



**Women's Health Victoria**

*"facilitating access to quality women's health information"*

# **Access to Women's Health Information**

## **A Literature Review of Health Professionals as Information Providers**

### **Market Research 2002-2003 for Women's Health Victoria**

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## **EXECUTIVE SUMMARY**

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Women's Health Victoria (WHV) commissioned Market Access, an independent market research company, to undertake a review of literature relevant to the health information needs of women and service providers in Victoria, Australia. This was done in two stages with this document being the second.

The prior literature review focussed on identifying women's preferred channels for accessing health information, their critical times for accessing health information and any barriers that existed for women in their access to health information.

The present review relates to service providers, including general practitioners and other community-based health professionals working in primary health care settings. The focus of this review was on how healthcare providers access information, both for their own education and in their role as an information channel for women. This literature review was designed to provide a basis to assist in determining the needs for further primary research to be undertaken with service providers.

This review was conducted with a primary focus on Australian literature and used overseas literature when no local studies could be sourced or to further the understandings of the Australian literature. While the review was designed to include the range of health care providers, the overwhelming majority of published data was in relation to general practitioners (GPs).

### **Current Practices**

Most studies into current practices have focused on GPs, with a handful of studies exploring patient education in other healthcare settings such as pharmacies, dentist clinics, chiropractic clinics and hospitals. The range of media used for disseminating information to patients included:

- Pamphlets and other written information (including manufacturer-generated product information) provided during consultations
- Information from the internet provided during consultations
- Information generated from clinicians' desktop resources, passed on either verbally or in written format during consultations
- Information gained from sources such as textbooks and colleagues, and passed on verbally
- Information from paper and electronic resources provided in waiting rooms.

While most healthcare providers regard patient education as part of their role, patient studies suggested that there is some dissatisfaction with the amount and type of information provided in primary healthcare settings. Similarly, studies suggested a lack of dissemination of printed resources to patients, at least in some primary care settings, often substantially below that recommended in clinical practice guidelines. In particular, it was noted that some providers are more likely to give information to those clients who ask for it. Given that one of the greatest complaints from patients is that they do not have adequate opportunity to ask questions, this is of some concern.

While GPs and other healthcare providers often turn to the internet for information about a specific patient problem, relatively few use the internet to access patient information at the point-of-care. The use of other computerised point-of-care systems is perhaps more widespread, although there were too few comparative studies to accurately evaluate the use

of such systems. Indeed, the two available comparative studies of GPs suggested that the majority still rely on traditional information sources for patient information – such as text books and colleagues – rather than on new technologies.

Importantly though, the literature clearly highlighted the internet and other computerised point-of-care systems as emerging trends in patient education as well as in health professionals' own self-education.

### **Benefits of providing information to patients**

Many studies have demonstrated the efficacy of providing printed educational resources in the context of a healthcare consultation. The provision of printed materials has been shown to impact positively in terms of increased knowledge, lifestyle change, screening behaviour and appropriate use of medicines. While such benefits are well demonstrated within consultations, by contrast, these benefits are not as substantial for printed resources disseminated without the face-to-face component of the consultation.

Computerised patient information systems have also been shown to have positive benefits in terms of knowledge and behaviour change, in some cases over and above those offered by printed resources. They are acknowledged for their capacity to provide information that is tailored to the needs of each patient. However, few studies have assessed the efficacy, in terms of patient outcomes, of point-of-care internet or other computerised systems.

### **Barriers to health information provision**

A range of barriers, related to structural and relationship factors that inhibit patient education and information provision, were identified throughout the literature. These included time constraints, lack of remuneration for preventative healthcare, lack of skill and knowledge in specific areas and concerns about jeopardising the relationship with the patient.

GPs themselves were also acknowledged as potentially restricting or inhibiting patient information receipt through the words and tone they use to inform patients. Thus, GPs have a direct influence on patient decision-making regarding treatment options. On the other hand, patients' lack of knowledge that health professionals can provide information is also a barrier.

Regarding printed educational resources, many studies have highlighted a range of limitations in the resources commonly available to patients in primary care settings. Again most of these studies focused on resources available in general practice rather than in relation to other health care providers. A plethora of studies have demonstrated that printed materials are commonly pitched at reading levels higher than the general population, with concomitant problems in comprehension of the information for many members of the community. However, research has also suggested that in addressing this issue content can be compromised in attempts to optimise readability, resulting in 'infantile' resources that do not adequately inform patients and clients. Indeed, many studies have highlighted problems in the content of printed educational resources across a range of topics: these problems include gaps and omissions which restrict informed decision making, and errors and inconsistencies which act to confuse patients; and suggest that any single resource is inadequate for accurately and comprehensively informing patients and clients about health issues and treatment options. These findings also lead to the conclusion that, in the process of developing patients' resources, it is important to test these information products on relevant target groups of patients to ensure they communicate effectively.

To an extent, the actions of the patients themselves can also act as barriers to the receipt of information. Several studies amongst GPs and pharmacists have demonstrated that the patient requesting information is a key determinant of whether they receive information. These findings suggest that it is important that patients know that information is available for

them to access it and have a range of consequences in relation to equality and consistency of access to information.

Several barriers and limitations were identified in the use of internet information for patient education in primary care settings, both in terms of the restrictions of the consultation and the limitations of internet information itself. First, the internet is currently perceived as being too slow for point-of-care searching for patient information, particularly given the time-constraints of the general practice consultation. GPs also have concerns about negative impacts on the doctor-patient relationship, although community-based studies suggested that an increasing proportion of the community have embraced the internet and would value GP advice regarding access to quality internet information. As with printed resources, some research suggested that problems were experienced with the readability of internet-based information. However, some differences in opinion were also identified, with other researchers proposing that the internet offers a flexible format that caters for all levels of education and health literacy.

The literature suggested that, within the context of concerns about quality assurance (QA) in internet information, GPs and other health professionals are increasingly being called upon to act as 'gatekeepers' to ensure patients and clients access quality health information on the internet. However, it was apparent that their experiences of the internet suggest that the medium does not provide them with as much assistance in this regard as they require.

In terms of the use of other computerised systems at the point-of-care, similar barriers were identified. Some systems are too slow for point-of-care generation of patient information, and some clinicians have concerns about lack of patient receptivity. Some healthcare providers also find these systems non-user friendly, further inhibiting their use for point-of-care information provision.

### **Assessing quality of health information**

Relatively few studies have explored how healthcare professionals access printed patient educational resources. Findings of one reviewed study suggested an over-reliance on drug-company leaflets due to their widespread availability and affordability and noted that this could result in biases in the information provided.

Likewise, few studies have investigated how healthcare providers appraise the quality of patient information resources. The key criteria in evaluation of printed information resources include readability, credibility of source, and currency. Guidelines available for healthcare providers clearly stipulate how information sources can be appraised, but it is unclear how many healthcare providers have access to these guidelines. Similarly for internet-based information, the research suggests that credibility and currency are the key criteria for QA, and while guidelines are available, it is unclear whether GPs and other healthcare professionals are accessing these guidelines.

Importantly, one of the key benefits of patient education via computerised systems is that they optimise QA in regard to the information given to patients. Because computerised systems – including desktop resources, Computerised Patient Information Systems, and Patient Decision Aids – are based on research evidence and clinical practice guidelines, their use helps to promote the practice of evidence-based medicine.

## Information sources used by health care providers

The literature suggests that health care providers use a range of sources of information for their own education. These include:

- Text books
- Consultations with colleagues
- Journals
- Continuing medical education (CME) programs
- Manufacturer provided information
- Conferences, workshops and academic detailers
- CD-ROM and internet sources

In terms of their own continuing education, the research suggests that GPs and other healthcare professionals have a preference for traditional methods of learning. In the context of day-to-day practice and learning, their preferred mechanisms include text-books and consultation with colleagues. In the context of CME programs, in-person conferences and print-based journal articles are the most commonly used and preferred media. Again, most studies in this area have focused on GPs, with relatively few studies documenting the education or information preferences of other service providers working in the primary care setting.

While relatively few GPs currently use electronic methods such as the internet and CD-ROM for their continuing education, there were some indications that these media are gaining increasing appeal. In particular, both the internet and other computerised information systems are being used for accessing research findings and clinical guidelines and, to a lesser extent, for engaging in online discussion groups.

Despite some benefits in terms of accessibility, a range of barriers was identified to use of the internet for health professionals accessing medical information. Specifically, the enormous quantity of information poses a problem and, according to some studies, is often not addressed by available search engines. Issues of QA also pose a large barrier to the use of the internet for professional education, as well as for patient education. For some health professionals, lack of training and lack of skill also inhibit use.

Computerised decision support systems are gaining increasing acceptance by GPs. These systems, which present clinical practice guidelines, have been shown to be more effective than written guidelines in changing GP behaviour. They also appear to have high learning efficiency.

Other more intensive approaches have been used to influence GP behaviour in a range of areas, including lifestyle counselling, prescribing, and screening practices. The two most common approaches are academic detailing of patient-education programs, and multi-faceted training programs. While research suggested that both methods can impact positively on GP behaviour, the intensity of such approaches means that they ultimately appeal only to a small proportion of GPs, presumably those with an interest in the topic area.

For other service providers, several educational strategies have been trialed. These have included active collaboration with researchers, workshops, 'train the trainer' approaches, computerised information systems, and printed materials. However, there is relatively little evidence regarding the preferences of other healthcare providers for each of these formats, or indeed the efficacy of these approaches in terms of healthcare professional education.

## **Needs of special groups of healthcare providers**

It was apparent that some specific issues are faced by healthcare providers working in rural areas and by older healthcare providers, specifically GPs. In both of these cases, issues were identified in relation to the use of new technologies, and especially slower uptake of the internet and other computerised systems. Importantly though, recent studies have suggested that this 'digital divide' is closing in, with almost all health professionals – particularly in Australia – gaining access to computers and the internet. Issues in the digital divide have also been addressed in our earlier review of information access amongst the general community (Murphy et al. 2002).

Some studies have also shown there is a lack of health care resources available to health professionals in rural Australia.

## **Concluding comments**

The present literature review has documented recent research in relation to the manner in which health professionals working in primary health care settings access health information for their own purposes and for passing on to patients.

Research clearly demonstrates that the provision of quality information has considerable advantages to patients, notably in relation to their knowledge, but also in terms of adopting lifestyle changes, screening behaviours and in the appropriate use of medicines. However, it was apparent that there is a lack of research that considers how health professionals determine the quality of information resources. This is of particular concern given the reliance on commercial organisations for some of this information and the biases that have been observed in this information.

The review has highlighted that the bulk of knowledge in this field is related to general practitioners, with a relative paucity of literature existing in relation to other health care providers.

The literature review highlighted the use of internet and other computerised point-of-care systems as emerging trends in both patient education and health professionals' self education. While there are some concerns about and barriers to using these technologies, the review suggests that the advantages of these mechanisms can also be regarded as overcoming some of the limitations experienced in using other resources for health information.

## **BACKGROUND AND RATIONALE FOR THE PRESENT REVIEW**

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Women's Health Victoria (WHV) is a state-wide women's health information service that aims to provide high quality, independent and up-to-date information to women, health service providers, and policy makers. Market Access, an independent market research company, was commissioned to undertake a review of literature relevant to the health information needs of women and service providers in Victoria, Australia. The present review relates to service providers, including general practitioners (GPs) and other community-based health professionals working in primary health care settings. The focus of the review is on how healthcare providers access information, both for their own education and in their role as an information channel for women. This literature review is intended to provide a basis for further primary research to be undertaken with service providers as appropriate.

Service providers, including GPs, are a key resource and information channel for women (Livingston et al. 1998; Mastaglia & Kristjanson 2001). GPs in particular, are often the first point-of-call for women seeking information, advice and/or treatment across a range of health and social issues (Lockwood 1999). Indeed, of all information sources, the GP has been shown to be the most influential in encouraging lifestyle changes and risk screening (eg. Metsch et al. 1998). Hence, it is important to understand the preferences of GPs and other healthcare providers in terms of access to and dissemination of health information. First, we need to understand the ways in which healthcare providers disseminate information to women. This includes an examination of current rates and methods of information dissemination and barriers to information provision. Second, we need to understand the educational and informational preferences of healthcare providers in regard to their own self-education. The present report reviews literature relevant to both of these issues.

There is strong evidence that women want to be informed by primary care health professionals about all aspects of their health care. In particular, studies have demonstrated that women want to know about the costs and benefits of all treatment options, particularly in the case of chronic and life-threatening illnesses (eg. Wilson et al. 2000; Coulter 2001). In addition, women increasingly want to be informed about alternative therapies (Whitehead 2000). As detailed in our earlier review of literature regarding women's access to health information, several studies have demonstrated that women want to be informed about all possible adverse effects of medications and, in the case of pregnant women, all advantages and disadvantages of prenatal screening (Murphy et al. 2002).

Given the importance of health information to women, and the importance of health professionals in the information provision process, there is a need to review and document research studies regarding current practices in the provision of health information in primary care settings.

## **OBJECTIVES**

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This review addresses a number of objectives, within two key areas. These two areas are: a) healthcare providers' role in disseminating information to women, and b) healthcare providers' own education and information.

First, regarding healthcare providers' role in disseminating information to women:

- 1 To investigate how healthcare providers disseminate information to women.
- 2 To identify the barriers to information provision by healthcare providers.
- 3 To identify the benefits of information provision by healthcare providers.
- 4 To investigate how healthcare providers source and evaluate the quality of women's health information.

Second, regarding healthcare providers' own education and information:

- 5 To identify healthcare providers' current and preferred channels for accessing health information, including emerging trends in these areas.
- 6 To identify what group differences exist in relation to the way health information is accessed by healthcare providers.

The report is divided firstly into two broad parts to address the two key areas. Each of the objectives will be addressed specifically and in turn within the two key parts. Emerging trends will be highlighted within each subsection as appropriate.

## **BOUNDARIES FOR THE PRESENT REVIEW**

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The increasing accessibility of computers and, in turn, the internet, underscores the need for the present review to focus on contemporary research findings. Use of the internet is rapidly increasing, and researchers predict that it will continue to do so (eg. Bessell et al. 2002; O'Connor & Johanson 2000; ACNielsen 2001; Lathey & Hodge 2001; Institute for the Future 2000a; 200b). As such, comparative usage rates rapidly become outdated and redundant. This highlights the need to restrict the present review to the last 3-4 years.

In order to increase the relevance of the review to the Australian service provision system, literature searches were initially restricted to Australian-based journal articles. However, as much of the relevant research has been undertaken overseas, predominantly in the United States of America (USA) and the United Kingdom (UK), searches were widened to also identify journal publications of relevant overseas research. Additional unpublished reports of Australian-based research and health promotion strategies are included where available. On the whole, the review has focussed on Australian literature where this is available, and used overseas studies where any gaps have been identified.

It needs to be acknowledged that, while the review is relevant to all health care professionals, the overwhelming bulk of the available literature was in relation to GPs.

## RESEARCH APPROACH AND METHOD

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### METHODOLOGY

A two-step methodology was used to identify and access material to be reviewed. First, relevant reports, literature reviews and other publications were accessed from the WHV library, with advice from the WHV librarian. Given its role as a clearinghouse for health information, WHV has a large collection of such material. Second, systematic literature searches were undertaken to identify relevant articles published in refereed journals. Searches were restricted to publications from 1998 onwards, and to English language and human research.

For Part 1, specific searches were specified as follows:

- An online search of the WHV database using the key words “doctor patient interaction” identified approximately 800 references. When linked with the key words “information provision”, 94 records were identified. When linked with the key word “communication”, 76 records were identified. When linked with the key words “informed consent”, 96 records were identified. Finally, when linked with the key words “decision making”, 42 records were identified. There was considerable duplication across the four searches. After checking all titles, 24 articles were seen as relevant to the aims of the present review and were accessed for detailed review.
- An online search of Medline using the key words “GP OR general practitioner OR physician” AND “patient information” identified 59 references. After checking all abstracts, 10 articles were seen as relevant to the aims and were accessed for detailed review.
- An online search of Medline using the key words “service provider” AND “patient information OR client information OR consumer information” identified only one reference, which was accessed for review. Given the limited outcome of this search, the key words were broadened for two subsequent Medline searches: First, the key words “service provider” yielded 97 references, of which 4 were seen as relevant and were accessed for review. Next, the key words “patient information” identified 423 references, of which 42 were seen as relevant and were accessed for review.
- An online search of Medline using the key words “patient education” yielded 6,998 references. When restricted to Australia, 155 references were identified. After checking, 37 were seen as relevant and were accessed for review. A variety of other key words were then used to restrict the remainder of the “patient education” references. These included nurse (n=494), pharmacist (n=73), pamphlet (n=22), brochure (n=27), system (n=16), point-of-care (n=11), source (n=20) and quality assurance (n=17). On the basis of these searches, a total of 50 articles were seen as relevant and were accessed for review.
- An online search of Medline using the key words “internet and general practice” AND “internet and consultation” OR “internet and point-of-care” yielded 17 and 155 references respectively. Of these, 10 articles were seen as relevant and were accessed for review.

For Part 2, specific searches were specified as follows:

- An online search of Medline using the key words “information OR inform OR education OR educate” and “GP OR general practitioner” identified 838 references. When restricted to Australia, 88 references were identified. A second search using the key words

“information OR inform OR education OR educate” and “physician” identified 152 references. When restricted to Australia, 22 references were identified. There was some duplication. After checking all abstracts, a total of 45 articles were seen as relevant to the aims and were accessed for detailed review.

- An online search of Medline using the key words “information OR inform OR education OR educate” and “service provider OR healthcare professionals OR health professional” identified 218 references. After checking, 25 articles were seen as relevant to the aims and were accessed for review.
- Additional searches were carried out to cover gaps identified following the initial searches. Specifically, a search using the key words “GP” OR “physician” AND “internet” yielded 250 references, of which 42 articles were deemed relevant and were accessed for review.

## **DETAILED FINDINGS**

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This report is divided into two parts to cover the two major areas of focus: information for disseminating to patients and information for self-education. Within the two parts, the findings are divided into sections to address each of the stated objectives as outlined. At the completion of each of these sections, a brief summary of the main findings from the literature has been included.

### **PART 1 – HEALTHCARE PROVIDERS’ ROLE IN DISSEMINATING INFORMATION TO WOMEN**

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#### **1 – CURRENT PRACTICES IN INFORMATION DISSEMINATION IN PRIMARY CARE SETTINGS IN AUSTRALIA AND OVERSEAS**

GPs and other healthcare professionals provide many educational and informational resources to clients and patients. Traditionally these have been predominantly printed pamphlets and brochures. More recently, the internet and other electronic patient information systems have been introduced and are gaining increasing use and concomitant attention in the research literature.

Information resources reach consumers through two main routes. First, many pamphlets and brochures are displayed in the waiting rooms of general practices, pharmacies, dentist clinics, community health centres, hospitals and other services, for clients to self-select. Second, resources are given to patients and clients in the context of health professional consultations. This latter group includes both pre-printed resources (pamphlets and brochures), as well as electronic information generated from either the internet or an electronic system during a health professional consultation. Each of these formats will be discussed in turn. More broadly, the role of primary care providers in giving verbal information and advice is also relevant to this discussion. First then, a brief overview of studies of current patient education practices in primary care settings in Australia and overseas is provided. Studies of both healthcare providers and patients/clients are reviewed to give both perspectives on the extent and adequacy of information provision and patient education in primary care settings.

##### **1.1 – EXTENT OF PATIENT EDUCATION IN AUSTRALIA AND OVERSEAS**

Several studies have demonstrated that general practitioners regard patient education as a key part of their role and currently offer information and education to patients on a routine basis. A study of 840 GPs, conducted by researchers from the Royal Children’s Hospital, assessed GP involvement in health promotion in children. The study found that almost all GPs (95%) see themselves as having a key role in health promotion activities for children (Waters et al. 2000).

There has been much speculation as to the relative involvement of female and male GPs in patient education and information provision, and studies have produced conflicting results. The Australian study of 840 GPs which assessed GP involvement in health promotion in children found that female GPs were almost twice as likely as their male counterparts to be involved in health promotion in children (Waters et al. 2000). A systematic review of 26 studies conducted between 1967-2001 was conducted by researchers in Baltimore, USA. All

studies used either audiotape, videotape or direct observation of consultations. The review concluded that female physicians were more likely than male physicians to engage in active partnership, positive talk, psychosocial counselling, psychosocial question-asking, and emotionally focused talk. In addition, their consultations were on average two minutes longer. However, despite their higher involvement in psychosocial information provision, female physicians were no different to male physicians in the amount, quality or manner of biomedical information giving (Roter et al. 2002). Indeed, a recent study of physician discussion of hormone replacement therapy (HRT), conducted by researchers from the University of Michigan and using audio-tapings of consultations, found that male GPs discussed HRT with their patients more often than did their female counterparts (Huston et al. 2001).

Like GPs, other primary care health professionals similarly regard patient education as part of their role. A study of 149 Australian dentists, conducted by researchers in Sydney, assessed dentists' current practices regarding smoking-cessation information provision and advice (Rikard-Bell & Ward 2001). In total, 70% of dentists saw smoking cessation education as part of their role, even though a higher 86% were aware that smoking is a risk factor for oral cancer. However, in reality a small 14% of dentists "always" asked about the smoking status of their patients and dentists' use of specific behavioural strategies known to assist patients to quit was low. Furthermore, they were more likely to use ineffective (i.e., advice to cut down) rather than effective (i.e., advice to quit) smoking advice. An earlier study of the patient education practices of Australian dentists, conducted by researchers from the University of Newcastle, reported that most dentists asked at least some of their patients about their smoking status and 60% asked at least some of their smoking patients if they were interested in quitting (Clover et al. 1999). A study of 140 practicing Australian chiropractors, conducted by a researcher from Swinburne University, explored chiropractors' willingness to undertake patient education on various health topics (Jamison 2002). The study found that most practitioners were willing to educate patients on a variety of topics, ranging from exercise (91%), to injury prevention (78%), to osteoporosis prevention (23%). A similar study of 658 USA chiropractors also found that the majority (84%) see patient education about lifestyle change as part of their role (Rupert 2000).

Pharmacists similarly see patient education as part of their role, although some evidence suggests that they are most likely to provide information when patients ask for it, rather than offering it unsolicited. In a study of 358 pharmacist-patient encounters in 12 community pharmacies in USA, conducted by researchers from the Ohio State University, information provision was studied in relation to various characteristics of the encounter (Schommer & Wiederholt 1997). Perhaps not surprisingly, more information was delivered to patients presenting with a new prescription than those with a repeat prescription. More importantly though, patient question-asking was found to be the key factor in the provision of information about purpose of medications, contraindications, side effects, interactions, as well as about administration issues such as replacement with a generic brand of medication (Schommer & Wiederholt 1997). This study highlights the importance of patient-initiated information seeking in the context of health-professional consultations.

Hospital-based health professionals also see patient information provision as part of their role. A USA study of 124 hospital-based acute care nurses found that the majority (92%) regard patient education as a priority in nursing care (Marcum et al. 2002). Indeed, hospitalisation is seen as an opportune time for patient education regarding lifestyle change for risk reduction. In a study of 397 hospital-based nurses, conducted by researchers from the University of Minnesota, 63% believed that hospitalisation was an ideal time to support patients in smoking cessation (McCarty et al. 2001).

Other studies show that healthcare providers see many opportunities for the provision of information to patients. A qualitative study of eight medical specialists, conducted by

researchers from the University of Adelaide, explored their perceptions of their role in the provision of non-medical support to patients with Hepatitis C (Teague et al. 1999). Participating medical specialists regarded information provision as a key part of their role, and identified four key periods when patients would benefit from information provision and support, these being: during diagnosis, if they failed to meet treatment criteria, during treatment, and following treatment failure.

Another Australian study has assessed the availability and type of breastfeeding information and support services offered by Melbourne hospitals. All hospitals involved in obstetric care were asked to complete a questionnaire, which assessed antenatal class timing, attendance, cost and content. While breastfeeding information is a small part of antenatal education in Melbourne hospitals, the inclusion of the Nursing Mothers' Association of Australia (NMAA) was widespread, allowing access to information and support services. A specific area of identified need was in the provision of information for women from non-English speaking backgrounds and Aboriginal and Torres Strait Islander backgrounds (Lowe 1998).

The studies reviewed so far document information provision from the perspective of the provider. Several studies have also assessed current information provision practices from the perspective of the patient or client. These are now reviewed.

In Australia, there is mixed evidence regarding women's satisfaction with current information provision and with their involvement in medical decision making in primary care settings. For example, in a study of women with breast cancer, researchers from the Edith Cowan University found that most women were satisfied with their participation in decisions regarding breast surgery: most indicated that they had participated in the decision making process as much as they wished and had received sufficient information (Mastaglia & Kristjanson 2001). By contrast, in a study of 278 postpartum women who had undergone a Caesarean Section (CS), 38% felt they were not involved in the decision, 20% would have liked more information on other options, and only 29% strongly agreed that they had been given good information to prepare them for the possibility of a CS (Turnbull et al. 1999). A recent study of 131 newly diagnosed melanoma patients suggested that not all patients had adequate opportunity to ask their clinician questions (Schofield et al. 2001). A smaller qualitative study of seven women with post-natal depression, conducted through the Action Research Issues Centre, found that women didn't know where to go for help, and were commonly dissatisfied with the information they received from their general practice and hospital doctors (Holopeinen 2002). Thus, while information provision is adequate and acceptable in some primary care settings, there is a lack of information provision in others.

Further to this, there is some evidence that women do not understand the language used by clinicians in primary healthcare settings. In an Australian study of 100 women with breast cancer, conducted by researchers from the University of Sydney, many respondents did not fully understand the language typically used by surgeons and cancer specialists to describe prognosis. Specifically, 53% did not understand 'relative risk' and 'absolute risk' adequately to calculate their own risk reduction with adjuvant therapy, and 73% did not understand the term 'median survival' (Lobb et al. 1999). The authors concluded that misunderstanding is responsible for women's confusion about breast cancer prognosis, and that clinicians should use a variety of techniques to communicate prognosis and risk and should verify patient understanding (Lobb et al. 1999). Several other studies have similarly evidenced the frequency of communication problems experienced in general practice settings (Britten et al. 2000; Barry et al. 2000). Furthermore, other studies have shown that communication problems between patients and clinicians are associated with later confusion, anger, anxiety and depression further into the disease process (Lerman et al. 1993), underscoring the importance of effective doctor-patient communication.

Overseas patient studies similarly show a lack of information provision in some primary care settings. In a study of 500 general practice patients, conducted by researchers from the Whipps Cross Hospital in London, information about smoking cessation was found to be limited. While 62% of smokers had received advice from their GP, only 13% had received information regarding nicotine replacement therapies, and only 5% had been given the phone number of the National Quit Line (Kava et al. 2000). This is despite clinical practice guidelines, which recommend that GPs advise all patients against smoking at every opportunity (Coleman et al. 2000). Also contrary to clinical practice guidelines, the provision of physical activity information by nurse practitioners to sedentary patients has been found to be as low as 30% (Melillo et al. 2000). A USA study of 1,500 women aged 40-69, conducted by researchers from the University of Illinois, assessed the extent of GP discussion about HRT. Only half of the women reported that their GP had talked with them about the benefits and risks of HRT. Furthermore, women at risk of osteoporosis or heart disease were no more likely to have received information (Gallagher et al. 2000). Likewise, a USA focus group study of 128 breast cancer survivors found that women consistently voiced a need for more educational services, particularly those women diagnosed with late-stage cancer and those living in rural areas (Wilson et al. 2000).

Regarding GP gender-differences in patient education, patient studies appear to concur with the GP studies outlined earlier. For example, a large USA study of general practice patients found that female GPs were more likely than their male counterparts to provide preventative health information to patients (Henderson & Weisman 2001).

Not only is there a lack of information provision, but also a lack of opportunity for patients to raise issues and ask questions. In a qualitative study of 35 patients attending GPs in 20 UK general practices, undertaken through King's College London, only four patients voiced all their agendas in the consultation. The most common unvoiced agendas were about possible diagnosis and what the future holds; patients' ideas of what is wrong; side effects; and not wanting a prescription (Barry et al. 2000). Often these unvoiced agendas led to specific problem outcomes, including major misunderstandings, unwanted prescriptions, and non-adherence to treatments (Barry et al. 2000). Australian studies similarly reveal that some patients do not raise issues or ask questions in consultations: "sometimes patients will forget to ask, are held back by language or social barriers, or are reluctant to trouble a doctor" (Hopkins et al. 2000, p.103).

Studies also show that patient information provision in hospital settings is similarly lacking. A study of 73 gastroenterology patients, interviewed after their outpatient appointment at Leicester General Hospital, UK, found high unmet information needs. In total, 90% wanted to know more about relevant diagnostic tests and 92% more about their medications (Eaden et al. 1998). In a UK study of 140 post-operative patients, conducted at the University Hospital, Nottingham, half the patients indicated that they had not received any information. Most agreed that a patient information leaflet would be helpful (Jolley 2000). Another UK study, undertaken by the Royal College of Surgeons, assessed experiences regarding the consenting process amongst a sample of recent surgery patients. Knowledge about the consent procedures was found to be limited: 49% of patients were unaware that they had a right to insist that their surgeon perform only the specified operation, and 83% were unaware that they could add to the consent form before signing. The authors concluded that patients were not well informed about consenting procedures before undergoing surgery (Meredith & Wood 1998).

In summary, these findings suggest that while primary healthcare providers perceive that they have a key role in information provision and patient education, patients themselves are often dissatisfied with the amount and type of information they receive in primary care settings. The next section turns to the use of printed patient education resources in primary care settings.

## **1.2 – USE OF PRINTED EDUCATION MATERIALS**

Research evidence suggests that, for health professionals in some primary care settings, the use of printed educational materials is the preferred approach to patient education. In the study of Australian dentists, for example, participants were asked about their preferences for resources to assist them in their educational role. The study found that dentists were more interested in self-help pamphlets for their patients than either evidence-based guidelines or a self-study module about smoking cessation (Rikard–Bell & Ward 2001). Likewise, in the study of 140 practising Australian chiropractors, practitioners were more likely to provide health information brochures than to develop a tailored health promotion contract with their clients (Jamison 2002). Importantly, chiropractic clients report a preference for health information brochures above other educational formats. In an earlier study of 102 chiropractic patients attending nine Australian chiropractic clinics, Jamison (2001) found that more patients opted for brochures than for classes, personally supervised self-care programs, or practitioner supervised self-care contracts (Jamison 2001). Thus, there appears to be a certain concordance between the preferences of healthcare providers and the expectations of clients in the chiropractic setting.

In other settings though, some evidence suggests that the dissemination of written patient education materials in primary care settings is lower than recommended in clinical practice guidelines. A USA study of 87 primary care physicians, conducted by researchers from the University of Illinois College of Medicine, explored adherence to clinical practice guidelines for the management of acute low back pain. In contrast to the guidelines, only 40% of GPs provided written patient educational materials to patients presenting with acute lower back pain (Di Iorio et al. 2000). A study conducted at Cabrini Medical Centre in Victoria, Australia, assessed the dissemination of supplementary drug information to patients by rheumatologists (Buchbinder et al. 2001). Of 84 participating rheumatologists, 54% reported that they provide copies of written drug information to patients.

In the hospital setting, the provision of printed information is similarly lacking. A study of 74 emergency departments throughout Australia and New Zealand, conducted by researchers from the Royal Melbourne Hospital, found that 78% of emergency departments provided instruction notes and 89% provided information sheets to patients on discharge. However, 69% gave them to only “some” patients. Moreover, none provided sheets that contained all recommended features. Private hospitals were more likely than public hospitals to provide information sheets, but the two did not differ in terms of instruction notes (Taylor & Cameron 2000). In contrast, in the UK, a study of consultant surgeons found that those based in public hospitals were more likely to disseminate written information to patients than were those based in private hospitals (Meredith & Emberton 2000).

In summary, this section again highlights a lack of dissemination of printed resources to patients, at least in some primary care settings. Some studies indicate that such information dissemination is substantially below that recommended in clinical practice guidelines. The next section turns to the use of the internet for patient education, with specific attention to the provision of internet-accessed information during primary care consultations.

## **1.3 – USE OF THE INTERNET**

Research evidence confirms that most GPs in the USA currently have access to the internet. A survey of a random sample of 2,200 physicians, conducted by researchers from the University of Alabama School of Medicine, USA, found that almost all (80%) have access to the internet and know how to use it (Casebeer et al. 2002). A study of 124 emergency medicine residents, conducted by researchers from Ohio Universities College of Medicine, found that 83% owned a personal computer (PC) and had internet access (Jwayyed et al. 2002). In rural America these rates are similar, with 85% of rural physicians reporting that

they have internet access and 75% indicating that they use it at least weekly (Kalsman & Acosta 2000). Rates in New Zealand from a study of 381 GPs found that while 70% had internet access at home, only 40% had internet access at their practice (Kerse et al. 2001).

Rates of internet access and use by health professionals in Australia are at least as high as those reported overseas. A large study of 900 GPs, 1,600 medical specialists, and 900 pharmacists investigated use of the internet by Australia's health professionals (ACNielsen 2001). According to the subsequent "Australian Online Health Report 2001", the majority of health professionals have embraced the internet, with 90% of GPs and over 90% of pharmacists having internet access either at work or home in 2001 (ACNielsen 2001). The internet appears to be equally accessible to rural GPs in Australia. A study of 131 GPs practising in rural and remote Queensland, conducted by researchers from the Queensland Rural Medical Support Agency and the Australian College of Rural and Remote Medicine in Queensland, investigated GPs' computer use as part of a larger study of GPs' preferences for continuing medical education (CME). The study found that 89% of participating GPs had access to computers and 84% had access to the internet (White et al. 2002). However, the authors queried the generalisability of the study findings due to their low response rate of 25% (White et al. 2002).

A Western Australian study of internet usage by GPs resulted in a 46% response rate and showed that 95% of GPs have computers and 75% have access to the internet at their practice. However, only 62% reported using computers at their practice for accessing the internet (Williams & Maj 2001).

When current usage rates amongst GPs are compared with those measured as recently as 1998, it is clear that internet access and usage is rapidly increasing amongst GPs overseas. A survey conducted in 1998 by the Canadian Medical Association and involving 3,520 Canadian physicians showed that, at that time, a lower 56% had access to the internet and only 51% used email. A smaller 47% were able to search bibliographic databases (Sullivan & Buske 1998). Similarly, in a 1998 survey of 9,466 members of the American College of Physicians, 82% used computers for professional or personal use and, of these, about two thirds (representing just over 50% of the full sample) connected to the internet on a weekly basis (Lacher et al. 2000). Furthermore, most of these used the internet for home email and non-medical uses (Lacher et al. 2000).

Australian studies show a similar increase in computer and internet use over recent years. A study of Sydney-based GPs, interviewed first in 1994 (N=301) and again in 1996 (N=371), found a significant increase in computerisation over time (Bolton et al. 1999). While the study did not assess internet use, computer access was shown to increase from (43%) to (59%). Computer and internet access has similarly increased in rural Australia. In contrast to the findings of White and colleagues, (White et. al. 2002) an earlier study of 440 rural GPs found that rural GPs were slow to adopt new technologies (Hoyal 1999).

However, there is less evidence for increasing internet usage amongst other health professionals. A USA study of 165 occupational health nurses, conducted by researchers from Sage Colleges, New York, found that only 39% reported that they frequently accessed the internet to seek health information (Lathey & Hodge 2001). However, a higher 65% reported that they wanted more education about how to use the internet to access health information, suggesting that their internet usage will increase in the future (Lathey & Hodge 2001). Indeed, professional journals are increasingly encouraging service providers to go online for patient information. In an article published in *Caring Magazine*, Cushman (2001) cites a range of websites for health professionals, particularly those working in homecare.

With this increasing prevalence of internet access and use, healthcare professionals are currently exploring ways to incorporate the internet into patient education programs and

consultations. Most studies in this area have focused on GPs, with only a handful exploring internet use amongst other health professionals.

### **1.31 - Use of the internet during consultations**

Research is suggesting that GPs and other health professionals commonly search for specific patient information. A study by researchers from Yale University School of Medicine, USA, found that many GPs report accessing the web daily for patient information (Angood 2001). The Alabama study (Casebeer et al. 2002) found that GPs most common reason for using the internet was to obtain specific information about a particularly patient problem. Similarly in both the Australian (ACNielsen 2001; White et al. 2002) and New Zealand (Kerse et al. 2001) studies, a search for patient information was amongst the key reasons for GPs accessing the internet.

Likewise, other health professionals similarly use the internet for patient-specific problems and patient education. In the Australian study, pharmacists turn to the internet for a specific client problem, many using it to access online drug information (ACNielsen 2001). An online survey of USA dentists, all internet users, found that the most common reasons for using the internet were to keep up generally, to answer patient-specific questions, and to provide patient education (Schleyer et al. 1999).

Documented evidence of the prevalence rates of internet usage during consultations suggests that only a minority of health professionals actually use this approach. A study of 50 New Zealand GPs, conducted by researchers from the University of Auckland, found that while 78% of GPs had a computer available to them at the time of the consultation, very few used it to access internet information during consultations (Arroll et al. 2002). Specifically, of the 50 GPs surveyed, two had used an online medical textbook, one an online medical journal, and one Medline. (Arroll et al. 2002). The Western Australian study also found that, while 75% had access to the internet, few GPs used it during consultations. Only 2.2% reported using it 'often', none reported that they 'regularly' did so and 24% used the internet 'sometimes/rarely' during consultations (Williams & Maj, 2001).

Overseas, a study of 888 primary care physicians in Switzerland found that, while 75% had access to the internet and 24% had access in the consulting room, only 7% used the internet for information retrieval during consultations (Koller et al. 2001). A slightly earlier study of 390 UK GPs, conducted by Backwell and Nailsea Medical Group, Bristol, found that while 91% had a computer in their consulting room, only 19% of these (representing 16% of the full sample) had used the computer to access reference information during the consultation (Watkins et al. 1999). More often in general practice consultations the computer had been used to prescribe medication (98%), look up patient details (98%), or to enter details about the patients' presenting problems (75%; Watkins et al. 1999). In the study of online dentists, conducted by researchers from the Temple University School of Dentistry, USA, only 5% used the internet in their consultation and/or treatment area (Schleyer et al. 1999).

On the other side of the equation, patients themselves present to GPs with health information they have accessed online. The Australian Online Health Report study explored GPs' views of patients' use of the internet for health information. Most GPs (79%) reported being in favor of patients accessing peer-reviewed health information on the internet. Indeed, the majority (89%) reported that patients had presented to them with health information accessed via the internet (ACNielsen 2001). Other studies have similarly reported that many GPs are frequently presented with internet-based information accessed by patients (Pemberton & Goldblatt 1998). Indeed, researchers have suggested that many patients now have the ability to access detailed and accurate online medical information that might be more up-to-date and more comprehensive than their attending doctor's knowledge (Pemberton & Goldblatt 1998). In contrast, one study has suggested that patient-presentation with online

health information is a relatively uncommon occurrence, with respondents in a UK survey of online doctors indicating that a low 1-2% of their patients had used the internet for health information in the previous month (Potts & Wyatt 2002).

### **1.32 - Availability of internet-based information systems in waiting rooms**

Internet-based information systems are also being made available to patients in waiting rooms. However, we could find no studies that documented the extent of patient information systems in waiting rooms in primary care settings.

In summary, this section has shown that GPs in particular often turn to the internet for information regarding a specific patient problem. However, few GPs and other healthcare professionals appear to use the internet to access information during consultations with patients. On the other hand, there is some evidence that patients are increasingly presenting to their GPs with online information. The barriers faced by healthcare providers in using the internet for patient education will be addressed in Section 2.

## **1.4 – USE OF OTHER COMPUTERISED GP DESKTOP RESOURCES**

As well as the internet, a range of desktop computerised programs are available to use by GPs at point-of-care. Some of these are specifically designed for patient education, such as GP desktop resources (GDRs) for counselling patients about smoking cessation (McEwen et al. 2002; Sciamanna et al. 1999) or providing assessments about treatment outcomes for women with early breast cancer (Ravdin et al. 2001). Others are designed both for point-of-care patient information and education, as well as for GP self-education outside consultation time. One such resource is MDConsult (Brahmi 1999). The system combines patient information with Medline, full text journals and textbooks, clinical practice guidelines, and CME programs into a “one-stop shop” for clinical information (Brahmi 1999). GPs can use the system to access patient information and personally provide this information to patients during the consultation: the system provides over 2,500 customizable handouts, which are accessible alphabetically or by topic area, and in a range of languages (Brahmi 1999). Similarly, Medical Director is a simple to use computerised system, developed by an Australian GP in consultation with hundreds of GP colleagues, which enables GPs to access and print out specific patient information during consultations ([www.australiandoctor.com.au](http://www.australiandoctor.com.au)). Medical Director also provides access to the Cochrane library, the PubMed database of journal articles, and various clinical guidelines. Some decision support systems (DSSs), which provide computerised clinical practice guidelines for use by GPs during or outside consultations, also provide patient education materials for distribution to patients during consultations.

Very few studies have directly assessed the use of computerised systems by GPs during consultations. The New Zealand study of 50 GPs found that, while 78% of GPs had computers available during consultations, only 8 (16%) had used a CD medical textbook for information retrieval during consultations over the previous month (Arroll et al. 2002). In contrast, the study of rural Australian GPs demonstrated that 71% of GPs use their computers for generating patient information sheets (White et al. 2002), suggesting widespread use of point-of-care systems such as these. However, none of the reviewed studies specifically documented the extent of use of GDRs in general practice or other primary care settings.

In summary, there are relatively few studies on the use of point-of-care computerised systems, the study by White et al. (2002) providing the only indication of the dissemination of computer-generated information to patients in consultations. While no comparative studies accessed for this review compared the use of GDRs and the internet, the White et al. study suggests more widespread use of GDR systems than shown in the several studies of internet

use at point-of-care. We now review the few comparative studies that have observed or examined where health professionals turn when faced with a specific patient problem.

### **1.5 – COMPARATIVE STUDIES OF INFORMATION SOURCE FOR PATIENT EDUCATION**

Two comparative study of GPs' patient information sources were accessed for this review, and both suggest that GPs still rely more heavily on more traditional resources for point-of-care patient information. The New Zealand study of 50 randomly selected GPs involved direct observation of the information sources used to answer questions arising in general practice (Arroll et al. 2002). There were 122 questions asked during the half-day study period, most of which related to either treatment or diagnosis. The majority of questions were answered using books (40%) or colleagues (20%). The range of colleagues consulted included specialists, GPs, nurses, physiotherapists and non-medical personnel. Although 78% of GPs had computers available to them at the time of consultation, only six (5%) questions were answered using a computerised source. Of these, four (3%) were answered using a CD medical textbook, whereas only one question was answered using Medline and one by other internet sources. Thus, the study demonstrated that questions arising in general practice are commonly answered by traditional information sources, even amongst GPs with high computer access (Arroll et al. 2002).

A USA study similarly used observational methods to determine the use of information sources by physicians in their practice over two half-day periods. The study of 103 randomly selected family physicians found that the most common resources used were books in GPs' personal libraries, followed by colleagues – including other physicians, pharmacists, and nurses. As in the New Zealand study, Medline and other computer applications were rarely used (Ely et al. 1999).

Like GPs, there is some evidence that other health professionals also tend to use traditional resources when faced with client or patient queries. Two studies, both conducted overseas, have examined where health professionals turn for information when faced with drug-related queries. A study of pharmacists, conducted by researchers in Toronto, Canada, explored the information provided by pharmacists to women inquiring about specific drug use during pregnancy (Lyszkiewicz et al. 2001). The study of 40 randomly selected pharmacies, which used a trained female student posing as a surrogate pregnant shopper, found that a relatively small proportion of pharmacists provided evidence-based information regarding the drugs in question. Only 14% referred to current medical literature, while 60% consulted the product monograph. Over 90% of pharmacists referred the client to the physician for further information (Lyszkiewicz et al. 2001).

A similar study of hospital-based nurses in Malaysia used questionnaires to document how nurses handled drug-related questions and the type of information source they used (Ab Rahman & Budiarti 1998). The most common information source used was the National Drug Index, which was cited by 58% of nurses as the most often used reference for handling drug-related queries. Most often nurses referred patients to community-based pharmacies to solve drug-related inquiries (Ab Rahman & Budiarti 1998). While these two studies are not Australian-based and relate only to drug-related inquiries, they raise some concerns about the quality of information provided in some primary care settings.

## **1.6 – SUMMARY**

The review so far has focused on the provision of patient education and information resources in primary care settings. Most studies have focused on GPs, with a handful of studies exploring patient education in other healthcare settings such as pharmacies, dentist clinics, chiropractic clinics and hospitals.

While most healthcare providers regard patient education as part of their role, patient studies suggest dissatisfaction with the amount and type of information provided in some primary healthcare settings. Similarly, studies suggest a lack of dissemination of printed resources to patients, at least in some primary care settings, often substantially below that recommended in clinical practice guidelines.

While GPs and other healthcare providers often turn to the internet for information about a specific patient problem, relatively few use the internet to access patient information at the point-of-care. The use of other computerised point-of-care systems is perhaps more widespread, although there are too few comparative studies to accurately evaluate the use of such systems. Indeed, the two available comparative studies of GPs suggest that the majority still rely on traditional information sources for patient information – such as text books and colleagues – rather than on new technologies. Related to this, many comparative studies have examined GPs preferences in format for their own self-education, again demonstrating a preference for more traditional informational formats than for new technologies. These studies are reviewed in Part 2 of this report.

Importantly though, both bodies of literature clearly highlight the internet and other computerised point-of-care systems as emerging trends in patient education and in health professionals' own self-education.

We now turn to a discussion of the benefits and efficacy of information in primary care settings, again addressing each of the key educational formats.

## **2 – BENEFITS OF INFORMATION PROVISION IN PRIMARY CARE SETTINGS**

Many studies have demonstrated the benefits of receiving information in the primary healthcare setting. These include both randomised controlled trials (RCTs) and satisfaction surveys. While too extensive to document in full, this section presents a brief overview of findings from a selection of relevant research studies conducted both in Australia and overseas.

### **2.1 – PRINTED EDUCATION MATERIALS**

Many RCTs have demonstrated that receipt of pamphlets and brochures in the context of a health professional consultation can benefit patients in terms of behaviour change to improve risk factor profiles. In an RCT, conducted by Sydney researchers, patients received either a GP prescription to exercise (n=380), a GP prescription plus mailed educational materials (n=376), or usual care (n=386) (Smith et al. 2000a). Compared with controls, inactive patients in the supplemented group showed an increase in physical activity at 6-10 weeks, which was sustained at 6-8 months. While a GP prescription alone was not found to be effective, the study demonstrated that GP advice for increased exercise is effective if supplemented by additional printed materials (Smith et al. 2000a). Similarly, in another RCT conducted by researchers from the University of Western Australia and involving 763 sedentary patients, GPs' verbal advice supplemented by mailed written information was found to be effective in promoting exercise. Exercise levels were higher in the intervention than control group at one, three and 12 months post-intervention (Bull & Jamrozik 1998). In

a RCT of 119 pregnant women, conducted by researchers from the University of Queensland, smoking cessation at 20 weeks gestation was found to be higher amongst women who received a smoking cessation booklet from their healthcare provider than those who received usual care (Lowe et al. 1998).

Written information given in the context of GP advice can also promote appropriate use of medicines. In a UK study, conducted by researchers from Nottingham City Hospital, patients presenting with acute bronchitis but not needing antibiotics were given a prescription for antibiotics and told to take the antibiotics if they got worse. A randomised sample of patients was also given an information brochure outlining this information. Two week follow-up demonstrated that those given written information were less likely to have taken the medication (49% vs. 63%), highlighting the role of GP-disseminated written information in promoting appropriate medication use (Macfarlane et al. 2002).

Likewise, written information provided by pharmacists has been shown to be effective in promoting positive behaviour change. In a Canadian study, conducted by researchers from the University of Alberta, community pharmacists provided written and verbal information, together with a point-of-care cholesterol measurement and referral to the GP, for a randomised sample of patients (Tsuyuki et al. 2002). The study demonstrated an improvement in appropriate cholesterol management of these patients by their GPs, including increased cholesterol testing and/or medication prescribing. The approach was so effective that the external monitoring committee terminated the RCT prematurely owing to benefit, thus enabling the information to be available to all pharmacy clients (Tsuyuki et al. 2002). A similar USA trial, involving the provision of written and verbal pharmacists' advice on breast self-examination (BSE), found improvements in BSE practice and confidence at a 6 month follow-up (Giles et al. 2001).

Importantly, while these studies testify to the benefits of information provision in the context of a health professional consultation, the same benefits are not seen when information is mailed to the general population without input from a health professional. For example, a large Australian study conducted by researchers from the University of Newcastle assessed changes in rates of pap tests, mammography, and skin operations following widespread dissemination of an information booklet about cancer risk reduction behaviours (Newell et al. 2002). In the RCT, involving 10 matched pairs of rural towns in NSW, the personal health record booklets were mailed to all residents in the 10 intervention towns. The study found no changes in rates of screening as a result of the intervention. The researchers concluded that information resources need to be targeted to high-risk groups or to constitute the first step in a risk reduction intervention (Newell et al. 2002). Alternatively, in light of the findings of several studies reviewed above, printed materials need to be delivered in the context of consultations with healthcare professionals.

In addition, the provision of written information in some other healthcare settings – apart from general practices or pharmacies – also appears to have limited benefits. For example, two studies of the provision of written information in hospital emergency department waiting rooms found very little impact on screening or risk reduction behaviours (Berger et al. 1998; Richman et al. 2000). The first involved the distribution to 1000 consecutive patients of a pamphlet containing information about cancer screening and immunisation. A two-month follow-up of 316 patients found some impact in terms of pap smears, but no effect for mammography or immunisation services (Berger et al. 1998). The second involved the distribution of a quit smoking pamphlet, with some patients also receiving advice from the physician to telephone the Quitline. Three-month follow-up showed that no patients had contacted the Quitline, and that the addition of physician recommendation had no impact on smoking cessation rates (Richman et al. 2000).

Furthermore, the receipt of written information is generally not as effective as more intensive information provision strategies. In several RCTs, receipt of an information brochure is used as a 'control' approach against which to measure the effect of more intensive methods. On the whole, written information brochures have been shown to be less effective in increasing knowledge and rates of screening behaviour than more intensive information provision strategies such as educational sessions (Forster et al. 2001) and CPISSs (Davis et al. 1998). In contrast though, one of the reviewed studies found that written information was equally effective as CPISSs in increasing knowledge and decreasing anxiety about breast cancer screening (Street et al. 1998).

## **2.2 – INTERNET-BASED INFORMATION SYSTEMS**

Only one of the reviewed studies assessed user-satisfaction with internet-based information systems available to patients in waiting rooms. Researchers from the Medical College of Wisconsin, USA, piloted an internet patient education system in general practice. The system, which used a hypertext webpage directory to patient education sites on the internet, was made available to patients coming for a GP consultation. The study of 56 patients who used the system over a one-month period assessed the usefulness and feasibility of, and patient satisfaction with, the system (Helwig et al. 1999). Most patients spent their online time intensely reading rather than surfing sites. Patients were highly satisfied with this form of information provision via general practice: 94% patients found the information helpful, 90% were more satisfied with their visit than usual, and 92% indicated that they would use the system again. This study shows that having internet-systems available in general practice waiting rooms is well received by patients.

## **2.3 – COMPUTERISED GP DESKTOP RESOURCES (GDRs)**

Again relatively few trials have assessed the benefits of computerised GDRs in general practice. One UK study assessed the use of a GDR for smoking cessation in general practices in London, focusing on changes in GPs opportunistic smoking cessation advice (McEwen et al. 2002). The RCT, conducted by researchers from St George's Hospital Medical School, assessed the use of the GDR by 107 GPs. The study found that rates of opportunistic smoking cessation advice and counselling were higher amongst GPs in the intervention group (given the GDR) compared with controls (McEwen et al. 2002).

## **2.4 – COMPUTERISED PATIENT INFORMATION SYSTEMS (CPISSs)**

CPISSs have a range of benefits regarding the tailoring of information to patients needs, background knowledge and literacy levels. In a letter to the editor of the British Medical Journal, a researcher from the University of Glasgow, UK, notes that a range of factors can be programmed into computerised systems to tailor patient information. "For example, the geographical site, on line questionnaires, medical records, response times to prompts on the screen, and previous choices from menus can all be used by the computer to choose the most appropriate next screen, the vocabulary to be used, or the most appropriate presentation on paper of the materials available (Jones 1999a, p.461). Clearly, this offers one way towards producing materials appropriate to the individual.

RCTs have demonstrated the benefits of interactive CPISSs based in GP and hospital waiting rooms. A USA study of 108 women in GP waiting rooms, conducted by researchers from Texas University, involved a RCT of a CPISS regarding breast cancer screening. Women who used the CPISS showed increased knowledge and decreased anxiety about breast cancer screening (Street et al. 1998). Younger women in particular were in favor of the CPISS in preference to a print-based brochure (Street et al. 1998). A USA RCT involving 445 women in public hospital waiting rooms, conducted by researchers from the Louisiana State University Medical Centre, assessed the relative benefits of a CPISS relating to screening

mammography (Davis et al. 1998). Compared with women receiving an information booklet, those who used the CPIS showed higher utilisation rates of mammography screening services at a 6-month follow-up (Davis et al. 1998). Other cancer-related CPISs have been shown to be easy to use and effective for patient and family education (Jones et al. 2001). Linking of cancer-related CPISs to the patient's record has been shown in an RCT to have an additional benefit above a generalised CPIS for cancer patients (Jones et al. 1999b). Cancer-related CD-ROM programs are similarly regarded as beneficial in informing patients about cancer and treatment options, both at the time of diagnosis and during treatment (Agre et al. 2002).

Patient Decision Aids (PDA) are also gaining increasing use in primary care settings. These have been developed for difficult decisions in which patients need to consider benefits versus risks, including HRT and prenatal testing. In a Canadian study, conducted by researchers from the University of Ottawa, a computerised PDA was shown to increase knowledge about expected outcomes and personal values (O'Connor et al. 1999). Given their role in informing patients about risks and benefits, these aids sometimes reduce the proportion of patients who choose more intensive treatment options, particularly amongst those who are undecided (O'Connor et al. 1999; Mort 2001).

## **2.5 – SUMMARY**

Many studies have demonstrated the efficacy of providing printed educational resources in the context of a healthcare consultation. In RCTs, the provision of printed materials by either the GP or pharmacist has been shown to impact positively in terms of increased knowledge, lifestyle change, screening behaviour, and appropriate use of medicines. In contrast, such benefits have not been seen for printed resources disseminated through hospital emergency departments.

Computerised patient information systems have also been shown to have positive benefits in terms of knowledge and behaviour change. However, few studies have assessed the efficacy, in terms of patient outcomes, of point-of-care internet or other computerised systems.

## **3 – BARRIERS TO INFORMATION PROVISION IN PRIMARY CARE SETTINGS**

Despite these benefits, the literature demonstrates that there are many barriers to information provision within the primary care setting. Broadly, health professionals express concerns about their own competency in providing education and information to patients and clients in primary care settings. Other structural barriers – such as time constraints and lack of remuneration – also inhibit information provision. Patient-related barriers also play a part. In addition, specific barriers apply to written information resources and internet-based information systems used in primary care settings. These barriers are addressed in turn.

### **3.1 – STRUCTURAL BARRIERS PERCEIVED BY HEALTHCARE PROVIDERS**

Structural barriers, particularly time constraints, have been found to limit the provision of information to patients in primary care settings. The Royal Children's Hospital study of 840 Australian GPs assessed barriers to health promotion in children (Waters et al. 2000). The study found that four key barriers to GP involvement in health promotion, including information provision, were time constraints, lack of remuneration, inappropriateness of preventive care during acute illness, and lack of community resources (Waters et al. 2000). Another Australian study of 60 GPs, conducted by researchers from the University of Western Australia, focused on the practice of evidence-based medicine (Young & Ward

2001). Within that context, the study found that lack of time to discuss research evidence with patients was a major barrier to information provision. Indeed, time constraints were considered more important than perceived lack of skills in limiting information provision by GPs. A USA study of 298 primary care physicians, including GPs, pediatricians, geriatricians and internists, similarly found that inadequate time was the major barrier to information provision (Abramson et al. 2000).

Likewise, hospital-based health professionals similarly cite structural barriers to patient education. In a study of 124 hospital-based acute-care professional nurses, researchers from the Boise Department of Veteran's Affairs Medical Centre, USA, found that time, staffing and lack of receptiveness by patients were the key barriers to patient education (Marcum et al. 2002).

In addition, several studies have demonstrated that GPs and other health professionals lack skills and a sense of competency in offering information and education to patients. In an Australian study, conducted by researchers from the University of Newcastle, 307 recent graduates and final year students of medicine and surgery indicated their perceived levels of competency in communication skills. For most items in the questionnaire, at least one third of respondents reported low competence. Compared with specialists, general practitioners reported higher competencies and more positive attitudes to communication skills training (Girgis et al. 2001). In a review of literature regarding health professionals' skills in "breaking the bad news" about a cancer diagnosis, researchers from the University of Newcastle report that while health professionals regard counselling as part of their role, many feel ill-equipped to do it. For example, a survey of Australian surgeons found that more than 75% regarded communication as part of their role, but felt they needed additional training in this area (Girgis et al, 1997; cited in Girgis & Sanson-Fisher 1998). Similar findings were reported for both GPs and oncologists (Girgis & Sanson-Fisher 1998). A qualitative study involving 12 Australian GPs revealed concerns about discussing emotional and sexual issues, particularly amongst male GPs (Johnson et al. 2001). A UK study of pharmacists' ability to provide advice relating to sexual health similarly found skill-based barriers. The study, conducted by researchers at Clayton Hospital, Wakefield, found that 29% of pharmacists felt unable or unskilled to broach the subject of sexually transmitted infections (STIs) with both male and female clients (Ralph et al. 2001). Indeed, only 44% had ever received training in emergency (post-coital) contraception (Ralph et al. 2001).

Health professionals also lack accurate knowledge in some areas of information provision. The Western Australian study of GPs' practice of evidence-based medicine, found that few GPs understood the terms 'relative risk' (23%) and 'absolute risk' (28%) sufficiently to explain to others (Young & Ward 2001). The UK study of pharmacists' ability to provide advice relating to sexual health similarly found knowledge-based barriers: 79% of pharmacists did not know where the local genitourinary medicine services were located and, subsequently, had never referred patients to appropriate services (Ralph et al. 2001).

Concerns about the doctor-patient relationship also inhibit the provision of preventive health information by GPs. In a UK study of 39 GPs, conducted by researchers from the University of Leicester, GP consultations were videotaped and assessed. The study found that GPs did not utilise opportunities for smoking-cessation advice amongst their smoking patients. Their reasons for this were concerns about preserving a good doctor-patient relationship and avoiding negative responses from patients once the topic of smoking was raised. They preferred to restrict smoking discussions to times when patients presented with smoking-related problems, or where the doctor-patient relationship was strong (Coleman et al. 2000). A qualitative study involving 19 UK GPs, conducted by researchers from the Institute of General Practice, Exeter, explored barriers to the practice of evidence-based medicine (Freeman & Sweeney 2001). Again concerns about maintaining a good doctor-patient

relationship often dictated what GPs told patients: “even if the evidence was extremely good, most of us would only ever interpret it in the context of the patient” (2001, p.2).

At the same time though, GPs themselves can act to deliberately limit and influence the amount and type of information patients receive. In the UK qualitative study regarding the practice of evidence-based medicine, participating GPs indicated that the words they use can have a strong influence on patient decision-making regarding treatment options. While it was clearly a ‘hotly-debated issue’, many of the participating GPs felt that “it’s how you put it over” and “it depends on how you feed it to them” (2001, p.3). One GP commented: “I make these judgements in theory with the patient but probably on my own” (2001, p.3). According to the authors, “this tension between encouraging autonomy and effectively limiting options by the slanted presentation of relevant material was a relatively strong theme” in the discussions (Freeman & Sweeney, (2001, p.3). These findings concur with those reported in an earlier focus group study conducted with Australian GPs by researchers from Monash University’s Department of Community Medicine (Mayer & Piterman 1999).

Patient-based knowledge barriers can also preclude information dissemination by health professionals. For example, a Canadian study of calls to a drug information line found that 94% of callers (mostly older females) had a pharmacist but had never thought of using their pharmacists for drug information. The authors concluded that lack of awareness that health professionals are willing and able to provide information can preclude information access (Grymonpre & Steele 1998).

In summary, these studies highlight a range of structural and relationship barriers which inhibit patient education and information provision. We now turn to specific barriers in disseminating printed and internet-based information in primary care settings.

### **3.2 – BARRIERS IN USING PRINTED EDUCATION MATERIALS**

A handful of studies have investigated the pamphlets and brochures used in general practice and other primary care services. These studies have included evaluation of the source and content of these patient education materials.

#### **3.21 - Problems of readability of printed educational resources**

Many studies have identified problems with the readability of printed educational resources commonly made available to patients and clients in primary care settings. In general, it is recommended that brochures be written at or below the 6<sup>th</sup> grade level (Estrada et al. 2000; Hayes 2000). However, many studies have found that this is often not the case. Most of these studies have been undertaken overseas.

Several overseas studies have demonstrated that patient education materials are pitched at inappropriately high reading levels. A USA study, conducted by researchers from East Carolina University, assessed the readability of 50 brochures commonly used in anticoagulant management units. Brochures sourced from both industry and health advocacy groups were assessed. The study found that the mean readability was grade 10.7. Moreover, 74% of brochures tested at a reading level of 9<sup>th</sup>-12<sup>th</sup> grade and a further 14% at higher than 12<sup>th</sup> grade. Indeed, none had readability at 6<sup>th</sup> grade level. There were no differences in readability of brochures sourced from either industry or health advocacy groups (Estrada et al. 2000). Another USA study, conducted by researchers from Wayne State University, assessed the readability of written patient information materials commonly used by nurses during home visits (Wilson 2000a; 2000b). The study found that much of the materials were too difficult for patients and caregivers to read and comprehend: 52% of patients needed additional instruction after reading the materials and 24% were unable to comprehend what they read (Wilson 2000a; 2000b). Similarly, a UK study of patient information resources available within an acute hospital found an over-use of technical and

medical language (Paul et al. 2001). A wealth of other USA and UK studies have similarly demonstrated that printed patient education materials are commonly pitched at inappropriately high reading levels. These findings relate to nurse-disseminated pamphlets (Maynard 1999), neurology patient education brochures (Murphy et al. 2001), emergency department discharge materials (Hayes 2000), pharmacy-based information brochures (Brock et al. 2000), pamphlets developed by the American Sleep Disorders Association (Chesson et al. 1998), and patient education pamphlets available through the American College of Obstetricians and Gynecologists (Freda et al. 1999). Only one study contrasted these otherwise consistent findings. In a study of 61 hypertension leaflets, researchers from the University of Birmingham, UK, found that 13 of the 19 non-internet leaflets met recommended criteria on use of language and were considered readable by the majority of the adult population. The authors concluded that most leaflets scored well in terms of readability and appropriate use of language (Fitzmaurice & Adams 2000).

While relatively few Australian studies have assessed readability of patient information brochures, the results confirm those shown overseas. A study conducted at Cabrini Medical Centre in Victoria assessed the readability of supplementary drug information currently being given to patients by rheumatologists in Australia (Buchbinder et al. 2001). Using two standardised methods, the readability of the information was rated at Year 11-12 level, implying that half of those at Year 11/12 would comprehend approximately half of the text. This is much higher than the average reading ability of the Australian population, estimated at Year 8 level (Buchbinder et al. 2001).

Relatively few studies have investigated readability of medication information leaflets enclosed in medication packets, but again the findings suggest problems with readability. A UK study found problems with comprehension of medication information leaflets in terms of a failure to understand key concepts about medication interactions and contraindications (Dickinson et al. 2001). Another study, conducted by researchers at the University of Perugia, Italy, found that participants were unable to read medication information because the print size used was too small (Bernardini et al. 2001).

However, readability is not the only criteria for patient education materials. In her editorial in the *British Medical Journal*, the Director of Policy and Development of the King's Fund, London, argues that the emphasis on readability has compromised the content of some patient resources (Coulter 1998). She proposes that "the insistence on aiming for the lowest possible reading age as measured by readability formulas may have contributed to the infantile quality of many materials. There are many problems with the standard readability formulas, and they are no substitute for researching patients' information needs and involving them in developing and testing materials" (1998, p.225). Coulter suggests that accuracy of the content "is arguably even more important, and there is no excuse for palming patients off with unscientific clinical opinion which does not conform to the standards required for evidence based medicine" (p.226). The issue of content is addressed in the following section.

### **3.22 - Limitations in content of printed educational resources**

Some studies have demonstrated that many printed educational resources available for patients are lacking in specific content areas. For example, the Victorian study of supplementary drug information disseminated to patients by Australian rheumatologists also assessed content of the written information (Buchbinder et al. 2001). While 98% of the written resources commonly used included some information about side effects, other content areas were lacking. Specifically, less than three-quarters considered dose (74%), drug interactions (70%), purpose of drug (67%), how and when to take it (62%), and expected time to improvement (54%). Very few addressed what to do in the event of side effects (44%), the expected duration of therapy (18%), and what to do if a dose was missed

(5%) (Buchbinder et al. 2001). Thus, important information was omitted in many of the drug information materials.

Consistently, another study suggests that much of the available patient education materials do not adequately encourage informed choice and shared decision making. The Canadian study conducted by researchers from the University of British Columbia evaluated the patient information available at the practices of 21 family physicians (Godolphin et al. 2001). The study aimed to find out how much patient information material on display referred to management choices, and hence might be useful to support informed and shared decision-making by patients. The study found that less than 50% of the displayed information mentioned more than one management option, thereby fulfilling the minimum criteria for informed and shared decision making. Using a published and validated instrument to assess quality, the study also found that the quality of the patient information materials used in the consultation were commonly inadequate. Again, there were major deficiencies with respect to mentioning choices, risks, effects of no treatment, or uncertainty and reliability (source, evidence-base), thereby again reducing informed choice (Godolphin et al. 2001). A study of 12 pamphlets developed by the American Sleep Disorders Association similarly found that few scored highly in terms of motivating qualities (Chesson et al. 1998).

Other studies have identified errors and inconsistencies in the content of pamphlets and brochures. A UK study of 81 leaflets about antenatal screening found that only 14% contained all the information recommended by the Royal College of Obstetricians and Gynaecologists, and many contained incorrect, misleading or inconsistent information (Murray et al. 2001). Similarly, a study of 28 pamphlets containing information about prenatal tests, conducted by researchers from the University of Pennsylvania, USA, found that there was much variation in the information presented. The omissions and inconsistencies prompted the researchers to conclude that the findings raised concerns about whether any one pamphlet presents balanced and accurate information (Loeben et al. 1998). USA researchers similarly reported conflicting information in two chemotherapy brochures for cancer patients (Foltz & Sullivan 1999), again raising concerns about the accuracy and reliability of any single informational resource.

In summary, these studies highlight a range of limitations in the printed educational resources commonly available to patients in primary care settings, again most studies focussing on resources available in general practice. We now review studies that highlight barriers to using the internet for patient education.

### **3.3 – BARRIERS IN USING THE INTERNET**

A handful of studies have investigated the benefits and barriers associated with use of the internet and internet-based systems in general practice and other primary care services. These studies have included evaluation of the source and content of these patient education materials. Collectively these barriers act to limit the usability of the internet as a tool in patient education. Indeed, some studies suggest that few GPs regard the internet as useful in patient education. Interestingly, the Western Australian study found that, while only 28% of GPs regularly used the internet, 61% believed that the internet could improve clinical performance (Williams & Maj, 2001). The Swiss study found that 65% of physicians considered the internet of no help in solving patient-related medical problems, while only 14% reported regularly finding useful patient information (Koller et al. 2001). Likewise, a survey of 1,084 physicians, conducted by the American Medical Association, found that only 11% felt the internet was useful in providing patient education (The Forrester Report 2001; cited in Gerber & Eiser 2002). In the Alabama study of 2,200 USA physicians, respondents reported that despite the huge amount of information on the internet, they often had difficulty finding specific information which answered a defined patient problem or issue (Casebeer et al. 2002). The specific barriers to internet use for patient education are now outlined.

### **3.31 - Limitations to internet use during consultations**

Research suggests that there are limitations in the use of the internet during consultations. First, some research evidence suggests that the internet is not yet fast enough for point-of-care searching to address clinical questions identified during routine clinical practice. A study conducted by the University of Missouri-Columbia, USA, assessed the ability of medical internet sites to provide adequate answers to 20 clinical questions of family physicians. In the study, two physicians conducted the searches and three acted as an arbitration panel. The time taken to find an answer ranged from 2.4 to 6.5 minutes, which was deemed too slow for point-of-care searching (Alper et al. 2001). The Swiss study similarly found that lack of time was one of the two major reasons for not accessing the internet during consultations (Koller et al. 2001).

GPs in the Western Australian study concurred that time was a primary reason for not accessing information via the internet. A total of 44% reported that their main reason was time constraints in the consultation to search for appropriate information and a further 30% reported that the internet was too slow (Williams & Maj, 2001).

Second, some GPs are also concerned that use of the internet during consultations might impact negatively on the doctor-patient relationship. For example, in the Swiss study, concern about negative impacts on communication was the other of the two major reasons for GPs not accessing the internet for patient information (Koller et al. 2001). On the contrary though, a study of 410 oncologists and their patients, conducted by researchers at the University of Toronto, found that both patients and oncologists agree that internet information seeking by either party does not affect the patient-doctor relationship (Chen & Siu 2001). Likewise, a USA study found that use of a point-of-care computer system by nurses did not impact negatively on the nurse-patient relationship (Nahm & Poston 2000).

### **3.32 - Problems of readability of internet information**

In addition, several studies have shown that internet based patient information is aimed at even higher reading levels than more traditional printed patient education resources. In the USA study of 50 samples of patient information commonly used in anticoagulant management units, the mean readability for information obtained from the internet was 12.2 grade, significantly higher than that for other patient information materials (10.3 grade) (Estrada et al. 2000). In a study of 50 sequential patient information samples accessed online, researchers from the University of Iowa found that the average reading level was 10<sup>th</sup> grade (Graber et al. 1999). Likewise, in a UK review study of internet sites relating to radiology procedures, 46% of sites were found to have a Flesch reading ease score below the preferred minimum of 60 (Smart & Burling 2001).

Despite these problems, it has been suggested that the internet can cater for people with limited literacy and, at the same time, for those who require detailed information (Campbell 1999). In a letter to the editor of the British Medical Journal, Campbell notes that "the strength of an interactive format, as offered by web documents or multimedia documents, is the ability of users to determine the level of detail and complexity they find acceptable and desirable. Suitable hypertext links can offer increasingly simplified explanations, and users can burrow down to the level appropriate for their age, background knowledge, and literacy" (Campbell 1999, p.462). In this regard, the internet can cater for a range of literacy levels, both in terms of education level and health-literacy.

### **3.33 - Concerns about quality assurance (QA) in internet-based information**

Other barriers to internet-based information are detailed in our earlier review (Murphy et al. 2002). Broadly, these barriers come under the heading of quality assurance (QA), and include problems regarding accuracy, currency, and source. QA is a problem both for the

public and, in turn, for healthcare practitioners themselves. For example, a UK study of 398 outpatients found that 20% of patients reported that information obtained on the internet contradicted that obtained by their surgeon (Gupte et al. 2002). In the Western Australian study of GPs, 20% reported questionable quality of information among their primary reasons for not accessing information via the internet at work (Williams & Maj, 2001).

Given the problems in QA of internet-based information, it has been suggested that today's GP has a new role "as information traffic director and quality monitor" (Dobson 2002). A report published in the British Medical Journal cites a study of the quality of information available on infertility websites. The study found that only one in 50 websites met basic standards for quality and accountability. As such, the report suggests that findings highlight that health clinicians "must keep abreast of what is being published over the internet" and "might wish to recommend specific internet resources that they find reliable, checking these sites at intervals for accuracy and currency" (Dobson 2002, p.408). Alternatively, health professionals might "maintain their own individual sites through their practices or professional organizations" (2002, p.408). Indeed, the report found that 21% of internet users seeking health information say they would switch to a clinician who owns a website (Dobson 2002). Consistent with this, 74% of online health seekers feel that a doctor recommendation would make them more likely to trust a health web site (Gerber & Eiser 2001). These findings underscore the need for today's GP to go online and to keep up-to-date with online health information.

To this end, researchers have begun to document quality websites which healthcare providers can recommend to patients and clients, together with tools for appraising online consumer health information (eg. Shepperd et al. 1999; Pemberton & Goldblatt 1998). Often this includes details of 'Gateway sites', such as Health On the Net Foundation ([www.hon.ch/](http://www.hon.ch/)), an international initiative which provides a database of evaluated health materials; Healthfinder ([www.healthfinder.gov/](http://www.healthfinder.gov/)), a USA government site that provides access to evaluated information from government agencies, voluntary groups, and professional organisations, and also has links to the consumer-oriented 'MedlinePlus'; and Organising Medical Networked Information ([www.omni.ac.uk](http://www.omni.ac.uk)), developed primarily for physicians but also useful to consumers, which provides access to good quality biomedical and health information (Shepperd et al. 1999; Pemberton & Goldblatt 1998).

In summary this section has addressed barriers and limitations in the use of internet information for patient education in primary care settings, focussing both on the restrictions of the consultation and the limitations of internet information itself. Healthcare provider barriers to using the internet for continuing education are addressed separately in Sections 5.23 and 5.24. We now turn to a brief discussion of the barriers to using other computerised systems at the point-of-care.

### **3.4 – BARRIERS IN USING OTHER COMPUTERISED GP DESKTOP RESOURCES**

As with the internet, structural barriers restrict the use of computerised GDRs. In a study of a decision support system (DSS), researchers from the Wake Forest University School of Medicine, USA, found that the system was under-utilised due to time constraints during the consultation and a lack of data entry experience for some practitioners (Porcelli & Lobach 1999). Just as time is a barrier to internet use during consultations, physicians commented that the response speed of the system was inadequate, and information retrieval required excessive time. Despite this, the patient education materials were perceived by users as useful and accurate. Indeed, availability of patient information handouts was specifically identified as a valuable asset of the system (Porcelli & Lobach 1999).

Likewise, an Australian study has highlighted health-professional barriers to use of computerised patient information systems (CPIS). The qualitative study, conducted at the

Women's and Children's Hospital in Adelaide, South Australia, involved focus groups with 53 nurses and midwives from a wide range of clinical settings and specialties. The study found that participants were critical of CPISs in almost every area related to user-friendliness. In addition to lack of speed, this included difficulties with navigability and a desire for more easy-to-use, graphic interfaces. Computer-based barriers were also mentioned, such as difficulties with passwords and gaining access to a computer terminal in some clinical settings (Darbyshire 2000).

### **3.5 – SUMMARY**

In summary, there is a range of structural and relationship barriers that inhibit patient education and information provision. These include time constraints, lack of remuneration for preventative healthcare, lack of skill and knowledge in some areas, and concerns about jeopardising the relationship with the patient. Depending on their own point of view and on what the research evidence suggests, GPs themselves can also restrict or inhibit patient information receipt through the words and tone they use to inform patients. Thus, GPs have a direct influence on patient decision-making regarding treatment options. Again most studies published in this area focus on information provision in general practice.

Regarding printed educational resources, many studies highlight a range of limitations in the resources commonly available to patients in primary care settings, again most studies focusing on resources available in general practice. A plethora of studies have demonstrated that printed materials are commonly pitched at reading levels higher than the general population, with concomitant problems in comprehension of the information for many members of the community. However, in addressing this issue, content is often compromised in attempts to optimise readability, resulting in 'infantile' resources which do not adequately inform patients and clients. Indeed, many studies have highlighted problems in the content of printed educational resources across a range of topics: these problems include gaps and omissions which restrict informed decision making, and errors and inconsistencies which act to confuse patients, and suggest that any one resource is inadequate for accurately and comprehensively informing patients and clients about health issues and treatment options.

Regarding the internet, there are several barriers and limitations in the use of internet information for patient education in primary care settings, both in terms of the restrictions of the consultation and the limitations of internet information itself. First, the internet is currently too slow for point-of-care searching for patient information, particularly given the time-constraints of the general practice consultation. GPs also have concerns about negative impacts on the doctor-patient relationship, although community-based studies suggest that an increasing proportion of the community have embraced the internet and would value GP advice regarding access to quality internet information. As with printed resources, some research suggests problems with the readability of internet-based information. However, other researchers propose that the internet offers a flexible format which caters for all levels of education and health literacy. With concerns about QA in internet information, GPs and other health professionals are increasingly being called upon to act as 'gatekeepers' to ensure patients and clients access quality health information on the internet.

In terms of the use of other computerised systems at the point-of-care, similar barriers apply. Some systems are too slow for point-of-care generation of patient information, and some clinicians have concerns about lack of patient receptivity. Some healthcare providers also find these systems non-user friendly, further inhibiting their use for point-of-care information provision.

## **4 – HOW DO HEALTHCARE PROVIDERS SOURCE AND EVALUATE THE QUALITY OF HEALTH INFORMATION**

Two questions arise: where do healthcare providers get their information from and how do they evaluate the quality of health information that they disseminate and make available to consumers? Few studies have asked healthcare professionals and services providers about how they access or obtain patient education resources, and how they make assessments about quality. Indeed, such assessments are likely to vary greatly across practitioners and services (eg. Godolphin et al. 2001).

### **4.1 – PRINTED EDUCATION MATERIALS**

Few studies obtained for this review included an assessment of how service providers select printed patient education materials. The source of patient education materials used in general practice consultations and available in waiting rooms was assessed in the Canadian study of 21 family practices (Godolphin et al 2001). In examining the source of information resources, the study found that 31% of the information on display was provided by commercial companies (usually pharmaceutical), 25% by government, 25% by professional organisations and 12% by patient organisations. Of concern was the finding that information in pamphlets provided by pharmaceutical companies was “frequently noted to be biased” (Godolphin et al. 2001, p. 239). Further, the study reported that, in general, information that was examined rated as ‘fair to poor’ with respect to criteria related to reliability and quality (Godolphin et al. 2001).

Another study suggests that there is a reliance in general practice on patient education resources sourced from pharmaceutical companies. The UK study of 326 nurses working in general practice, conducted by researchers from Aberdeen University in Scotland, explored the use of asthma patient information leaflets (Jaffray et al. 2001). Most (83%) nurses distributed 1-10 leaflets per week. The main sources of the patient leaflets were Glaxo-Wellcome (47%), the UK National Asthma Campaign (NAC; 19%), and Astra (19%). While leaflets sourced from the NAC were perceived by nurses to be more accurate, those sourced from pharmaceutical companies were regarded as more freely available and more attractively presented. Importantly, all leaflets conformed to British Thoracic Society guidelines for acute asthma. Although nurses expressed a preference for NAC leaflets because of their superior accuracy, in reality they used more pharmaceutical company leaflets, because the latter were more readily available and free of charge. Some nurses expressed unease about their self-perceived over-reliance on drug company resources (Jaffray et al. 2001).

A handful of studies have asked health providers about the content areas that they see as important in consumer resources. These few studies also provide some information about how service providers evaluate health information. A study of 44 oncology healthcare professionals, conducted by researchers from the Mayo Clinic Women’s Cancer Program, USA, identified the characteristics believed to be important for effective print educational materials (Frost et al. 1999). Five factors were identified as the key criteria for assessing educational resources: 1) appropriate reading level; 2) clarity; 3) credibility; 4) currency and 5) patient acceptance of the material. Of a set of listed characteristics, attractiveness/eye appeal was the least often endorsed characteristic. Despite this though, changes in format do improve acceptability of patient resources. The study also compared uptake of two versions of the displayed material. The design features which increased uptake of the materials were increased font size for headings and text, and the use of a vertical line to separate columns. The use of color did not appear to influence uptake (Frost et al. 1999).

This study also looked at the differences between nurses and physicians in terms of their opinions of the importance of different characteristics of materials. Nurses rated currency of content, and patient acceptance of the material as 'very important' more often than physicians, while physicians rated brevity as 'very important' more frequently than did nurses (Frost et al. 1999). From this finding the authors concluded that it is important to include the input of a variety of health care providers in the development of patient materials.

Various checklists have been proposed to enhance the quality of health information available to patients. In an editorial in the British Medical Journal, the Director of Policy and Development of King's Fund in London lists the key issues covered in such checklists. These include accessibility, acceptability, readability, and comprehensibility; style and attractiveness of presentation; accuracy and reliability of content; coverage and comprehensiveness; currency and arrangements for review and updating; reference to sources and strength of evidence; reference to sources of further information; credibility of authors, publishers, and sponsors; relevance; and utility (Coulter 1998). While these checklists are not necessarily used by those who disseminate patient information, they have been compiled to guide the development of patient information resources (Coulter 1998).

## **4.2 – THE INTERNET**

A few studies have asked GPs about quality assessment of information retrieved from the internet. For example in the Swiss study, 620 GPs answered questions about how they appraise the quality of internet-retrieved information. The most commonly used criteria were institution (78%), authorship (62%), and date of last update (54%) (Koller et al. 2001). However, it is not clear from the results of this study whether these QA criteria are applied in accessing information specifically for patients or rather in accessing information more generally for GPs' own self-education. As documented in Section 4.2.3, credibility of the information source is similarly a key QA criterion for information relating to GPs' self-education (Casebeer et al. 2002).

Increasingly, health professionals are being given guidelines for evaluating the quality of internet information accessed either by themselves or their patients. As with guidelines for printed materials, these guides and checklists are being published in high profile medical journals. For example, the Medical Journal of Australia has published a simple quality check for medical information (Pemberton & Goldblatt 1998). The checklist includes assessment of the credibility in terms of authorship, institution/affiliation, publisher, and financial interests; and assessment of content in terms of currency, evidence citation, and presentation of a balanced representation (Pemberton & Goldblatt 1998). Clearly these principles go beyond the criteria used by Swiss GPs in their appraisal of internet information outlined above. As detailed earlier in Section 2.3, 'gateway sites' are also available to both clinicians and lay-users to assist with QA of the health information obtained from the internet. As with the QA checklists, information about gateway sites is also published in high profile medical journals, such as the British Medical Journal (eg. Shepperd et al. 1999). An assessment of the readership of such journals, and the extent to which this information reaches practicing health professionals, is beyond the scope of the present review.

## **4.3 – COMPUTERISED POINT-OF-CARE INFORMATION SYSTEMS**

While little is known about QA with regard to printed educational resources in primary care settings, the increasing use of computerised systems by GPs is going some way to promoting QA in patient education (NHIMAC 2001; Institute for the Future 2000b). Most DSSs and GDRs used by health professionals and most CPISs and PDAs made available to patients are based on research evidence and/or clinical practice guidelines (Maslin et al. 1998; Greenhalgh et al. 2002). Thus, the increasing use of these standardised tools in general practice and other healthcare settings promotes evidence-based practice and

adherence to clinical practice guidelines (Greenhalgh et al. 2002). In addition, the use of these tools helps to address the barriers to the practice of evidence-based medicine, the most common of which is lack of time (McColl et al. 1998).

#### **4.4 – SUMMARY**

Relatively few studies have explored how healthcare professionals access printed patient educational resources. Findings of one reviewed study suggested an over-reliance on drug-company leaflets due to their widespread availability and affordability and noted that this could result in biases in the information provided.

Likewise, few studies have investigated how healthcare providers appraise the quality of patient information resources. The few studies have shown that the key criteria in evaluation of printed information resources include readability, credibility of source, and currency. Importantly though, it is unclear how credibility of source is actually assessed. Guidelines available for healthcare providers clearly stipulate how information sources can be appraised, but it is unclear how many healthcare providers have access to these guidelines, which are commonly published in high profile medical journals. Similarly for internet-based information, the research suggests that credibility and currency are the key criteria for QA. Again, guidelines for QA and information about gateway sites are increasingly being made available to healthcare providers. However, as previously noted, it is unclear whether GPs and other healthcare professionals have access to these guidelines and/or have the time and inclination to incorporate them into their practice.

Importantly, one of the key benefits of patient education via computerised systems is that they optimise QA in regard to the information given to patients. Because computerised systems – including GDRs, CPISs, and PDAs – are based on research evidence and clinical practice guidelines, their use helps to promote the practice of evidence-based medicine.

## **PART 2 – HEALTHCARE PROVIDERS’ SELF-EDUCATION**

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Part 2 of this review focuses on health professionals’ self-education practices and preferences, and hence provides a more detailed view of the ways in which GPs and other service providers obtain medical and health information for their own continuing education. Because much of the information disseminated to women – both as patients and clients – is based on service providers’ knowledge base, these studies are also important in clarifying the source of health information disseminated to women via health professionals.

### **5 – HEALTHCARE PROVIDERS’ CURRENT AND PREFERRED CHANNELS FOR ACCESSING HEALTH INFORMATION**

There has been a great deal of research, both in Australia and overseas, as to the way in which healthcare providers educate themselves and access information relevant to the care of their clients and/or patients. Much of the research has focused on GPs and medical physicians. In this section, research studies relevant to each media are reviewed in turn.

#### **5.1 – COMPARATIVE STUDIES OF SOURCES OF HEALTH INFORMATION**

Many of the studies reviewed here are based on GPs preferences in terms of CME format. While fewer in number, non-CME GPs studies and studies of healthcare professionals apart from GPs are included where available.

##### **5.11 - Prevalence of use and preference across various media**

There are a number of overseas-based studies of GPs practices and preferences in accessing medical and health information. GPs in Australia and elsewhere are required by licensing boards to accumulate CME credits or points as part of their career-long learning. Several studies have compared current and preferred formats for CME learning, and these provide useful information about GP information preferences. On the whole these comparative studies suggest that in-person conferences and print-based journal articles are the most commonly used and preferred media for CME delivery. While relatively few GPs currently use electronic methods such as the internet and CD-ROM, there are some indications that these media are gaining increasing appeal. Relatively few studies have documented the education or information preferences of other service providers working in the primary care setting.

Many studies have demonstrated that GPs and nurses prefer traditional methods rather than new technologies for their continuing education. A study conducted by the USA Department of Health and Human Services assessed the media used, that preferred and that of interest to try for CME delivery (Brown et al. 2001). The study was a voluntary survey of members of the Society for Healthcare Epidemiology of America (SHEA). In total, 225 SHEA members completed the mailed questionnaire. Journal articles (52%) were the most frequently used educational medium. Regional meetings (53%) and local ground rounds (53%) were the preferred media. The media of greatest interest to try were CD-ROM (56%) and the internet (46%). Interestingly, despite a wide age range amongst participating physicians, there were no age-group differences in current or preferred media (Brown et al. 2001). A similar study, conducted by researchers at the University of Minnesota, USA, surveyed 385 physicians about their participation in CME programs over the previous two years, and their intentions for CME participation in the future. The authors concluded that most physicians prefer traditional CME methods, with relatively few participating in interactive, technology-based programs (Reddy et al. 2001). Another USA study, conducted by researchers at San Jose

State University, surveyed 1,120 physicians, nurses and physician assistants (Mamary & Charles 2000). Again in-person conferences (93%) and print-media (66%) were the most common CME methods. The top three preferences were conferences, print media and CD-ROM. The least preferred method was teleconferencing. While almost all providers had computer access, those with more years of practice were significantly less likely to have access or to use computer-based technologies (Mamary & Charles 2000).

In the Western Australian study of GPs use of the internet 48% agreed that 'using the internet for CME is useful'. However, as previously noted, while 61% of GPs believed that the internet could improve clinical performance, only 28% regularly used it (Williams & Maj, 2001).

Only a few studies have explored GPs' educational preferences outside CME, or identified the most commonly offered educational formats, again suggesting a preference for traditional information formats. One Australian study, conducted by researchers at the University of Newcastle, investigated GPs preferences for the implementation of clinical practice guidelines (Puech et al. 1998). The study of 83 randomly selected GPs found that the preferred formats for the dissemination of guidelines were small group meetings with a facilitator, lectures, and patient education materials. Again participating GPs expressed least interest in new technologies, such as internet access, interactive computer systems and distance education. They also expressed relatively little interest in academic detailing. Endorsement of the guidelines by an eminent individual or organisation was highly valued (Puech et al. 1998). The Western Australian study of GPs' practice of evidence-based medicine found that GPs' preferred sources of evidence-based medicine information were clinical practice guidelines (55% found them "very useful") and journals that summarise research evidence (52% very useful). GPs were less interested in systematic reviews (15%) (Young & Ward 2001).

Similar findings have been evidenced in overseas studies. In addition to assessing information sources used during consultations, the New Zealand study of 50 GPs also investigated what sources GPs use to answer their informational needs more generally (Arroll et al. 2002). The study found that, in the previous month, 92% of GPs had referred to drug information booklets, 88% to journal articles, and 84% to text books. In contrast, only a low 4% had used the computer for information retrieval in the last month (Arroll et al. 2002). A Swiss study similarly explored commonly consulted information sources for the handling of medical problems (Koller et al. 2001). The study, of 888 primary care physicians in Switzerland, found that colleagues (91% often or sometimes consulted) and text books (88% often or sometimes consulted) were the most commonly consulted information sources. Again, although internet access was common, it was not the preferred medium for medical information for the majority of GPs. Only 42% often or sometimes consulted the internet (Koller et al. 2001). A USA study of 14 medical societies, which represent over half of America's practicing physicians, found that the most commonly offered educational formats were professional meetings, followed by audiotapes, computer programs, internet sites, and print-based self-study materials. Only 5 societies had measured use of these formats by their members, and none knew of members' format preferences (Smith et al. 2000b).

In terms of other healthcare professionals, there is some evidence that they too are relying on more traditional sources for their own information seeking. A USA review of nine review papers and 39 studies conducted since 1990 concluded that nurses and other health care professionals are using the same information sources that they used 20 years ago (McKnight & Peet 1999). On the basis of their review, the authors' note that colleagues remain healthcare professionals' preferred information source, despite new emphasis on evidence-based medicine and easier access to electronic information. Importantly though, internet access has given healthcare professionals greater access to colleagues through electronic mail (McKnight & Peet 1999). Consistently, another USA study of 165 occupational health

nurses, conducted by researchers at Sage Colleges, found that most sought information from peers and colleagues, personal files and books, and professional organisations. As with other health professionals, nurses in this study relied less on the internet for their health information (Lathey & Hodge 2001). A study of dental hygienists similarly found that discussions with colleagues and journal articles were the most commonly sought sources of information, while electronic bibliographic retrieval systems were rarely used (Covington & Craig 1998).

The studies reviewed in this section tend to point to a preference for traditional information sources rather than new technologies. Specifically, text books and colleagues appear to be the major resources used for day-to-day learning, while in-person conferences and print-based journals appear to be the major resources used for CME. The following subsections present an overview of literature relevant to each of the key education or information formats for GPs and other service providers. Although not the preferred information source, the internet and other computerised systems have recently gained dominance in the research literature.

## **5.2 – THE INTERNET**

Research evidence confirms that most GPs in the USA currently have access to the internet. As outlined in Section 1.3, rates of internet access by physicians in the USA are above 80% (Kalsman & Acosta 2000; Jwayyed et al. 2002). Current trends suggest even higher rates up to 90% in Australia, for both GPs and pharmacists (ACNielsen 2001), but slightly lower (70%) for New Zealand GPs (Kerse et al. 2001).

### **5.21 - Reasons for using the internet**

Apart from using the internet for a specific patient problem (as discussed in Part 1), the major reason health professionals go online is to access research findings, evidenced in both overseas and Australian studies. In the study of physicians in rural America, the internet was commonly used for online literature searching and for accessing online journals (Kalsman & Acosta 2000). In the Swiss study of 888 physicians, the most often-used online information sources were Medline (40%), online journals (21%) and the Cochrane Library (14%) (Koller et al. 2001). In the Australian Online Study, GPs, pharmacists and medical specialists all reported using the internet for accessing medical publications and up-to-date research findings (ACNielsen 2001). Importantly though, in the New Zealand study, only 42% of GPs were aware of the Cochrane library of evidence-based medicine, and only 15% had used it (Kerse et al. 2001). In the study of rural Australian GPs, males were more likely than females to use computers for self-education (White et al. 2002).

Both GPs and pharmacists also use the internet for reviewing clinical guidelines. In the Australian Online Study, GPs indicated using the internet to access clinical guidelines, while pharmacists indicated that they accessed clinical databases. Use of electronic clinical guidelines by GPs is discussed in detail in Section 1.3.

As indicated earlier, GPs are also using the internet for participating in online CME programs. While these do not yet appear to be superseding more traditional CME formats (Reddy et al. 2001; Brown et al. 2001; Mamary & Charles 2000), they are gaining increasing appeal amongst the GP profession (Brown et al. 2001). Importantly, studies have shown increased GP confidence and improved knowledge and skills after participation in online CME programs (Harris et al. 2001).

Some service providers also use the internet for online discussion and information exchange with colleagues. Unlike GPs and specialists, pharmacists in the Australian Online Study indicated that they use the internet for online discussion groups (ACNielsen 2001). Little is

known about the use of email or interactive discussion groups by other healthcare professionals.

### **5.22 - Advantages of the internet**

A study of GPs attitudes towards electronic medical journals highlights several advantages of the internet. In the study of 255 physicians affiliated with a large university-based teaching hospital in Maryland, USA, 70-80% indicated that electronic journals would decrease clutter in the home and office, were more environmentally friendly than written journals, enabled easier location of research reports, and offered better linkage to related articles (Wright et al. 2001).

Convenience and ease of access are also commonly cited benefits of the internet. The Alabama study highlighted that 24-hour access and speed were important features of internet-based medical information (Casebeer et al. 2002). Other researchers have similarly emphasized that convenience is a key benefit of the internet (Richardson & Norris 1997; Sigulem et al. 2001; Wright et al. 2001). Consistently, online CME courses are seen as more flexible and convenient than traditional CME methods that require physicians to travel to the CME site (Overstreet 2000; Tetzlaff et al. 1999; Krebs et al. 1999). Some also note that online CME is less costly financially than traditional methods (Krebs et al. 1999).

### **5.23 - Barriers to internet use**

The huge volume of information available on the internet is clearly a barrier to ease of use by GPs and other health professionals. GPs feel overwhelmed by the amount of internet-based information available (Haddad & MacLeod 1999) and many indicate that they lack the time to browse the internet for information (Lacher et al. 2000; Kalsman & Acosta 2000; Morrison 2000). A survey of online health professionals including GPs, medical specialists, nurses, pharmacists and dentists, conducted by the Health On the Net Foundation (HON), a not-for-profit Swiss-based international organisation, found that lack of time was the major obstacle in using the internet (HON 2000). The Alabama study of 2,200 USA physicians revealed that ease of searching is a major consideration in accessing the internet and the researchers concluded that online information needs to be focused and well-indexed (Casebeer et al. 2002).

Consistent with these concerns about time, studies have shown that internet-based search aids are not effective. Specifically, a Canadian study demonstrated that search engines are rarely efficient in retrieving relevant articles and locating relevant websites, with many omissions in search results using any single search engine (Rosser et al. 2000). Regarding searches for research studies listed in medical databases, use of the "impact factor" is designed to assist with assessment of the impact of the journal. However, a French study in which a Medline search identified 2247 articles about occupational diseases, found that only 66% of articles had an impact factor. Furthermore, more than 80% had an impact factor in the extremely low range (less than 2). The study concluded that the impact factor was not a reliable or useful indicator (Gehanno & Thirion 2000).

Quality Assurance is another concern in use of the internet. In the study of 9466 members of the American College of Physicians, many indicated that they were concerned about the accuracy of the information obtained on the internet (Lacher et al. 2000). The Health on the Net study also found that dissatisfaction with information quality was a key obstacle to internet use (HON 2000). In a discussion paper, researchers at the University of Chicago, USA, emphasised that there is much non-peer-reviewed information on the internet, and that it can be biased, inaccurate and potentially problematic for both patients and physicians (Genzen 1998). The author cautioned that physicians need to be aware of the information available on the internet, both to know what to recommend to patients and to gain an

understanding of misleading information which patients might obtain (Genzen 1998). This issue has been discussed earlier in Section 2.3 of the present review. In the large study of 2,200 USA physicians' use of the internet, credibility of the information source was identified as one of the key factors in QA (Casebeer et al. 2002).

In addition, some health professionals lack training and skills in using the internet. In the Western Australian study of GPs, 19% reported lack of experience among their primary reasons for not accessing information via the internet at work (Williams & Maj, 2001). In the USA study of 124 emergency medicine residents, 79% reported no formal PC training and 32% said they had insufficient training to meet their physician needs (Jwayyed et al. 2002). Furthermore, when given an internet literature search task, 31% failed the task. This included 27% who said they could not perform it (Jwayyed et al. 2002). A UK survey found that 70% of GPs indicated that they needed training in use of either the internet or computers generally (Wilson et al. 2001). In the study of computer use amongst GPs in rural Australia, lack of training and lack of access to training were the key reasons for not having computer or internet access (White et al. 2002).

Finally, internet-based information is seen by some health professionals as less convenient than printed resources. For example, in the study of GP attitudes to electronic journals, 74% were concerned about losing the convenience of being able to read printed journals anywhere at anytime (Wright et al. 2001). However, while personal computers are not as portable as a journal or other printed resource, there are ways around this barrier. First, internet-based information is easily downloaded and printed for later perusal (Jadad 1999). Second, laptop computers are relatively portable and could replace printed materials in many settings (Jadad 1999).

#### **5.24 - Barriers to computerisation generally**

There are also some barriers to computerisation in healthcare more generally. The cost of computers remains an issue for some GPs and service providers. A longitudinal Australian study conducted by researchers at Balmain Hospital in Sydney explored the use of and attitudes to computerisation in clinical practice over a two year period from 1994 to 1996. The study involved a survey of GPs practising in the Sydney area, with 301 and 371 participating at each of the two time-points. Results demonstrated that there was a persistent negative attitude to the costs of computerisation. Nonetheless, by 1996 there had been an increase in the use of computers for clinical tasks and an improvement in attitudes to computerised prescribing (Bolton et al. 1999).

The issue of security is also a concern with computer-based information systems. A trial of an internet-based system to inform GPs about consultants at hospitals was conducted by researchers from the University of Portsmouth, UK (Briggs & Bradley 1998). The system was designed to assist GPs in deciding to whom to refer patients. The study revealed that concerns about security inhibited confidence in use of the system, thereby reducing the effectiveness of the system (Briggs & Bradley 1998).

### **5.3 – COMPUTERISED DECISION SUPPORT SYSTEMS (DSSs)**

In most areas of clinical practice, GPs have available to them written practice guidelines to assist in their clinical decision making. However, more than 1000 written guidelines are developed annually (Rosser et al. 2001) and many clinicians find them challenging to apply (Dayton et al. 2001). In addition, guidelines in some areas of clinical practice have been shown to contain inconsistencies in content (Haetsch et al. 1999), further inhibiting their effective application. In order to increase the usability of clinical practice guidelines, computerised DSSs based on written guidelines have been developed in many areas of

clinical practice, and it is predicted that these will gain increasing acceptance in primary care settings (Institute for the Future, 2000b).

There is evidence from one study that GPs are positive about the use of electronic clinical guidelines. The UK study of 390 GPs primarily explored computer use during consultations (Watkins et al. 1999). When asked their attitudes to electronic clinical guidelines, 65% of GPs indicated being positive about the inclusion of clinical guidelines on their computer system. However, only 45% were positive about integrating management guidelines with patients' personal computerised medical records (Watkins et al. 1999).

Some recent studies have examined the impacts on GP knowledge and practice of internet-based DSSs, using written guidelines as the benchmark for comparison. These studies have assessed the relative effectiveness of the two approaches in terms of accurate decision making and speed of learning.

There is some evidence that internet-based DSSs are more effective than written practice guidelines for GP clinical decision making. In a study conducted by researchers from the University of Iowa, USA, physicians were given either internet-based DSSs or written guidelines for both asthma and tuberculosis preventive therapy (Thomas et al. 1999). In both cases, physicians using the internet-based DSS scored significantly better in terms of accurate decision making (that complied with national guidelines) than did those using the written guidelines. The authors concluded that internet-based DSSs represent an effective educational tool for physicians (Thomas et al. 1999).

Internet-based DSSs have also been shown to provide high learning efficiency. In a later publication of results relevant to the tuberculosis DSS, the authors reported that physicians using the DSS required only three mouse-clicks and 1.5 minutes per scenario to reach their clinical decisions, therefore representing an efficient learning tool (Dayton et al. 2000). In another randomised controlled trial, conducted at the University of California, USA, 162 medical residents were asked to study guidelines regarding patient care after acute myocardial infarction (AMI). They were randomly assigned to either printed material (n=79 control group) or a web-based DSS which featured links to specific passages and animated depictions of research evidence (n=83 intervention). While both groups showed similar levels of knowledge, onliners spent less time accessing and absorbing the information suggesting greater learning efficiency. In addition, onliners were more satisfied with their learning experience (Bell et al. 2000).

Specific features have been identified which can enhance usability of DSSs for point-of-care decision support. A 1998 study conducted by researchers from the University of Pittsburgh, USA, found that, with time constraints at point-of-care being of paramount concern, GPs prefer features which enhance ease of use, highlighting the need for a "forgiving, flexible interface" (Gadd et al. 1998, p. 91). They also want features that enhance usefulness and motivate use, such as the availability of physician instruction and patient education materials.

Informaticist support systems are also gaining increasing use in primary care settings. These systems provide evidence based answers to questions arising in clinical practice and, like DSSs, thereby support high quality clinical decision making by practitioners. Practitioners submit their questions and/or patient details by telephone, fax or email to the informaticist system, then receive a structured response based on a thorough search and appraisal of the relevant literature (Greenhalgh et al. 2002; Hunt et al. 2001). Some systems respond with electronically generated patient-specific advice within 45 minutes (eg. Hunt et al. 2001), whereas others take up to 5 days to produce a more detailed response (eg. Greenhalgh et al. 2002). Preliminary descriptive studies of informaticist services suggest that relatively few GPs use them, but that those who do generally find them useful (Greenhalgh et al. 2002; Swinglehurst & Pierce 2000).

## 5.4 – MULTI-FACETTED EDUCATIONAL OR TRAINING PROGRAMS FOR GPs

Multi-faceted educational programs for GPs are of two major types:

- 1) educational programs involving printed and/or video resources delivered to GPs via the Academic Detailing model, where a health professional personally delivers and describes the program components to GPs in their clinic; and
- 2) training programs variously including expert demonstration, small group interactive discussions, role playing, and/or video feedback, and commonly supported by printed materials.

These two types of programs will be discussed separately. Programs designed to educate other community-based service providers are outlined separately. It should be noted that this discussion does not purport to be a comprehensive review of all research studies in this area but, rather, an overview of the types of programs commonly implemented.

### 5.41 - Educational programs

There have been many clinical trials investigating the efficacy of academic detailing of educational programs for GPs. Academic detailers are commonly medical doctors (Ray et al. 2001), pharmacists (Reeve et al. 1999) or nurses (Jones et al. 2002). Most often these studies assess changes in GP knowledge, attitudes and clinical practice. An extensive review of RCTs of educational strategies or interventions that assessed changes in physician knowledge and behaviour found that academic detailing is more effective than commonly used CME methods, such as conferences (Davis et al. 1995).

Educational programs have been shown to affect GPs' prescribing behaviours. In a study conducted through Vanderbilt University, Tennessee, USA, 209 physicians were randomly assigned to either the intervention (n=103) or control (n=106) groups. The study explored the effect of an educational program to reduce the use of non-steroidal anti-inflammatory drugs (NSAIDs) in elderly patients. Physicians in the intervention group were visited by another doctor and given written guidelines and reminder cards, whereas those in the control group were mailed the guidelines. The study found that the intervention group showed a modest but significant reduction in inappropriate NSAID use (Ray et al. 2001). A similar Australian study, conducted by researchers from the University of Tasmania, involved the use of pharmacists as academic detailers for Tasmanian GPs (Reeve et al. 1999). As in the USA study, participating GPs demonstrated a significant improvement in knowledge of therapeutic issues in the elderly and a significant reduction in drug prescribing in the elderly (Reeve et al. 1999). A more recent UK study involved nurses as academic detailers and similarly found a significant reduction in inappropriate NSAID use in the elderly (Jones et al. 2002).

Educational programs have also been shown to affect GPs' rates of cancer screening. In a study conducted by the Department of Health Services in California, USA, 41 primary care physicians were randomised to either a control group (receiving ongoing education) or an intervention group (receiving ongoing education plus academic detailing and peer feedback). The program focused on preventive care for older patients. Compared with those in the control group where screening rates decreased over time, GPs in the intervention group showed steady rates of mammography and breast examination over the two-year study period (Kim et al. 1999). The authors concluded that the program had a modest effect on GP practice.

However, educational programs involving academic detailing and other components are often perceived by GPs to be too time-consuming. For example, Ray and colleagues point to the high non-participation rate in their study: 27% of randomised physicians did not participate in the program. The authors noted that many of these said that the program "seemed worthwhile but they did not have adequate time to consider it" (Ray et al. 2001,

p.433). While clearly an effective method in terms of behaviour change, this barrier suggests that academic detailing of educational programs is not a preferred learning method for GPs.

#### **5.42 - Training programs**

There is also a plethora of research evidence regarding the efficacy of training programs for GPs. Again these studies assess changes in GP knowledge, attitudes and clinical practice.

Most intervention studies demonstrate that training programs have positive impacts in terms of improved GP knowledge. For example, in a USA study of 282 community-based GPs, those assigned to a 2-hour training program for breast screening (n=128) showed greater knowledge gains about the risk factors of breast cancer than did GPs who used a self-study workbook (Lane et al. 2001).

Training programs have also been shown to improve GPs self-efficacy, particularly regarding counselling skills. In a study conducted at the East Carolina University School of Medicine, USA, 18 medical residents participated in a training program to improve behavioural counselling skills for multiple risk factor reduction. The study found a significant increase in residents' self-efficacy regarding risk screening and behaviour modification (Pololi & Potter 1996).

However, the findings regarding the effects on clinical practice following participation in training programs are more conflicting. Some studies find that training programs have no effects on diagnoses or management. For example, a USA study of 109 GPs randomly assigned to either a training program on managing depression or a control group, investigated effects on GP diagnoses and prescribing behaviour. One year after the intervention, there were no differences between the two groups in either rates of new depression diagnoses or new antidepressant prescriptions (Lin et al. 2001). In contrast, other findings show positive effects on GPs screening and counselling behaviour. For example, in a randomised controlled trial of a training program to improve medical residents' violence screening skills, those who participated in the program (n=26) showed more positive behaviour change than did those who received a standard manual containing articles on violence prevention (n=30). Specifically, the intervention group were more likely to screen young patients and were rated more positively by patients in terms of interpersonal and management skills (Abraham et al. 2001). Similarly, in the study by Lane and colleagues, GPs who participated in the training program were more prepared to counsel patients about clinical breast examination than were those in the control group (Lane et al. 2001). Likewise, GPs who participated in a depression training program were more likely to screen patients for depression (Gerrity et al. 1999).

Targeted programs aimed at improving GP concordance with clinical practice guidelines have also been effective. In a study of 112 GPs from randomly selected areas of Australia, researchers from the University of Newcastle assessed GP practice in accordance with national guidelines regarding the management of women with breast cancer (Cockburn et al. 2001). GPs were assessed before, and five months after, the release of national guidelines. In the interim, GPs received peer-relative feedback and attended one seminar. The study found that the intervention improved GP concordance with practice guidelines, particularly regarding the investigation of breast lumps but less so for rarer symptoms (Cockburn et al. 2001).

However, as with education programs, there is evidence that training programs are too time consuming to represent a viable learning method for busy GPs. The programs are generally conducted away from GPs' own clinics, and presumably appeal mainly to GPs with a special interest in the topic area. In their study, Gerrity and colleagues point out that participating physicians were self-selected and that presumably the program would have less appeal amongst the general population of doctors (Gerrity et al 1999). This suggests that training

programs are not a preferred learning method for GPs. Indeed, group or individual educational methods are seen as cost-ineffective because of the time involved. A discussion paper by Bates et al. (1998) compares the relative merits of different approaches to physician education about therapeutic drug monitoring. The authors note that, while traditional educational approaches can improve practice, they are labor-intensive and their effects wane with time. Similarly, one-to-one education is also labor intensive, but the effect is less likely to diminish over time (Bates et al. 1998).

## **5.5 – MULTI-FACETTED EDUCATIONAL PROGRAMS FOR OTHER HEALTHCARE PROVIDERS**

There have been fewer trials of educational programs designed for health professionals and service providers other than GPs. The few such projects have tended to focus on service providers working in the area of STIs, Human Immunodeficiency Virus (HIV), and auto-immune deficiency syndrome (AIDS). As well, a handful of programs for health professionals working in the area of cancer have been evaluated. Relevant studies are outlined.

### **5.51 - Active collaboration between researchers and service agencies**

There is some evidence that active communication and collaboration between researchers and community-based agencies is effective in promoting the implementation of research-based preventive care programs. For example, a trial conducted by researchers from the Medical College of Wisconsin, USA, compared three progressively more intensive methods of transferring research-based HIV interventions to community-based service providers. All three groups received printed how-to manuals. One group also received a staff training workshop, and the other received a staff training workshop plus follow-up telephone consultation between the researchers who developed the program and the service agency implementing the program. The more intensive method resulted in more frequent adoption and use of the HIV prevention intervention, demonstrating the benefits of active collaboration between researchers and service agencies (Kelly et al. 2000).

### **5.52 - Workshops and training programs**

There is also evidence that workshops and conferences are effective media for educating healthcare providers. A trial conducted by researchers from the University of Tennessee, Nashville, USA, compared the benefits of large conferences and small workshops for the delivery of STI and HIV education to primary care service providers. Both formats resulted in significant improvements in STI and HIV knowledge, particularly amongst those service providers with poorer knowledge and less experience at the outset (Neff et al. 1998).

Pharmacists have also been shown to benefit from small group workshops and training programs. In a study of a pharmacist counselling training program, conducted by the University of the Pacific, USA, pharmacists received printed information, and participated in role-playing and skill-assessment. Pharmacists' self-reported confidence in counselling patients about common diseases and medications was significantly improved after the training (Lee et al. 1998).

### **5.53 - Train the Trainer model**

The Train the Trainer approach has also been used for educating service providers. In this approach, a small group of workers from the target group receive intensive training, then they themselves train colleagues in their local service-provision community. The Virginia Project, implemented in Richmond USA, aims to educate health professionals about geriatric alcohol abuse and alcoholism using the Train the Trainer approach. A study of service providers involved in the project found that it had had a positive impact in terms of service provider knowledge and satisfaction (Coogler et al. 2000).

### **5.54 - Computerised data bases**

There is also evidence that a computerised data base can be effective for educating service providers. An Australian study, conducted by researchers from the University of Newcastle, assessed the efficacy of a program for officers of the state-based Cancer Information Service (CIS) (Pitt & Cockburn 2000). Officers accessed a computerised database with current best advice about breast cancer, and also participated in a one-day interactive workshop. Pre- and post-evaluation simulated calls to the service were used to assess program efficacy. The study found that improvements in information consistency with current best practice guidelines were achieved in a number of areas, specifically descriptions of lymphoedema, familial aspects of breast cancer, and the appropriateness of discussing genetic testing with GPs. Many topic areas were already well handled by CIS officers, therefore allowing little room for improvement. However, some other areas were seen to require more targeted intervention (Pitt & Cockburn 2000).

### **5.55 - Printed information**

Programs involving the dissemination of written information have also been shown to improve health professionals' practice. An Australian study of 514 health professionals, conducted by researchers from the University of Newcastle, assessed the effects of the provision of written information on knowledge and choice made about the use of cardiopulmonary resuscitation (CPR) (Kerridge et al. 1999). Following the intervention, health professionals demonstrated an increase in knowledge and a decrease in the reported frequency of use of CPR in hypothetical clinical scenarios, both indicating improved practice (Kerridge et al. 1999).

## **5.6 – SUMMARY**

In terms of their own continuing education, GPs and other healthcare professionals appear to have a preference for traditional methods of learning. In the context of day-to-day practice and learning, these include text-books and consultation with colleagues. In the context of CME programs, in-person conferences and print-based journal articles are the most commonly used and preferred media. Most studies have focused on GPs, with relatively few studies documenting the education or information preferences of other service providers working in the primary care setting.

While relatively few GPs currently use electronic methods such as the internet and CD-ROM for continuing education, there are indications that these media are gaining increasing appeal. In particular, both the internet and other computerised information systems are being used for accessing research findings, clinical guidelines and, to a lesser extent, engaging in online discussion groups. Despite some benefits in terms of accessibility, there are many barriers to using the internet for health professionals accessing medical information. Specifically, the enormous quantity of information poses a problem which, according to some studies, is often not addressed by available search engines. Issues of QA also pose a barrier to the use of the internet for professional education, as with patient education. For some health professionals, lack of training and lack of skill also inhibit use.

Computerised DSSs are also gaining increasing acceptance by GPs. These systems, which present clinical practice guidelines, have been shown to be more effective than written guidelines in changing GP behaviour. They also appear to have high learning efficiency.

Other more intensive approaches have also been used to influence GP behaviour in a range of areas, including lifestyle counselling, prescribing, and screening practices. The two most common approaches are academic detailing of patient-education programs, and multi-faceted training programs. While research suggests that both methods can impact positively

on GP behaviour, the intensity of such approaches means that they ultimately appeal only to a small proportion of GPs, presumably those with an interest in the topic area.

For other service providers, a range of other educational strategies has been trialed. These have included active collaboration with researchers, workshops, 'train the trainer' approaches, computerised information systems, and printed materials. However, there is relatively little evidence regarding the preferences of other healthcare providers for each of these formats, or indeed the efficacy of these approaches in terms of healthcare professional education.

## **6 – ISSUES FOR SPECIAL GROUPS OF HEALTHCARE PROVIDERS**

### **6.1 – HEALTHCARE PROVIDERS IN RURAL AREAS**

There is some evidence that information acquisition is particularly difficult for GPs and other healthcare providers working in rural areas. A study conducted by researchers from Edith Cowan University, Western Australia, found that there is a lack of health care resources available to health professionals in rural Australia (McConigley et al. 2001). Indeed, in 1997 the Australian Government allocated \$250 million over five years to meet the telecommunications needs in rural and remote Australia. Service providers in rural areas need access to up-to-date information, including patient and practice guidelines (Hovenga et al. 1998).

There is also some evidence that rural GPs might be slower to access the internet, although a recent study seems to suggest otherwise. In a 1999 study, National Needs Assessment of the CME, the needs of Australia's rural GPs were explored in terms of current and preferred modes of CME. The study of 440 rural GPs found that face-to-face formats, either group or individual, were preferred. Internet-based CME, on the other hand, was amongst the least preferred options, suggesting that rural doctors are slow to access new technologies. Indeed, the authors concluded that rural GPs appear to require additional training on how to use new technologies (Hoyal 1999). However, a more recent study of GPs practising in rural and remote Queensland suggests that GPs' access to computers and the internet is high, with 89% of participating GPs reporting access to computers and 84% access to the internet. Importantly, the majority (80%) reported having local call access to their internet service provider (White et al. 2002). As pointed out earlier though, the authors queried the reliability of the study findings due to the low response rate of 25% (White et al. 2002).

### **6.2 – OLDER GPs**

There is conflicting evidence about the receptivity of older GPs to electronic media. In the USA study of 1,120 physicians, nurses and physician assistants, those with more years of practice were significantly less likely to have access, or to use, computer-based technologies (Mamary & Charles 2000). Likewise, a study of 9,466 members of the American College of Physicians found that those over 50 years of age were less likely to use computers for medical applications (Lacher et al. 2000). On the contrary though, in the USA study of 225 SHEA members, there were no age-group differences in current or preferred media, despite a wide age range amongst participating physicians (Brown et al. 2001).

However, perhaps because they have less formal training in electronic media, older GPs appear to be receptive to learning about these new technologies. A study conducted by researchers from the University of Melbourne found that older GPs in particular benefited from a computer education and support program. The study involved 128 GPs who received computer training and 127 control GPs. The training focussed on use of email, use of the

internet for research, and electronic prescribing. Post-intervention comparisons demonstrated significantly improved computer skills following the training, with older GPs (>55 years) showing greater change in their skills than their younger colleagues (Liaw et al. 2000). This study demonstrates that older GPs will benefit from computer and internet education.

### **6.3 – SUMMARY**

This brief section has pointed to the specific issues faced by healthcare providers working in rural areas, and by older GPs. In both cases, the issue concerns slower take up of the internet and other computerised systems. Importantly though, recent studies have suggested that this 'digital divide' is closing in, with almost all health professionals – particularly in Australia – gaining access to computers and the internet. Issues in the digital divide are also addressed in our earlier review of information access amongst the general community (Murphy et al. 2002).

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## LIST OF ABBREVIATIONS

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AIDS	Auto-Immune Deficiency Syndrome
AMI	acute myocardial infarction
BSE	breast self-examination
CIS	Cancer Information Service
CME	continuing medical education
CPIS(s)	Computerised Patient Information System(s)
CPR	cardiopulmonary resuscitation
DSS(s)	Decision Support Systems
GDR(s)	GP desktop resource(s)
GP(s)	general practitioner(s)
HIV	Human Immunodeficiency Virus
HON	Health On the Net Foundation
HRT	Hormone replacement therapy
NAC	National Asthma Campaign
NMAA	Nursing Mothers' Association of Australia
NSAIDs	non-steroidal anti-inflammatory drugs
PC	personal computer
PDA(s)	Patient Decision Aid(s)
QA	quality assurance
RCT(s)	randomised controlled trial(s)
SHEA	Society for Healthcare Epidemiology of America
STI(s)	sexually transmitted infection(s)
UK	United Kingdom
USA	United States of America
WHV	Women's Health Victoria