught basic skills through direct observation with minimal participation. GPs can choose whether or not to become trainers of registrars and students and to provide placements in their practices.

Numerous studies in Australia, the UK and the USA have been conducted to identify factors that motivate GPs to be willingly involved in practice-based teaching and training. The majority of studies report that GPs regard the personal or intrinsic rewards of teaching and training as their biggest motivating factor. The findings suggest that personal satisfaction is valued more highly by GPs than any external rewards that may be offered to themselves or their practices.

Of particular importance to those GPs willing to be involved in teaching or training is the perceived increase in enjoyment of the practice of

medicine with the presence of registrars or medical students. For those GPs considering a teaching or training role the idea that these activities will be enjoyable is one of the major attractions (Hampshire 1998). For those GPs already involved in teaching there is evidence to suggest that the majority do in fact enjoy their role as a teacher or trainer (Hays et al. 2003). Family physicians in the USA identify increased enjoyment as one of the major benefits of having a medical student present in the practice (Kollisch et al. 1997; Grayson et al. 1998; Baldor et al. 2001).

This increase in enjoyment can probably be linked to the increase in morale reported by many GPs involved in practice based teaching and training. An Australian example is the increase in GP morale observed from evaluation of the 2002 Greater Green Triangle - Parallel Rural Community Curriculum (Walters et al. 2003). GPs have attributed an increase in morale associated with the presence of a student or registrar to: the variety that is added to the everyday activities of the practice, a broadening of horizons, and a better image of the practice and improved stature with patients (Grayson et al. 1998; Hartley et al. 1999; Mathers et al. 2004).

Altruism is another important motivator for GP involvement in practice-based teaching and training, as reported in the literature. A study of GPs involved in placements of medical students from the Nottingham Medical School in England found that one of the most common reasons for choosing to participate was a desire to improve the teaching that students receive (Hampshire 1998). Some GPs involved in undergraduate placements in the University of North Carolina third year family medicine clerkships valued the altruistic aspects of their experience such as joy in the opportunity to share the knowledge and values of family medicine and also the opportunity to shape the students desire for becoming a family physician (Kollisch et al. 1997). A

few GPs involved in these placements also reported that they felt teaching was a natural part of the doctor's role, which goes back to the Hippocratic oath. Other studies have reported that GPs feel the educational experience they can offer pre-vocational students is valuable even for those who will eventually be employed at a secondary or tertiary health service level. For instance some GPs have reported that pre-registration house officers (PRHOs) in the UK could be offered diverse benefits from a rotation in general practice such as a greater understanding of the interface between primary and secondary care and an increased understanding of the effect of social and psychological factors on health (Williams et al. 2001).

Many GPs report that they are motivated by the challenge and mental stimulation that teaching and training in general practice provides. GPs report that having a student or registrar in the practice encourages them to reflect on their own methods of working and also to keep up to date with recent developments (Harris et al. 1996; Barritt et al. 1997; Mathers et al. 2004). GPs also benefit from the opportunity to enhance their skills as a supervisor and medical educator (Hartley et al. 1999). The idea that teaching would be stimulating was a major reason reported by GPs for their initial interest in the medical student placements from the Nottingham Medical School in England (Hampshire 1998).

What these findings suggest is that motivation to teach and train in the practice is largely influenced by the perceived intrinsic rewards of teaching. These and other findings suggest that a positive experience of teaching is more likely to be experienced by GPs who value education, are interested in self-development and are keen to promote the values of general practice and enhance recruitment of GPs (Howe 2000).

Unwilling GPs

While the majority of GPs who choose to take on registrar or student placements are positive about the experience there are many GPs who choose not to be involved. A small number of studies, particularly in the UK, have sought to address this issue by examining the perceptions of non-training GPs and the reasons why they choose not to participate. One study highlighted the fact that non-training GPs can be further delineated into two groups, namely, those GPs who are interested in teaching or training but cite barriers and those GPs who report no interest in teaching or training at all (Harris et al. 1996). This study and others report that GPs who are not interested in taking on a teaching or training role are more likely to report external barriers such as lack of time to accommodate the increase in workload as their major motivating factor (Harris et al. 1996; Pitts et al. 2005).

Lack of time is an important factor identified not only by GPs not interested in practice-based teaching or training but also by interested GPs (Harris et al. 1996). Furthermore, a number of studies have found that GPs already willingly involved in practice-based teaching or training report that the increase in workload and the additional time needed for teaching and training are major concerns (Kollisch et al. 1997; Grayson et al. 1998; Hartley et al. 1999; Baldor et al. 2001; Mathers et al. 2004). Since there is evidence to suggest that medical students require a significantly higher level of supervision than that needed for registrars (Williams et al. 2001) it may be assumed that time and workload concerns are greater for GPs considering student placements.

Lack of time and the workload demands of students and registrars are particularly pertinent to GPs working in rural and remote areas of

Australia. Workforce shortages and high clinical workloads only exacerbate concerns regarding insufficient time and have a potentially detrimental effect on the number of GPs interested in taking on a teaching role and their continued satisfaction with teaching (Hays et al. 2003; Wearne 2003).

There is a need for further research to determine the actual reasons why some GPs are not interested in teaching or training and to examine whether personal factors play a role in determining lack of motivation. Of interest is a study conducted by Howe (2000) that found that personal factors such as a low priority for education and negative experiences of teaching might be antithetic to practice-based teaching. Weller and colleagues also suggest that the stringent quality targets and careful tallying of hours enforced on GP trainers in the UK may work to demoralise GPs (Weller et al. 2004).

While the factors that affect a lack of interest in some GPs are yet to be fully explored, GPs themselves are more likely to report external barriers such as lack of time. Thus it is important to identify the barriers faced by GPs in regard to practice-based teaching and training and find out if removal of these barriers would improve recruitment and retention of GPs in these roles.

Do GPs have the appropriate ability and skills to be trainers?

In addition to determining whether GPs are willing to be involved in practice-based teaching or training is the important aspect of whether they have the appropriate skills and abilities. Fundamental to successful practice-based teaching is whether GPs and their practice have the necessary infrastructure, funding and support to effectively incorporate teaching and training activities into the everyday clinical workload.

Vocational training providers and teaching institutions are specifically interested in ensuring that GPs and their practices are equipped and able to provide training and education that meets certain educational standards. While objective measurement of ability is crucial, subjective assessments of ability by GPs themselves are also important. GPs consistently report the importance of external factors in their decision to accept or decline student or registrar placements and identifying perceived barriers may be useful for the recruitment and retention of GP trainers.

Teacher skills

It cannot be assumed that all GPs possess the teaching skills and educational experience to carry out quality teaching in general practice. Education activities are seen by many to be an integral component of the GP's role. However, without the necessary skills GPs may be unable to deliver a quality learning experience for registrars and students. Of particular concern is the introduction and expansion of practice-based teaching for medical students. These concerns are largely based on the fact that medical students are perceived to require greater educational responsibility than registrars (Illing et al. 1999) and also the traditional primacy of the teaching hospital in medical education. Concerns such as these were encountered by some students involved in a trial of a new curriculum involving a general practice placement at the Cambridge Clinical School in England. Some senior doctors, junior doctors and other medical students criticised the students for choosing to undertake a general practice placement which replaced their junior medical and surgical hospital placements and also their specialty rotation (Oswald et al. 2001).

There is evidence to suggest that GPs lack confidence in certain areas of teaching. For instance, some rural GP preceptors involved in undergraduate placements at the University of Tasmania felt they had a poor understanding of their role as clinical teachers and how what they taught fitted in to the overall curriculum (Dalton et al. 2004). A lack of understanding of the student evaluation and grading system were reported by some GPs involved in teaching for the University of North Carolina third year family medicine clerkship in the USA (Kollisch et al. 1997).

In spite of the concerns raised by some, the majority of evidence shows that GPs provide an equivalently high standard of education as the hospitals and the teaching provided is valued by students. A randomised crossover trial based on objective structured clinical examinations found that first year students studying at University College London Medical School could learn basic clinical skills equally well in both general practice and hospital settings (Murray et al. 1997). This is similar to the findings of an evaluation of the Cambridge Community-based Clinical Course, which showed that all students involved in the course passed their exams and felt themselves the equal of peers on the traditional course in knowledge and skills (Oswald et al. 2001). Interestingly, an Australian study found evidence that general practice, even rural general practice, may provide a better educational opportunity than hospitals. Third year students attending the Flinders University graduate entry medical course involved in a 12 month rural general practice placement scored significantly better on their year 3 exam scores ($p < 0.001$) than students studying at the Royal Darwin Hospital and the tertiary teaching hospital in Adelaide (Worley et al. 2004).

The perceptions of students involved in practice-based education in the UK reveal that they value the organization of teaching and the methods employed by GPs. For instance University College London Medical School first year students felt that aspects of practice-based teaching such as lower student-tutor ratios, greater supervision and feedback and the active involvement of students in learning were more conducive to a positive educational experience than that offered by hospitals (O'Sullivan et al. 2000). Students from the medical school at Queen's University, Belfast, also believed that GPs were more likely to model positive teaching attributes than hospital doctors including showing interest in students and providing feedback (Johnston and Boohan 2000). Furthermore pre-registration house officers involved in general practice placements with the Newcastle Medical School(UK) regarded the type of supervision given by GPs to be better than that offered by their hospital-based supervisors (Illing et al. 1999).

Many training providers and university departments now offer GPs various teacher training and professional development programs and support. In 1999 a study of medical schools in the UK, Canada and Australia found that 90% of medical schools in Australia offered GP preceptors training prior to teaching, and 70% offered ongoing teacher training (Elliott 1999). This is similar to the UK where 85% percent of schools offer training prior to teaching and 95% offer ongoing training.

Many vocational training providers and teaching institutions offer teacher-training programs as a means of developing and enhancing teachers' skills and confidence and also to ensure the quality of teaching provided to students and registrars. One such program titled Preceptor Onsite Preparation Program for Information Education and Support (POPPIES) is offered within the Discipline of General Practice at

the University of Tasmania. Preliminary responses from GP preceptors who have attended indicated that the workshops were effective in addressing educational needs, and in providing rural clinical teachers with professional teaching development (Dalton et al. 2004).

An innovative teacher-training program addressing the needs of vocational trainers in the North Coast General Practice Training (NCGPT) region in Australia is the NCGPT Teacher Incentive Payment (TIP) Program. GP supervisors in the region are encouraged to develop and enhance their teaching skills and improve the quality of learning for registrars through attendance at training workshops. A requirement of the program is that supervisors must attend a training workshop before they can claim TIP (O'Brien 2004).

In situations where registrars and medical students are being trained in the same setting, there is the opportunity for registrars to provide formal or informal teaching to medical students. This is sometimes referred to as vertical integration. Although detailed evaluation of the quality and value of teaching by registrars in the general practice environment is limited, there is some evidence to suggest that they can be effective teachers of undergraduate medical students and personally benefit from these teaching roles. In the Riverland region of South Australia registrars are often involved in teaching activities within teaching hospitals. These activities include the teaching of basic clinical skills and diagnostic and management processes, with students allowed to manage cases, in concert with them. A key benefit of this training is the large number of opportunities for students to receive teaching on a one to one basis (Rosenthal et al. 2004). Vertically integrated teaching in general practice has also been associated with other potential benefits such as an increased emphasis on teamwork, and increased morale (Glasgow and Trumble 2003).

Another program titled “ Registrars are teachers, too!” has been implemented by the Western Sydney (Wentwest) Regional Training Provider to enhance the teaching skills of registrars in the region. Evaluation of the program showed a very positive response from participants and the authors hoped that other Regional Training Providers in Australia will adopt similar training programs for their registrars (Usherwood et al. 2004).

Do practices have the infrastructure and resources to support placements?

A positive educational experience for students and registrars in general practice requires certain dedicated facilities and educational resources. It is also important that infrastructure and support within the practice are in place to ensure that the general practice can function as a site for medical education and vocational training, while at the same time continuing to deliver a high standard of service to patients and clients.

The Royal Australian College of General Practitioners (RACGP) has set some standards for the general practice as a registrar training post (RACGP 2004). In particular, the RACGP has outlined what physical resources must be available to accommodate general practice registrars. These include consulting space for the registrar in the form of a suitably equipped room, private space for teaching purposes and adequate educational resources such as Internet access, a reference library and easily accessible patient records. In addition the RACGP outlines the important role that practice staff members play in supporting vocational training within the practice. For instance, practice staff should be informed of the function and needs of the registrar, provide feedback to the GP on how the registrar interacts

with them, and encourage the registrar to take an interest in aspects of practice administration.

It logically follows that similar facilities and infrastructure should be in place to support medical student placements. The medical schools themselves can demand certain physical aspects through the application and recruitment process for GP tutors. Some of the specific practice attributes identified as having a positive impact on practice-based teaching of medical students include supportive staff, shared teaching, a joint sense of responsibility, a well organized practice, and adequate premises and facilities (Howe 2000).

There is some evidence to suggest that changes to facilities and practice infrastructure are implemented by most general practices when they commence teaching or training activities (Mathers et al. 2004). However the level of change required differs from practice to practice. For instance, a practice already involved in vocational training will probably require less change to facilities and physical resources if they decide to accommodate medical student placements. In line with this is the suggestion that greater effort is needed for new tutors to engage than for prior tutors to continue in a new context (Howe 2000).

For many GPs the need to update or alter the physical aspects of their practice and the way the practice operates is a barrier to taking on student or registrar placements. For instance a study of a sample of non-training GPs in the Wessex Deanery in England revealed that half of the respondents thought that accommodation within the practice was an obstacle to taking on a training role (Pitts et al. 2005). Problems may also arise from a number of practice level factors such as differing values between a GP tutor and their partners or practice staff, when

teaching is seen as a personal not a team task and also with the occurrence of crises and changes within the practice (Howe 2000).

The findings of studies regarding student and registrar training in rural or remote areas of Australia have raised particular issues such as difficulties finding accommodation and also transport issues (Hays et al. 2003). GPs involved in the 2002 Greater Green Triangle – Parallel Rural Community Curriculum program in South Australia and Victoria were initially concerned about the infrastructure demands on their practices to support the undergraduate medical student placements (Walters et al. 2003). There is also evidence that potential general practice registrars are deterred from undertaking general practice training in rural areas because of the perception that they will be isolated from educational resources, friends and support services (Hays et al. 2004).

However, research shows that GPs are not always deterred by the changes to their practices that need to take place to accommodate registrar or student placements. In fact, many GPs report that they value the opportunity to upgrade certain aspects of their practices and cite a number of short and long term benefits for the practice as a whole. For instance some GPs in the Black Country area of the West Midlands in England reported positive improvements in IT and practice and patient records as a result of either student or registrar placements (Mathers et al. 2004). A study conducted by Baker and Thompson (1995) with 62 training and 62 non-training practices in the UK over the eight-year period from 1982 to 1990 also found that training activities could have a positive effect on the practice. Training practices were more likely than non-training practices to develop important practice capabilities including personnel, aspects of practice organization, educational activities, clinical activities and equipment.

Financial Resources

Current funding models for practice based vocational training and medical student placements in Australia and other countries are aimed at remunerating GPs and their practices for the time, effort and resources necessary to undertake these activities. In Australia GPs involved in vocational training are reimbursed by their Regional Training Provider (RTP) with a teaching allowance, salary subsidy and other practice subsidies. GPs hosting medical student placements, however, are remunerated by their patients on a 'fee for service' basis and accredited practices can also claim the Practice Incentive Program (PIP) Teaching Incentive. The PIP Teaching Incentive, introduced in May 2000, allows practices to claim a payment of \$100 per session, with a maximum of two sessions per day, for medical student teaching activities.

Medical students need greater supervision and create a greater workload for GPs than registrars (Illing et al. 1999; Williams et al. 2001) and so the cost of undertaking undergraduate medical student teaching responsibilities, in particular, is a concern. GPs remunerated by their patients on a 'fee for service' basis only may be particularly deterred from taking on a teaching role for financial reasons. A number of studies report longer work hours and decreased productivity because of a reduction in the number of patients seen per day when a student is present (Kollisch et al. 1997; Baldor et al. 2001). These effects may result in loss of income for some practices and provide a significant deterrent to GP involvement in future teaching of undergraduate medical students. However there is evidence to suggest that student attachments are not always a financial burden, even where GPs work on a 'fee for service' basis. A study to determine the financial impact of a 12 month student attachment to rural general

practice in the Riverland region of SA found that extended attachments (>5months) had a positive effect on general practitioner productivity, without any loss in patient satisfaction. Although there was initially some loss in productivity due to the increase in workload for GPs, the investment was often rewarded later by the students' willing involvement in supervised clinical work (Worley and Kitto 2001).

The subjective assessments by GPs of the costs of taking on student and registrar placements as reported in the literature are varied. For instance, community-based primary care physicians who served as preceptors for Introduction to Primary Care, a course for first and second year medical students at the New York Medical College, had different views on the costs of these student placements. 65% of preceptors felt that their costs for practice were the same when a student was present, while 32% of the preceptors felt their costs increased. Furthermore, these findings appeared to have no relation to practice type, specialty or previous teaching experience within the practice (Grayson et al. 1998). Discrepancies regarding costs were also reported for a sample of South Australian rural GPs with only half (52%) reporting they felt that the attachments had a negative affect on their income (Barritt et al. 1997). Also, only six of the 30 GPs interviewed regarding their involvement in the community based medical education in the North Thames (CeMENT) project in the UK found that the funding for teaching was inadequate (Hartley et al. 1999). What these findings suggest is that GPs may make judgements regarding the costs of teaching and what constitutes adequate remuneration differently.

While adequate remuneration for time, effort and the expenses associated with teaching are important to GPs, it appears to have less influence on the willingness of GP involvement in practice-based

teaching than perceived personal rewards and benefits for the practice, as discussed earlier. For instance, rural GPs involved in a medical student placement program in South Australia, considered quality assurance points to be more appropriate than financial reimbursement as an incentive to take on future teaching activities (Barritt et al. 1997). However, financial incentives may play a key role in attracting non-training GPs to take on teaching or training roles and also assure the quality of the teaching provided. For instance the PIP Teaching incentive, which is used to reimburse GP tutors for the time and effort they spend on student teaching activities, was increased from \$50 to \$100 an hour in August 2004 to more appropriately recognise the work of GPs undertaking teaching roles and also as a means of encouraging more GPs to become involved in teaching (<http://www.hic.gov.au/>). Also, as discussed earlier, North Coast General Practice Training in Australia has implemented a Teacher Incentive Payment (TIP) Program as a means of upskilling GP Supervisors and encouraging and rewarding the provision of quality learning opportunities for registrars (O'Brien 2004).

Are patients happy to be seen by students and registrars?

A crucial factor in the success of practice based training and education is patient consent. The continuing success and further expansion of practice-based teaching and training is highly dependent on an adequate number of patients consenting to have students or registrars present during their consultations. Patient resistance, when it occurs on a large enough scale, may prove to be a significant barrier to the expansion of practice based teaching and training (Hays et al. 2003).

There are a number of studies looking at patient consent, particularly in regard to medical student placements. The evidence from studies conducted in the UK, Australia and New Zealand show a generally positive picture in regard to patient consent. The majority of patients not only give consent to have a student present during their consultation but in many cases have reported personal rewards from the experience. One study in the UK found that almost 100% of the 130 patients participating in the study experienced no disadvantage in seeing a medical student prior to seeing their GP and would be prepared to consult with a student again (Bentham et al. 1999). Evidence from studies conducted in Australia and New Zealand also confirm a high level of acceptance from patients regarding the teaching of medical students in general practice (Kljakovic and Parkin 2002; Walters et al. 2003). One of the major benefits for patients of having a student present during a consultation is being able to hear a more thorough explanation, or to discuss their situation at greater length (Howe 2000).

In recent years in the UK there has been a change from the traditional model of general practice-based teaching, where a student sat in with the GP during a consultation, to the active involvement of patients over a period of time, who have been specifically asked by their GPs to assist in teaching. Patients who are actively involved in teaching have identified a number of benefits from the experience. Two studies from the UK have shown that patients value the opportunity to provide a service to the community and help students and also receive personal benefits such as improved knowledge and improved self esteem (Stacy and Spencer 1999; Coleman and Murray 2002).

Although patient feedback is generally positive, patients have raised a number of concerns about the presence of medical students in

general practice. These include the potential for embarrassment, concerns about student access to notes and whether discussions about patients occur after they have left the consulting room (O'Flynn et al. 1997). The concept of an exclusive GP-patient relationship can be problematic to practice-based teaching (Howe 2000). In the case where patients are actively involved in teaching a specific concern is the potential for reinforcement of the sick role through repeated contact with doctors and students (Coleman and Murray 2002).

There is also evidence to suggest that certain patients, medical conditions and situations are more likely to result in a patient refusing to have a student present during their consultation. Patterns of consent have important implications for the quality of the educational experience received by medical students. For instance a study conducted in the UK by O'Flynn and colleagues (1997) found that patients were more willing to have a student present if the consultation was for a simple physical condition than for an emotional problem or if an internal examination was required. Also, observations from fourth year medical student placements in Wellington, New Zealand, found that consent was more often declined for male students by young women attending women doctors (Kljakovic and Parkin 2002).

Are students and registrars satisfied with their training experience?

In addition to the value students and registrars place on GPs as teachers there is much evidence to suggest that students are enthusiastic about the general practice as a setting for their training and education. This is important in the discussion of the effectiveness of practice-based training since dissatisfaction among students and registrars is likely to affect the willingness of GPs to take on placements

and their ability to provide quality teaching. For instance, a UK study by Howe (2000) found that GPs involved in teaching medical students in their practices identified student response as the most important influence on retention. Motivated and enthusiastic students were thought to have a positive impact on practice-based teaching. Conversely, difficult or uninterested students were thought to bring about self-doubt and team disappointment.

First year medical students involved in University College London Medical School community-based placements reported a number of advantages and disadvantages of learning in the general practice, compared with a hospital setting. Disadvantages included the expense and time taken to travel to community sites; fewer physical signs to elicit; fewer opportunities to practice procedures; and a lack of associated social activities (O'Sullivan et al. 2000). Another recent study has attempted to identify and characterise the types of problems encountered by general practice registrars in Australia. These problems most often relate to aspects of the general practice such as unsatisfactory work conditions, administrative concerns and issues with rural terms. Interestingly, the study also found that problems encountered by registrars were often undetected by their training providers (Larkins et al. 2003).

The majority of studies conducted with students and registrars involved in practice-based teaching and training show that they are generally positive about the experience. Of particular value are the opportunities provided by the general practice as opposed to the hospital as a teaching site. For instance students in the UK have identified the opportunity to see the impact of the social environment on health as an important advantage of learning in a general practice (Illing et al. 1999; Howe 2001). Students also appreciate the opportunity to learn

the importance of dealing with people rather than diseases (Hampshire 1998; Howe 2001). These are similar to the responses of students involved in the Riverland – Parallel Rural Community Curriculum in South Australia, who valued the opportunity to learn clinical decision making in the context of the whole patient, their family, and the available community resources (Worley et al. 2000). Unlike the hospital teaching environment students may be given a wider aspect to learning, resulting in a more holistic view of health (de Villiers 2000). General practice is also perceived to foster more long term and personal relationships between doctor and patient than the hospital setting and students reported that witnessing this relationship is one of the most valued aspects of their placements (Howe 2001).

Conclusions

There is a growing literature from a number of countries about the training of medical students within general medical practices. General practice is organised in different ways in the countries surveyed and so the lessons learnt in one place may not be generalised elsewhere. For instance, in countries where GPs are paid by capitation the balance of financial incentives and barriers is different to those countries that are predominantly fee-for-service. In some countries the multi-disciplinary primary care team has developed in such a way that the GP is the leader of a team while in others the GP does all of the clinical work and sometimes much of the administrative work as well.

It does not follow that if the barriers discussed above are lowered there will necessarily be adequate placements in Australia to meet the requirements of new and old medical schools when they are operating at expected capacity.

It is therefore necessary to look in depth at the practices in New South Wales that are currently training registrars and/or medical students to see what clinical and administrative models are at work and whether they are likely to be transferable to those practices that have taken no part in education and training to date.

Many hopes are riding on the promise of practice-based training. Will they be fulfilled in the Australian health care system?

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Appendix

Table of References

Author(s)	Country	Focus*	Description	Key Findings
Baker and Thompson (1995)	UK	MS & GPRs	Cohort study of training and non-training practices from 1982 to 1990.	Training practices were more developed and more innovative.
Baldor, Brooks et al. (2001)	USA	MS	Qualitative study to assess the interest, perceptions and needs of GPs re student placements.	High interest. Decreased productivity and increased length of day. Enhanced enjoyment and keep up to date.
Barritt, Silagy et al. (1997)	Australia	MS	Qualitative study of views of rural GPs re medical student attachments.	95% willing to have students. Positive effects on continuing education and professional development.
Beaton, Nichols et al. (2001)	Australia	MS & GPRs	Analytical description of ongoing reform of rural general practice education in Far North Queensland.	Importance of vertically integrated regional training structure.
Bentham, Burke et al. (1999)	UK	MS	Qualitative study of patients reactions to consultations with students prior to GP.	98% thought no disadvantage and willing to do it again. 35% thought it was advantageous.
Birks, Farrell, and Newson (2004)	Australia	MS & GPRs	Description of optimised medical education in one rural general practice.	Flexible teaching and learning needs vertical and horizontal integration.
Boendermaker, Schuling et al. (2000)	Netherlands	GPRs	Focus groups with trainers, trainees and staff. Description of good GP trainer.	Good methods, feedback, observation, individualise foster reflection.
Boendermaker, Ket et al. (2002)	Netherlands	GPRs	Log book records to identify quality educational encounters.	Better preparation, more follow up and feedback.
Britt, Miller et al. (2003)	Australia	N/A	Overview of GP activity in 2002 and 2003.	Number of training and non-training practices.
Bryant, Hartley et al. (2003)	UK	MS	Clinical exposure in GP.	Chronic disease. Need hospital to learn about acute.
Butt, Lapsley and Brooks (2002)	Australia	MS & GPRs	Discussion of medical workforce planning.	Responsive and flexible training are fundamental.
Coleman and Murray (2002)	UK	MS	Patients views on medical students in GP in North London	Positive about experience. Altruism and personal gains.
Cottrell, Kilminster, et al. (2002)	UK	GPRs	Identify effective supervision.	Direct supervision and quality of supervisory relationship are key.
Dalton, Baker and Walker (2004)	Australia	MS	Teacher training program.	Need and desire for educational skills development among rural preceptors.
de Villiers (2000)	UK, Australia, South Africa	MS	Discussion of important issues re learning in primary care.	Wider aspect to learning and holistic view of health. Lack of resources. Professionalisation of teaching is important.
Elliott (1999)	UK, Canada and Australia	MS	Changing patterns of medical education in 45 medical schools.	More learner-centred community-oriented format.
Fulkerson and Wang-Cheng (1997)	USA	MS	Reasons for precepting and the rewards expected	Personal satisfaction derived from the student-teacher interaction most important motivator.
Glasgow and Trumble (2003)	Australia	MS & GPRs	3 case studies of Vertical Integration: North Qld, Hunter and Melbourne.	Critical success factors identified.

Author(s)	Country	Focus*	Description	Key Findings
Gray and Fine (1997)	UK	MS	Assess teaching experience and view	86% teaching experience and high level of interest.
Grayson, Klein et al. (1998)	USA	MS	Benefits and costs to GPs of teaching.	Increased enjoyment, keep up to date. Decrease in number of patients.
Hampshire (1998)	UK	MS	Views of students and their GP tutors re early clinical experience course.	Gained confidence. 50% more motivated and able to understand their course. GPs positive. Some difficulties.
Harre-Hindmarsh, Coster and Gilbert (1998)	International	GPRs	Literature review of 25 studies on the outcomes of vocational training.	Improved patient care, knowledge, skills, confidence, attitudes and personality traits.
Harris, Silver et al. (1996)	UK	GPRs	Investigate training deficit and reasons in London.	Less training. Poor incentives.
Hartley, Macfarlane et al. (1999)	UK	MS	Effect of teaching on GP morale.	Positive effect.
Hays, Gupta, et al. (2003)	Australia	MS and GPRs	GP views on barriers to expansion of training.	Barriers include teacher skills, resources and poor rural workforce.
Hays, Veitch, et al. (2004)	Australia	Interns	Views of interns considering general practice.	Concerns about supervision, clinical workload, isolation and support (rural).
Henderson, Berlin, and Fuller (2002)	UK	MS	Student attitudes towards GPs and general practice as a career.	Positive attitude. Increase in popularity from 1 st to final yr. Experience of general practice important factor.
Howe (2000)	UK	MS	GP views on community-based teaching.	Cycle of satisfaction includes personal motivation, shared team responsibility and enhanced professional self-image.
Howe (2001)	UK	MS	Views of students on learning in general practice.	Long-term and more personal relationships with patients, social impacts on health, teamwork. Enthusiasm from all is important.
Howe and Ives (2001)	UK	MS	Impact of general practice exposure on career preference.	Greater preference for general practice.
Illing, Taylor, and van Zwanenberg (1999)	UK	PRHO	PRHO and supervisors views re general practice attachments.	High supervision and wide spectrum of illnesses. Certain aspects were stressful.
Johnston and Boohan (2000)	UK	MS	Student perception and exam scores. GP vs hosp.	Prefer being taught by GPs.
Kljakovic and Parkin (2002)	New Zealand	MS	Patient consent patterns.	Consent usually provided. Declined most for male students by young women attending women doctors.
Kollisch, Frasier et al. (1997).	USA	MS	GP view of clerkship.	Intrinsic rewards have greatest affect on decision to precept. Loss of revenue etc. was demotivating.
Larkins, Spillman et al. (2003)	Australia	GPRs	Nested study- characterise problems experienced by registrars.	Isolation, flexibility, change and uncertainty, work conditions
Larkins, Spillman et al. (2004)	Australia	GPRs	Describe problems during vocational training.	Work conditions, administration, rural issues. Often not detected by trainers.
Mathers, Parry et al. (2004)	UK	MS	Views of primary care staff re more student placements.	Benefits for students, GPs, practice and patients
Mugford and Martin (2001)	Australia	Interns	Preregistration rural intern-training position based in rural general Practice.	Junior doctors report a high-quality learning experience, with ready access to patients and procedural work.

Author(s)	Country	Focus*	Description	Key Findings
Murray, Jolly and Modell (1997)	UK	MS	Randomised crossover trial – comparing clinical skills in GP vs hospital.	Nil difference to slight improvement for GP.
O'Brien (2004)	Australia	GPRs	Description of the North Coast GP Training (NCGPT) Teacher Incentive Payment (TIP) program.	Incentive for more teaching and better quality. More influence from NCGPT.
O'Flynn, Spencer, and Jones (1997)	UK	MS	Patients views on consent and confidentiality re students in general practice.	Generally supportive. Concerns about choice and confidentiality.
O'Sullivan, Martin and Murray (2000)	UK	MS	Perceptions of 1 st yr students. Hosp. vs GP	Clinical skills equal. GP good for social aspects of health and communication skills. Better teaching.
Oswald, Alderson and Jones (2001)	UK	MS	Evaluation of long-term GP attachment. Feasibility, exams, clinical experience, cost and feedback.	Successful.
Parle, Greenfield et al. (1997)	UK	MS	Clinical exposure in GP.	Appropriate exposure to complement hospital teaching.
Parry and Greenfield (2001)	UK	MS	Discussion of quality of education in primary care.	Need to focus on maintaining protected teaching time, low tutor-student ratios and GP enthusiasm.
Pearce (2003)	Australia	GPRs	Describes the nature of corridor teaching in vocational training.	Important aspects of vocational training.
Peile (2001)	UK	GPRs	GP views on aspects of vocational training that have lasting value.	Preparation to tackle unforeseen problems by means of systematic approaches which have been tried and tested.
Pitts, White and Smith (2005)	UK	MS & GPRs	Non-trainer GPs' views on training.	Obstacles include time, space and practice partners.
RACGP (2004)	Australia	GPRs	Vocational training standards for Regional Training Providers	Certain facilities and educational standards must be in place.
RCGP (2004)	UK		Profile of general practitioners in UK	39,920 GPs in 2003.
Rosenthal, Worley et al (2004)	Australia	MS & GPRs	Analytical description of Vertical Integration in Riverland Region of SA.	Successful vertical integration: (1) raised educational stakes; (2) local ownership; (3) broad university role; (4) longer attachments; and (5) shared workforce vision.
Rutter, Herzberg and Paice (2002)	UK	MS & GPRs	Literature review to explore the relationship between a teaching role and stress in doctors and dentists who teach.	Conflicting results. Low autonomy, work overload, and lack of congruence between power and responsibility are risk factors for stress.
Sen Gupta and Spencer (2001)	International	MS & PRHOs	Discussion of shift to more community-based medical education.	More patients in community setting is matched by more education in community.
Stacy and Spencer (1999)	UK	MS	Views of patients taking part in a medical student project.	Patients benefited from the experience.
Stewart and Hyde (2002)	New Zealand	GPRs	Questionnaire and qualitative study of registrars view of a general practice education program.	Most useful aspects of attachments include adequate numbers and a good variety of patients, teacher availability and approachability, informal corridor teaching, supportive positive work environment and

Author(s)	Country	Focus*	Description	Key Findings
				high quality practices.
Sturmberg, Reid and Khadra (2001)	Australia	MS	Description of a patient-centred longitudinal curriculum at Greater Murray Clinical School.	Learning is driven by "doing" in a context-sensitive learning environment.
Talbot (2004)	UK	MS & GPRs	Criticism of graduate and specialist medical education based solely upon a competency model.	Need for a model that engages the higher order competence, performance and understanding which represent professional practice at its best.
Thistlethwaite (1999)	UK	MS	Case-control quantitative assessment of change in consultation behaviour after general practice attachment.	Improved consultation skills.
Thomson (2004)	Australia	MS & GPRs	Framework for planning and implementation of Vertically Integrated training.	Definition, principles, key result areas, outcomes and performance indicators.
Trumble (2003)	Australia	GPRs	Historical account of changes to general practice vocational training in Australia and discussion of current model.	Radical reforms of general practice training in 2001. Graetest challenge is resolving workforce problems.
Turner, Collinson and Fry (2001)	UK	MS	Discussion of changing context of medical education.	Curricula need to be linked to healthcare delivery.
Usherwood, Mishra and Knight (2004)	Australia	GPRs	Evaluate short program for registrar teaching skills.	Highly positive feedback.
Vinson, Paden and Devara-Sales (1996)	USA	MS	Observation of primary physician activity with and without presence of student.	Decrease in productivity of 0.6 patients per hour. Increase in working hours.
Walters, Worley and Mugford (2003)	Australia	MS	Evaluation of transfer of Riverland PRCC model to Greater Green Triangle region of SA and Vic.	Successful student performance, GP acceptance and community ownership.
Wearne (2003)	Australia	GPRs	Registrar views on quality of learning in central Australia.	Isolation, workforce pressures.
Wearne and Wakerman (2004)	Australia	MS & GPRs	Editorial	Need for high quality training <i>in rural areas for rural areas.</i>
Weller, Heller, and Jamrozik (2004)	Australia and UK	MS	Opinion article discussing role of education in the discipline of medicine.	Loss of enthusiasm for imparting wisdom to students.
Wilkinson, Laven et al. (2003)	Australia	MS	Case-control study to determine the association between rural pre-vocational training and medical school entry criteria on likelihood of working in rural Australian general practice.	<i>Positive association between pre-vocation training, medical school entry criteria and likelihood of rural general practice.</i>
Williams, Cantillon and Cochrane (2001)a	UK	MS	GP views on undergraduate teaching.	Most are supportive. Workload is greater.
Williams, Cantillon and Cochrane (2001)b	UK	PRHOs	Views of PRHOs re general practice rotation	Valued the clinical experience and supervision. Encouraged self-directed learning skills.
Worley, Esterman and Prideaux (2004)	Australia	MS	Cohort - Assess academic results of hospital vs GP 3 rd year placement.	Rural GP scored better than Adelaide and Darwin hospitals.

Author(s)	Country	Focus*	Description	Key Findings
Worley and Kitto (2001)	Australia	MS	Determine financial impact of 12 month general practice placement in rural SA.	Attachments greater than 5 months had positive effect on productivity with no loss in patient satisfaction.
Worley and Lines (1999)	Australia	MS	Preliminary results of the PRCC in Riverland SA. Exam results.	Rural GP students scored higher in each of 5 specialist disciplines than hospital peers.
Worley, March and Worley (2000)	Australia	MS & GPRs	Predictions of GP training in 2020.	More undergraduate training in general practice.
Worley and Nichols (2001)	Australia	MS	Progress and results of 1 st year of the Rural and Remote Area Placement Program (RRAPP) for postgraduate Medical students.	Early strategic lessons were identified.
Worley, Silagy et al. (2000)	Australia	MS	Evaluation of Parallel Rural Community Curriculum (PRCC). GP vs hospital.	Better access to patients, clinical learning. Improved academic performance.
Worley, Strasser and Prideaux (2004)	Australia	MS	Comparison of student experience and perceived competence in rural GP compared with hospital.	Reported increase in clinical exposure to common clinical conditions and procedures in comparison with their hospital-based peers.

* MS = Medical students
GPRs = General Practice Registrars
PRHOs = Pre Registration House Officers