PERCEPTIONS OF MEDICAL RESEARCH AND TEACHING AMONG MEMBERS OF AN HEALTH MAINTENANCE ORGANIZATION

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ABSTRACT

Recent changes in the health care system in the United States have resulted in the emergence of collaborations between academic medical centers and health maintenance organizations. The aim of this study was to provide information about perceptions of medical research and teaching among primary care patients of an health maintenance organization.

The study used data from focus groups to devise survey instruments. The surveys attempted to further explore patient preferences regarding the conduct of teaching and research and establish how patients think teaching and research affect their health care. Due to the limitations of the study, in particular with response rates, the applicability of the findings in terms of the perceptions of patients in general is uncertain.

The results show that although the majority of respondents supported teaching and research in principal, and some felt that participation in teaching and research could be a positive experience, benefiting their health and increasing their knowledge about their health, not all patients would necessarily be comfortable with participation in these activities.

Respondents indicated that they would value an invitation to take part in medical student teaching from a known clinician, they would not wish to see medical students alone, or if an internal examination is required, and they would not wish to see a resident for certain conditions, especially if the resident is not known to them. The findings suggest that respondents would be more interested in participating in research if an invitation is received from a known clinician, written information is available, and feedback will be provided. Willingness to participate in a drug trial involving randomization would be lower than for other types of study.

The low response rates influence the interpretation of the study findings. However, implications of this work for other health care providers, and for future research, are discussed.
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I. INTRODUCTION

Harvard Pilgrim Health Care (Harvard Pilgrim, formerly Harvard Community Health Plan and Pilgrim Health Care) is acknowledged as a leading academic health maintenance organization (HMO). It has an established reputation as both a teaching and research organization. Faculty of Harvard Medical School were among the co-founders of Harvard Community Health Plan (HCHP) in 1969. Since that time HCHP has considered education, research and community service to be part of its organizational mission. Continuing this tradition, a joint Department of Ambulatory Care and Prevention (DACP) was formed with Harvard Medical School in 1992. This long term relationship has benefited both parties, providing medical students and residents with access to ambulatory care patients and experience in preventive medicine, and Harvard Pilgrim with clinicians and staff who are motivated by a work environment that values teaching and research activities, and provides high quality care. The department is the first medical school department to be based in a free-standing HMO. However, the outcomes of this relationship have not been formally evaluated. Academic activities are thought to be a marker of medical excellence, but there is little evidence to support this theory.

Teaching and research programs at Harvard Pilgrim Health Care

Harvard Medical School graduates have traditionally chosen to pursue careers as specialist rather than generalist doctors. This situation has begun to change over recent years. In 1990 approximately 20% of students chose primary care residencies (general internal medicine, general pediatrics, and family practice). In 1995 more than half the graduates chose to enter primary care. In 1995, only 56 students requested and were matched with primary care mentors in the community. In 1996, 90 students, more than half the incoming class, applied for primary care mentors (Harvard Medical School Primary Care Division, 1997, personal communication).

Harvard Pilgrim Health Care is an HMO, providing care to members in New England. The majority of health care in the United States is provided on a commercial basis. Academic medical centers and university hospitals charge patients and their insurers for care provided, as do other providers not associated with academic institutions. Some
provider organizations are run for profit, others are run on a not-for-profit basis. Harvard Pilgrim is a not-for-profit organization, and has the equivalent of charitable status.

The study was conducted in the Health Centers Division of Harvard Pilgrim. This division provides care to approximately 150,000 people. The HMO is capitated for all primary and secondary care for this group. Care is delivered through health centers employing generalists and specialists, and by referral to local teaching and non-teaching hospitals. There is a primary care ‘gatekeeper’ system in operation. Primary care clinicians may be general internists, pediatricians or nurse practitioners.

Harvard Pilgrim clinicians provide teaching to Harvard Medical School students via several activities, including a two month Ambulatory Care Clerkship. This program places third and fourth year students with preceptors in general internal medicine and pediatrics. The students spend the majority of their time with their preceptors in the primary health care center. This program is to be replaced by a one year Primary Care Clerkship, which will be an ongoing program over one year, allowing students to follow patients in the health center over time. Approximately one third of Harvard Medical School students will be placed at Harvard Pilgrim for this part of their training.

There are two primary care residency programs at Harvard Pilgrim. One in Cambridge, Massachusetts, and one based in the DACP in Boston. These programs train residents to be general internists. The intake of each training scheme is four residents per year. Each program provides three years of training, leading to the Board of General Internal Medicine Exams. The first internship year is mainly spent in the in-patient hospital setting. The following two years combine periods of in-patient attachment with blocks of time in primary care practice at one of the Harvard Pilgrim health centers. During their three years, the residents build up a panel of patients, for whom they are the primary care physician. They also see patients registered with their preceptor or other physicians in the health center. In addition they work in the urgent care departments of the health centers, where ‘walk in’ and urgent cases are seen.
There are many ongoing research studies conducted at Harvard Pilgrim. Some have been instigated by clinicians within the health plan, and others are in collaboration with academic medical centers and other institutions. The Harvard Pilgrim Health Care Foundation, an independent charitable trust, funds a number of research studies, and also supports teaching and local community programs.

There is considerable experience and work around patient satisfaction with managed care, medical care, and the delivery environment. However, this work has not specifically addressed research and teaching activities within managed care. As managed care becomes the focus for more training and research activities it will become very important to know how patients feel about these adjuncts to the traditional care delivery role. While managed care plans are responding to increased demand for ambulatory teaching and research, they are also facing concomitant pressure to control costs and maintain high quality care. If managed care organizations are to conduct research on their patient base, and teach significant numbers of medical students and residents, they must explore the views of their members and tailor these activities in a way that does not compromise quality of care and patient satisfaction. As one of the first HMOs to embark on this course, Harvard Pilgrim provided a suitable environment to evaluate the impact of these activities on its patients. Such information is important to the development of academic HMOs in the future.
II. LITERATURE REVIEW

References were identified from searches of the Medline database, using a range of search terms identified prior to searching, and modified after initial searching. Both text word and subject heading searches were used where appropriate. Searches were updated during the course of the study. Further papers were identified from discussion with other researchers, and reference lists of published papers and reports.

Changes in American health care
Paradoxically, the failure of comprehensive federal health care reform in 1994 may have resulted in a greater threat to academic medical centers in the United States than if legislation had been passed (Iglehart, 1994). Health care reform continues in the medical market place, driven by purchasers, who seek to reduce the cost of health care. Thus, changes in the system are in response to the need for cost reduction, and are not planned or coordinated to take into account the special situation of academic medical centers (Iglehart, 1996)(Kassirer, 1994).

Managed care plans provide primary and secondary care on a capitated basis. There are several different types of managed care plan, including HMOs. Plans differ in terms of their financial and contractual arrangements with providers. Because managed care organizations are capitated, costs tend to be lower than those of fee for service insurance plans. Payers are therefore increasingly attracted to managed care plans, because of the reduced cost. However, managed care as a form of health care delivery is acknowledged to have potentially negative effects on research and teaching (Fairfield et al. 1997). Enrollment in managed care is steadily increasing. In 1995, 54 million Americans were enrolled in HMOs, and a further 130 million in other types of managed care (Blumenthal and Thier, 1996).

Managed care plans may either compete with academic medical centers to provide care, or may negotiate with the center for the provision of care to their enrollees at a discounted rate.
The revenue stream of academic medical centers is further threatened by Congressional changes to the Medicare budget (Gottlieb, 1996). This has traditionally been a source of finance for graduate medical education (Iglehart, 1996). The drive to lower health care costs, accompanied by changes in the practice of medicine have also resulted in a decline in hospital admissions and length of stay, thereby further reducing the income of teaching hospitals (Iglehart, 1995).

**The impact of health care reform on medical education**

Medical teaching activities have traditionally been carried out at academic health centers attached to, or affiliated with medical schools. This tradition is being transformed by the recent changes in the health care system outlined above. Managed care has created two challenges for medical education at academic medical centers. The first is financial. A recent report from the Council on Graduate Medical Education found that: “Changes in the health care environment that have led to the growth in managed care will also have major effects on the allopathic and osteopathic medical education system and their teaching institutions; this will likely result in decreased financial support for medical education at both the undergraduate and graduate levels, which could affect the quality of these endeavors” (The Council on Graduate Medical Education, 1995). The training of doctors also adds costs that competing institutions do not face. Faculty members often contribute many hours to teaching, this effort may be poorly compensated and stringent cost containment measures have the potential to erode the delicate social contracts on which teaching activities are based (Shea et al. 1996).

The second challenge for academic medicine is educational. The Council on Graduate Medical Education found that: “The growth of managed care will magnify the deficiencies of the current educational system, yet will also provide new and essential educational opportunities to improve the preparation of physicians for their future roles” (The Council on Graduate Medical Education, 1995). Physicians working in managed care provide more ambulatory care, and less secondary care, work in interdisciplinary teams, are under pressure to practice cost effectively within administrative controls, and are required to think about maintaining the health of the enrolled population, rather than individual, fee for service patients (Blumenthal and Thier, 1996).
Work by Gold in 1996 confirmed the financial and market pressures on academic medical centers in three areas with high managed care penetration (Gold, 1996). Gold found that managed care plans were unable, and unwilling, to pay a premium for the services of academic medical centers, particularly when established alternatives exist. Leaders of managed care plans were also concerned about where money for residency training is allocated, and the relevance of many academic training programs to the work force needs of managed care organizations.

For-profit managed care companies in particular have shown little interest in helping to finance medical education or research (Ginzberg, 1996). In Tennessee, where the majority of the State’s Medicaid and uninsured populations were transferred to managed care in January 1994, academic medical centers experienced large revenue reductions, adverse patient selection, loss of patient volume necessary for research, and had to reduce training programs (Meyer and Blumenthal, 1996). However, some managed care plans are willing to pay academic medical centers above market rates to be associated with high profile institutions and a number of plans are owned, or originally formed, by academic medical centers (Fox and Wasserman, 1993).

Changes in the knowledge and skills required by physicians

As more care shifts to the ambulatory setting and to integrated delivery systems, clinicians with different skills are needed. The training of ambulatory care clinicians requires a focus that differs from the skills imparted in a teaching hospital environment. Fogelman highlighted this situation on behalf of the Association of Professors of Medicine: “The vast majority of internal medicine faculty in academic health centers are subspecialists. In their current state, it is unlikely that most departments will be able to teach the skills needed for generalists to practice in a managed care environment.” (Fogelman, 1994)

In order to continue contracting successfully with managed care plans, faculty practices at academic centers may need to undergo internal restructuring and retraining themselves, particularly in terms of utilization and resource management (Culbertson, 1996).
Managed care organizations need physicians who are trained to practice in the ambulatory setting, and who have a focus on preventive care and high quality, cost sensitive practice (Wartman, 1994). In 1986, Jacobs surveyed HMOs in the United States and found that managed care organizations wanted medical school and residency programs to have increased emphasis on cost effective use of services, utilization review and quality assurance, the role of the primary care ‘gatekeeper’, and knowledge of the financing of health services (Jacobs and Mott, 1987). In Minnesota, a mature managed care market, Parenti organized focus groups to determine how internal medicine training should adapt to meet the needs of the community (Parenti, 1995). Focus group participants from local integrated care systems stressed the value of physicians who, in addition to their core clinical skills, can function independently and think critically.

Learning medicine in a managed care organization could potentially expose medical students to new areas such as cost effectiveness analysis, evidence based decision making, quality management, and working as part of a multi-disciplinary team, skills which are required by clinicians in managed care (Blumenthal and Thier, 1996) (Cohen, 1995). In 1996, 16% of medical schools required all students to undergo clerkships in a group or staff model HMO, some students from a further 46% of schools spent time in an HMO (Veloski et al. 1996). In total, 85% of schools exposed students to some type of managed care. In most cases the learning objectives of these placements did not explicitly address learning issues relevant to managed care, but were focused on general clinical experience.

Residents also need to acquire similar skills in order to practice in the managed care environment. Much of the literature addressing residency training and managed care focuses on the adverse effects of managed care on residency training, rather than the opportunities and challenges offered by extending residency training into managed care plans (Wartman, 1994) (Leslie, 1995) (DeLisa and Jain, 1996). However, some authors cite changes in the health care system as an opportunity to improve patient service and resident training through organizational restructuring (Ben-Menachem et al. 1996). Others focus on the teaching opportunities offered by managed care, which may be used as a discussion tool for learning about the economics of health care, including practical
applications such as utilization management and evidence based medicine (Tinsley, 1996)(Tinsley, 1996)(Inui, 1996).

**Changes in physician work force requirements**

There is concern in the United States that too many physicians are being trained, and that the distribution of physicians is skewed too far towards specialists (Epstein, 1995). Primary care careers, including family practice, are becoming more popular, and achieving higher status than in the recent past (Purdy and Rich, 1995). The need for a greater proportion of graduates to choose primary care careers has been acknowledged (Stimmel, 1992). The growth of managed care has magnified the problem, as HMOs tend to focus on the provision of care by primary, gate-keeping, generalists, and limit referrals to specialist physicians (Rivo et al. 1995). Experts have recommended that the number of physicians trained be either reduced, or maintained at current levels, with redistribution from specialist training to the primary care disciplines of family medicine, general internal medicine, and general pediatrics. (Wennberg et al. 1993)(Mullan et al. 1993).

**The impact of health care reform on medical research**

Funding for research has also been affected by the impact of market competition from managed care. This has limited the ability of academic medical centers to subsidize research activities with clinical revenues (Mechanic and Dobson, 1996)(Skirboll, 1997). For example, it has been suggested that the clinical efficiencies pushed by managed care will prevent the development and application of new technology (Carey and Engelhard, 1996). New diagnostic tests, traditionally developed by faculty with research interests in the field, are less likely to be designed if developmental resources are limited.

In many cases managed care plans have been reluctant to cover the costs of clinical care that is associated with a research protocol (Skirboll, 1997). As research grants generally only cover the cost of the investigative activity, and not the patient’s care, these clinical costs must therefore be met by the academic institution.

Mechanic and Dobson studied seven academic medical centers in areas with high HMO penetration (Mechanic and Dobson, 1996). In addition to the financial pressures placed by intense competition on some institutions, the authors cite the need to move to more
outpatient focused research, as inpatient stays are reduced. They describe a need for academic medicine to focus more attention on research that is relevant to integrated delivery systems. The authors found that communication between researchers and managed care organizations was inadequate, and sometimes adversarial. They describe this as very unfortunate given the possibilities created by combining the ready access to patients available via computerized records in managed care plans, with the skills and resources available in academic centers. They recommend that clinical care decisions should in the future be supported by evidence that is generated in the settings in which care will increasingly take place.

Managed care plans collect detailed data on their patient populations, including demographic, utilization and outcomes data. This information has not traditionally been used as a basis for epidemiological or clinical research. The National Institutes of Health, a major source of federal funding for medical research, are developing collaborations with managed care organizations to begin to address this issue (Skirboll, 1997).

**Successful collaboration between academic medical centers and managed care organizations**

The move to increased ambulatory training for medical students and residents, that has resulted from changes in health care delivery, has created a necessity for academic centers to extend their teaching beyond the traditional in-patient environment (Perkoff, 1986) (Woolliscroft and Schwenk, 1989). This responsibility should be shared by managed care plans, according to Showstack and colleagues who have described the functions of a socially responsible managed care system (Showstack et al. 1996). Included in the list are active participation in the education of health professionals, and meaningful collaboration with academic medical centers.

Collaboration is not a new phenomenon. As early as 1970, Bosch and Banta describe the conduction of teaching in a pre-paid group practice (Bosch and Banta, 1970). In 1982 Hoft and Glaser discussed the problems and benefits of formally associating academic medical centers with HMOs (Hoft and Glaser, 1982). The HMO may provide a source of patients, generate additional revenue, increase resources for teaching, and improve the
delivery of care. However, the authors describe problems arising from very different styles of practice, the high cost of clinical services at the academic center, and the differing missions of the two organizations. More recently, Moore used a case discussion to elicit the views of academics and HMO medical directors about cooperation between academic centers and HMOs (Moore, 1990). He cites the advantages to the academic centers as being new ambulatory sites and teachers, and for the HMO, the possibility of recruiting appropriately trained physicians.

Isaacs and Madoff surveyed American medical schools for collaboration with prepaid health plans on medical student teaching (Isaacs and Madoff, 1984). Their results from the early 1980s showed that, at that time, 26 of a total of 127 medical schools had formal educational arrangements with HMOs. The extent of student teaching activity varied widely across the health plans.

The Group Health Association of America, a membership organization for managed care plans, surveyed 481 HMOs in 1990 to assess their involvement in graduate medical education (Corrigan and Thompson, 1991). Fifty eight percent of the HMOs responded. Only 15% were involved with residency training, usually as an ambulatory care rotation site. HMOs that were involved in training were more likely to be staff or group model HMOs, older plans with more than 50,000 enrollees, not-for-profit, and owned by, or linked with, an academic medical center.

Collaboration need not necessarily focus on teaching. Lewis suggests that academic medical centers should consider an alliance with an HMO in order to continue the research that provides the intellectual underpinning of the medical education experience, and keeps the institutions at the cutting edge of the market (Lewis, 1995).

Moore et al. have described the successful collaboration between the former Harvard Community Health Plan and Harvard Medical School. The collaboration resulted in the formation of a new joint academic Department of Ambulatory Care and Prevention that has teaching and research functions (Moore et al. 1994). The advantages of this close working relationship for the medical school are cited as enhanced teaching and research
activities in preventive medicine and primary care. This formal association grew from previous links that provided training for medical students, residents, and mental health fellows within the HMO (Dorsey, 1973) (Donovan et al. 1991). Other examples of collaborations between HMOs and medical schools do exist, Moore mentions three: Kaiser Permanente Northern California, Group Health Cooperative of Puget Sound, and an academic HMO at George Washington University.

More recent literature describes an affiliation between Case Western Reserve University School of Medicine and the Henry Ford Health System (Stevens et al. 1996). This collaboration was facilitated by a shared commitment to health services research, and education relevant to managed care. The authors highlight the potential differences that had to be overcome, for example, the customers in academic medical centers are the students and faculty, whereas the customers of the managed care organization are the patients and their employers.

**Patients views of medical student teaching in the United States**

Several authors have studied patient’s views of medical students in the inpatient setting. Magrane studied attitudes and expectations of obstetric patients toward the involvement of medical students in their care at a teaching hospital in Vermont (Magrane, 1988). A questionnaire was distributed to patients who had agreed to medical student participation in their labour and delivery, this was therefore a sample that was favorably disposed toward medical student involvement. The women were asked to rate politeness, respect for patient’s wishes, consideration for the companion, empathy or sensitivity to needs, ability to answer questions, preparation to participate in care, and professional appearance. Students were highly rated on respect, politeness, consideration and empathy or sensitivity. They did less well on professional appearance and preparation to participate in care. Over 25% of women rated the students as less than excellent on ability to answer questions. A small number (6%) would have preferred not to have a student present, several of these women stated that this was dependent on the characteristics of the individual student. Eighty three percent of women thought the student improved their care in the hospital, primarily in supportive ways.
Magrane and colleagues went on to study patient decisions to agree to, or refuse, medical student participation in their obstetric care (Magrane et al. 1994). Patient decisions were based on need for privacy, past experiences with students, and expectations of the level of student involvement with care. Of those who agreed to student participation, 61% identified a wish to contribute to the education of students as an important reason for agreeing (Magrane et al. 1996).

Patients who refused to have students present during labour expected the students to be more significantly involved in patient care than did patients who agreed to participation. Among patients who had previous exposure to students in maternity care, those who refused participation had less positive views of prior contact with students.

Patients' attitudes toward the involvement of medical students in their inpatient surgical care were assessed by York and colleagues (York et al. 1995). Patients were interviewed by faculty members using a questionnaire. Patient's attitudes were favorable regardless of the student's experience or performance clinically, the patient's age or length of hospital stay. Ninety percent of patients stated that they would allow a student to participate in future care. The use of faculty members to interview patients, despite reassurance of confidentiality, may have introduced bias into these results.

Findings of research about patient views of medical students in the ambulatory care setting show a more mixed picture. Glasser and Bazuin found that less than two per cent of patients were attracted to community health centers because of their affiliation with a medical school, more common reasons were location, advice from a friend, or dissatisfaction with a previous doctor (Glasser and Bazuin, 1985). However, a majority of the responding patients felt that their care was improved because of the medical school involvement. A number of patients did have negative views of the student's role. Negative perceptions were related to older patient age, preference for seeing a faculty doctor, and lower satisfaction with care. The importance of this finding, published in 1985, is discussed in an accompanying editorial (Kassebaum, 1985). This suggested that the growth of interest in assuring patient satisfaction with health care needed to be balanced with the requirement for expanded training of students in ambulatory care.
Simons and colleagues surveyed a random sample of patients attending an academic general internal medicine ambulatory practice at a university hospital in Pennsylvania (Simons et al. 1995). The majority of patients (194 of 199) completed the survey. Of these, approximately half had no preference regarding medical student participation. A third preferred to see the physician alone, and ten percent would like to see a student with the clinician. Half of the patients desired to have some time alone with the physician. Approximately half the patients (47%) enjoyed their interaction with students, 43% were neutral, and 10% disliked their encounters.

Swee and Warburton surveyed patient satisfaction with visits to family practice offices in New Jersey (Swee and Warburton, 1980). Sixty percent of visits included a medical student, the remainder did not. Patients were randomly selected for each group. There were no significant differences in satisfaction for visits with and without a medical student. Eleven percent of patients indicated feeling a lack of privacy when a student was present, and a smaller number reported emotional or physical discomfort, or that their time was wasted.

Berkelhamer and Herald studied satisfaction of patients' parents in a hospital based primary care pediatric clinic (Berkelhamer and Herold, 1982). Although visits involving a student were significantly longer, the proportion of parents who expressed overall satisfaction with their child's visit was greater for visits involving medical students. This was despite an average visit time of over two hours in the group that saw a student. Provider concern with the patient and problems was also perceived to be higher in the group that saw medical students. The authors suggest that increased time with a student or doctor may be seen as beneficial by some parents, the thoroughness of the student's history taking and examination may add to this.

Work by Frank and colleagues, published after completion of this study, measured patient satisfaction with visits and monitored encounter length and activities during the consultation (Frank et al. 1997). The study was conducted in a family medicine clinic attached to an academic health center. They found that patient satisfaction and total encounter length were similar for visits involving the physician alone and the physician.
and student. However, when the student was present, physicians spent significantly more time discussing visit expectations, and less time on history taking, assessment and answering the patient’s questions. Similar time was spent in treatment planning, health education and social conversation.

O’Malley and colleagues have recently published research about patient satisfaction with a visit to a general medicine walk in clinic at an army medical center where medical students and interns were present (O’Malley et al. 1997). Patients were initially seen by the student or intern and then by the trainee and a faculty preceptor. Questionnaire results were compared with satisfaction scores for visits where trainees were not present. Compared with the 372 patients seen by a faculty physician alone the 103 study patients were significantly more satisfied with the technical skill and explanation provided at the visit. Benefits cited by patients in the teaching group included greater provider interaction (45%), enhanced education (34%) and improved care (26%). Drawbacks were longer waiting times (18%) and, for a small number of patients (5%), a perception that the care provided was worse than in a non-teaching clinic.

Patients views of medical student teaching in Europe and Australia
The relevance of findings from studies conducted in other countries is uncertain. The different methods of training, funding, and delivery of care have effects on public perceptions and expectations of the health care they receive. However, research from other systems may provide some helpful insights into the situation in the United States.

Richardson and colleagues surveyed patient’s attitudes to medical students on the labour and delivery ward at a London hospital used for training medical students (Richardson et al. 1988). Seventy six percent of responses by patients were favorable to the presence of medical students. There was a significant trend for patients from lower social class groups to have a more positive attitude to medical students. Reservations were mainly about the student’s youth and inexperience.

An interview survey of 106 elderly patients prior to discharge from a teaching hospital in Liverpool showed that 29% of patients did not know what a medical student was, despite
having been interviewed and examined by one (King et al. 1992). Elderly patients were in the majority sympathetic towards, and positive about, students. Fourteen patients objected to having been examined by a student, thirteen of these were women. Nineteen female patients were examined by a male student without a chaperone. Five patients would not like to see a student during a future admission, and 16 said they were happy to talk to students, but not to be examined.

A move to increased primary care education of medical students has occurred in the United Kingdom (Oswald, 1991) (Field and Kinmouth, 1995) (Illife, 1992). Most medical schools have expanded the contribution of general practice to the teaching of undergraduate students (Robinson et al. 1995). This has effects on the primary health care team, the students and patients. Some of these effects are not known, or are not fully understood (Higgs and Jones, 1995).

However, teaching of medical students in general practice is not a new departure in the United Kingdom. Wright investigated the attitudes of 259 patients to medical students in an established teaching practice in 1974 (Wright, 1974). He found that discussion of physical illness, smoking or drinking was acceptable to patients. However, 40% of patients would prefer not to discuss sexual problems, 39% personal anxiety or family problems, 22% money problems, and 18% work problems, when a student was present. Women tended to be more reluctant to discuss these problems than men, and also preferred not to raise the topics of contraception, possible pregnancy or abortion if a student was present. The proportion of patients with previous exposure to students who would choose not to consult with a student present was higher than in the unexposed. Female patients preferred that a student not be present if they needed to remove their clothes, or if an internal examination was necessary.

Jones and Oswald sent a postal questionnaire to 1133 patients registered with one general practitioner (Jones and Oswald, 1994). They asked about past encounters with medical students within the practice, and willingness to be involved with medical student training in the future. The majority of respondents (86%) who had previous experience reported that having the student present made no difference to the consultation. Patients with prior
experience were not significantly more or less willing to see a student at a future visit. Younger patients were less likely to be willing to see a student.

More recently published work by Jones and colleagues surveyed 100 patients who had a student present during a consultation with their GP (Jones et al. 1996). The survey achieved an 84% response rate. The majority (95%) remembered a student being present during the consultation. Ninety eight percent could recall having been asked prior to the consultation for their permission for the student to be involved. The majority of respondents (71%) would allow a student to be present again, and 93% indicated that they thought teaching medical students at the health center was a good idea. Fourteen patients commented that they may be less willing to have a student present if their problem was 'embarrassing' or 'intimate'.

Evans and Seabrook found from qualitative work, and a survey of 180 patients, that the advantages of having a student present at the consultation were perceived as: helping to educate future doctors, learning more about their condition from the discussion between student and doctor, receiving a more thorough check up, interest in seeing the student's approach, and having someone uninvolved in their care to talk to (Evans and Seabrook, 1994). Disadvantages were perceived to be: potential embarrassment if the patient has a personal problem, feeling uncomfortable at being watched by the student, being upset if the student appears disinterested, and the possibility that the consultation might take longer.

A group of medical students from Oxford University used a questionnaire survey to ascertain the views of patients in general practice about students (Cooke et al. 1996). The sample included those with and without previous experience of medical students. Of those who had attended a teaching surgery 56% were positive about the presence of students, whereas 41% of those who had not attended a teaching surgery were positive. More patients felt that the impact of the student was positive (17%) than negative (1%).

More recently, O'Flynn and colleagues sent questionnaires to 480 patients who had attended a teaching surgery in either Newcastle upon Tyne or London (O'Flynn et al.
Response rates were 79% and 60% respectively. The proportion of patients who were happy to have students present at a future visit depended on the clinical scenario. Consultations for a sexual problem and those involving an internal examination had a consent rate of 50% or less. A number of patients had not been asked if they would like a student to be present (9% and 18%), and a proportion did not believe that they had a choice (28% and 11%). Women were significantly less likely to wish to see a student for emotional or sexual problems, or if an internal examination would be required.

A study conducted at a medical school in Umea, Sweden, included the views of a random sample of patients who had visited the primary health care center or one of five departments at the hospital (Lynoe et al. 1998). Four hundred and forty one patients returned the questionnaire (76% response rate after four reminder letters). Across the specialties, including primary care, 88% of patients were positive towards participating in clinical teaching in the future. Of the 49 people who were negatively disposed towards future participation, a large proportion had a previous experience of student teaching that was described as negative, but no further details about these experiences were ascertained.

The positive impact of first year medical students on the primary care of patients with chronic disease was described by Kamien in Australia (Kamien, 1990). Thirty five percent of the students attached to a patient discovered new information that was judged by the patient's general practitioner to be of significant help in the management of the patient's illness.

**The effect of medical student teaching on the health care organization**

Kirtz and Larsen assessed the costs and benefits of medical student training to an HMO in Washington State by surveying providers and patients and reviewing appointment records (Kirtz and Larsen, 1986). Patients were asked four questions about teaching, one about exposure to medical students, one about exposure to residents, and two about satisfaction or dissatisfaction with these experiences. They found benefits including provider perceptions of increased quality of care, increased patient satisfaction, and enhanced provider education and enjoyment. Negative impacts included decreased productivity of approximately one visit per half day, the use of 47 minutes of direct teaching time per half
day, and the resulting extra costs. A final cost estimate (published in 1986) was $16,900 per full time equivalent student per year.

Earlier studies in the 1970s by Pawlson and colleagues also addressed the financial costs of teaching medical students in the primary care practice setting (Pawlson et al. 1979; Pawlson et al. 1980). Both managed care and fee for service practices were used. The least expensive student activity was observation by first year students, the most expensive was active participation in clinical care by second year students. As students became more experienced costs were reduced. The estimated costs were similar in both studies at about $50 per student per day.

More recent work by Vinson and colleagues found that when a medical student was present with a family physician in private practice, physicians shifted substantial amounts of work time from patient centered to student centered activities, used their personal time for teaching, and also experienced a decrease in productivity of 0.6 patients per hour (Vinson et al. 1996). These findings substantiate previous work by Vinson that found that family physicians spent an average of 46 minutes longer per day at work when teaching students (Vinson and Paden, 1994).

Usatine and colleagues examined family physicians' attitudes towards being a preceptor of first year medical students in California (Usatine et al. 1995). They found that preceptors learned new information about patients because of the student's presence, that patients gave positive feedback in 83% cases, and that preceptors changed their own practice by learning from the course.

**Patient views of resident doctors**

Sheets and colleagues assessed patients' satisfaction with care provided by family practice residents in a gynecology ambulatory care facility at an academic HMO (Sheets et al. 1990). Patients' satisfaction ratings were generally higher for faculty physicians than for residents. However, there was no significant statistical difference apart from one variable: compassionate treatment by the physician.
Reichgott and Schwartz conducted a mailed survey of private primary care patients, asking about attitudes towards resident participation in their care (Reichgott and Sanford Schwartz, 1983). The response rate was only 29%. However, from this sample they concluded that patient dissatisfaction in private practice was associated with not knowing beforehand that a resident would participate in the outpatient health care delivery. Prior exposure to a satisfactory resident experience (in any setting) was associated with greater patient acceptance. The majority of patients (71%) desired faculty consultation at every visit. The small number of Medicaid patients were significantly more willing to accept resident care. The authors recommend that patients be fully informed, faculty be actively and visibly involved in decision making, and special attention to continuity must occur at times of trainee rotation.

Rodney and colleagues used a patient satisfaction questionnaire in a family medicine residency program (Rodney et al. 1985). All patients had been seen for a minimum of five visits. Care provided by residents was reported to be as satisfying in terms of quality of care and physician conduct as that delivered by faculty physicians. Rodney also surveyed patients who did not return for scheduled follow up visits to determine the reason for their non-attendance (Rodney et al. 1986). Dissatisfaction with the physician was one of the variables listed on the survey as a possible reason for not attending. There were no significant differences between the responses of patients who had seen residents and those who had seen faculty physicians.

Gerace and Sangster studied patient satisfaction with residents in a family practice residency teaching center in Ontario (Gerace and Sangster, 1987). They found that four variables correlated significantly with higher patient satisfaction: whether time with the preceptor was adequate, and explanations regarding the teaching program and their health care were sufficient; whether patients felt comfortable expressing their concerns about the teaching program to permanent staff members; whether the patient had a positive attitude regarding the teaching program; and whether patients felt that the preceptor was available to them. The quality of the doctor-patient interaction and the patient’s comfort in expressing concerns were more important than a factual knowledge of the teaching program in terms of patient satisfaction. The problems that patients found difficult to
discuss with a resident were, in order of priority: personal or emotional problems, serious illness, gynecological care, chronic illness, and complete physical examination.

Earlier work by Blanchard and colleagues measured patient satisfaction pre and post introduction of residents into a family medicine private practice in Mississippi (Blanchard et al. 1977). They found significant decreases in several aspects of patient satisfaction after the introduction of residents. These included: whether the doctor spent enough time with the patient, used words the patient did not understand, seemed unsure of what he was doing, made the patient feel they could discuss personal problems, answered questions directly, and adequately explained their illness. However, there were no significant differences between the patients who saw a resident or a faculty physician at the second visit, apart from the item on explanation of illness, on which residents were scored more highly. The authors suggest that system changes, e.g. appointment and billing arrangements, associated with the incorporation of the practice into the university system may be responsible for the change in patient satisfaction, rather than the resident physicians themselves. (Blanchard et al. 1977)

Krol and Nordlund identified variables that patients felt were a measure of resident physician competence, and were qualities of a “good” physician (Krol and Nordlund, 1983). They identified the following as being the most important: physician concern about the patient, effective treatment, the physician spent enough time with the patient, and the patient felt he or she could contact the physician again if necessary.

Gebo and colleagues found that medical outpatients seen by either a medical student or intern, plus a faculty physician, were significantly more likely to be dissatisfied with their care than patients seen by a faculty physician alone (Gebo et al. 1996). Poor health showed a strong correlation with dissatisfaction. However, age, race, gender, and educational level were not associated with dissatisfaction.

Patient satisfaction with the transfer of care from one resident to another was studied by Roy and colleagues at a military medical center (Roy et al. 1995). Questionnaire follow up of patients who returned after transfer, and a random sample of those who did not return, showed five independent significant predictors that patients would continue to see
a new resident. These were: personal notification by the departing physician, belief that the physician had done everything possible to facilitate transfer, whether the departing resident had provided opportunity for discussion of the transfer, whether this discussion was perceived as sufficient, and patient’s impressions of the institution. Overall, 57% of patients were satisfied by the transfer process, 25% were neutral, and 18% were dissatisfied.

Scheid and colleagues showed that the demographic characteristics of patients who visited residents and faculty at seven family practice training programs in Ohio were significantly different (Scheid et al. 1995). Patients who visited residents were significantly younger, were more likely to be non-white, and more likely to have Medicaid health insurance.

**The impact of resident training on the health care organization**

Kahn and colleagues determined productivity and costs for a teaching program in pediatrics and general internal medicine in a prepaid group practice attached to a medical school (Kahn et al. 1978). Using a time and motion study technique they evaluated work before and after introduction of second and third year resident physicians to the clinic. They found that the productivity of residents more than compensated for the loss of productivity of faculty members. There was therefore no increased cost in terms of productivity for the managed care organization resulting from the residency program.

Meyer et al. randomized 254 primary care patients at a Veterans Affairs Medical Center to two groups (Meyer et al. 1996). A control group received care from residents, with no restrictions. In the intervention group, residents had to obtain approval for all referrals. Both groups were followed for one year. A small reduction in resource use was identified in the intervention group, particularly in medication costs. Patient satisfaction was similar in the two groups.

**Research in the managed care setting**

The literature about research and managed care tends to focus on the adverse impact of health care reform on the research activities of academic health centers. One example is a
discussion piece by Marwick that focuses on the threat to research funding posed by managed care (Marwick, 1996). Although Marwick suggests that managed care organizations may fund research to determine effectiveness of treatments, he goes on to suggest that HMOs are only interested in short term cost saving, rather than long term health improvement.

The views of other commentators echo Marwick’s remarks. Korn, former Dean of Stanford University School of Medicine, worked to build an integrated health system based around the University’s clinical services (Korn, 1995). However, he has expressed considerable concern about the lack of interest in research and teaching among HMOs and for-profit providers of health care. Also in 1995, Hanks warned of the risk that basic science research could be jeopardized at academic medical centers because the flow of money through provision of clinical services would dry up (Hanks, 1995). Surgical research is viewed in a similarly pessimistic fashion by Zinner, and by Thompson (Zinner, 1995), (Thompson, 1996).

Makadon and Aseltyne have argued that the increased competition posed by managed care may force academic medical centers to stop caring for high cost patients with HIV, and to curtail research in the field (Makadon and Aseltyne, 1995). They propose that managed care plans should contribute to the cost of these programs, but that they do not usually have sufficient expertise to conduct research themselves.

Cohen explains that the threat to academic medical centers from managed care is based on erosion of clinical income (Cohen, 1996). Academic medical centers cost almost twice as much a day as non-teaching hospitals. This, he suggests, in combination with the very different goals of managed care and clinical research institutions, is the cause of the crisis. Managed care seeks to decrease costs, increase efficiency, and decrease referrals, while clinical research has a need for financial support, may increase costs, is time consuming and inefficient, and requires patients to be referred. It’s focus is to improve care, rather than decrease cost of care.

Despite the negative tone of many commentaries about research and managed care, Donahue and colleagues have described a successful research collaboration between an
HMO and an academic health center in New England (Donahue et al. 1996). The joint research venture was a large four year study of HMO members with high blood cholesterol. The study organizers describe a number of differences in the two systems that had an impact on the project. The cost versus research balance was a concern to HMO administrators throughout. Costs were not just financial, but included disruption of patient care, and therefore concerns about reduced quality of care and patient satisfaction. The priorities of the two systems differed. For example, the HMO made service decisions and changes based upon patient need, without regard for the research protocol. If implemented, these changes in clinical care could have adversely affected the study methodology and timetable. In summary, the study team found that the initial study design failed to ensure integration of the two systems, key players were not informed, and institutional support and commitment was not adequate. Appointment of a project manager from the HMO served to overcome many of these problems.

Patient participation in research in academic and non-academic settings
Research and teaching are traditionally associated with academic medical centers. Patients who receive care in a community primary care setting may not expect to be invited to participate in research or teaching activities. However, patient participation may actually be higher in the non-academic setting. Wadland et al. describe the rates of recruitment during a randomized clinical trial of smoking cessation in two primary care practices in Vermont (Wadland et al. 1990). One site was a non-academic five doctor practice, the other a six doctor academic practice. They found that enrollment was significantly higher (54% of smokers) in the non-academic practice than the academic practice (19% of smokers). Kelly and colleagues also found that recruitment rates into a survey study about cholesterol were significantly higher in non-academic practices (average 84%) than in a practice with a residency program (59%) (Kelly et al. 1992). They postulate that the low recruitment rate in academic sites represents a "fatigue factor" resulting from previous exposure to invitations to participate in research.

Patient motivations for participating in research
There is relatively little published work about why healthy individuals and patients volunteer to take part in research. The majority of the work focuses on clinical trials.
One study conducted at a teaching hospital in the United States showed that the views of samples of cancer patients, cardiology patients, and the general public were similar (Cassileth et al. 1982). Most of the 295 respondents (71%) believed that patients should serve as research subjects. The most frequently cited reason why this should be the case was to benefit society and increase medical knowledge (69%). However, when it came to their own participation, the main reason for taking part would be to get the best medical care (52%), with fewer people (23%) being motivated to contribute to scientific knowledge.

A study of the views of 197 patients of an academic department of medicine in Glasgow included current participants in trials, a small number of people who had declined participation in a trial, and a group who had never been invited to participate in research (Bevan et al. 1993). The most commonly stated motivations for taking part in current or future research were to help others and to improve the treatment received. About a third of those who had previously taken part in research, took part because of a doctor’s request. Among those who had never taken part in research, the most common reasons for not participating in future studies would be: too ill to take part, not wanting to change their treatment, and concern about side effects.

Investigators in the Netherlands looked at the motives and perceptions of healthy volunteers who participate in pharmacological experiments (van Gelderen et al. 1993). Unlike patient volunteers, these individuals received no direct health benefit from participation. The researchers found that motives differed according to age. Young volunteers mostly participated because of financial compensation (96% of those aged 18-30 years). Older volunteers (over 60 years) mainly took part to get a medical check up, and because of the benefit that other people might obtain from the results of the experiment. People were more likely to take part if they had heard positive information from friends or acquaintances.

Two other studies have looked at parents and their attitudes toward clinical research on their children. Harth and Thong in Australia interviewed parents of asthmatic children invited to participate in a randomized, double blind, placebo controlled trial of a drug used
in asthma treatment (Harth and Thong, 1990). Both parents who consented, and those who declined, were included. The response rate was 94% in volunteering parents, and 70% among those who declined. Results showed that volunteering parents were less well educated, and were less likely to have professional or administrative jobs than the non-volunteering group. Volunteering parents had less social support, demonstrated greater help seeking behavior and consumed more habit forming substances. They were motivated by a desire to help others and to contribute to medical research, but they were also searching for more information and for help for their own children. Reasons for not participating included fear of side effects, inconvenience of visits, dislike of becoming involved, lack of time, distrust, cost and loss of privacy. The authors raise a concern that vulnerable parents may be volunteering their children for research. A further paper, using the same samples, describes the results of psychological profiling of parents in the two groups (Harth et al. 1992). Volunteering parents put more value on benevolence, whereas non-volunteering parents were more concerned with power and prestige. Volunteering parents had lower self esteem, were more introverted, more anxious and less confident. The authors suggest that the informed consent procedure may discourage the more highly educated, more privileged and psychologically resilient from participating as research subjects.

Autret and colleagues conducted a study of parents of newborn infants in France (Autret et al. 1993). Parents were asked about consent for clinical studies. Thirty one per cent of parents said they themselves would agree to participate in a drug trial, and 64% would refuse. Twenty one per cent would agree to their child participating in a study, 74% would refuse. The principal reasons for agreement to participate were: for the benefit of other children, contribution to medical progress, confidence in the physician and the benefit for their own child of a new treatment. The main reasons for refusal were: the risk of side effects, unproved efficacy, disagreement 'on principle' and lack of availability. The socio-demographic differences between the groups were not significant, apart from the level of education. Parents in the acceptance group had more often achieved a higher level of education than those in the refusal group. This finding is contradictory to that of the Australian study by Harth and Thong (Harth and Thong, 1990). However, the fact that the two studies were conducted in different countries makes comparison difficult.
A questionnaire survey of 3,522 patients participating in a long term trial of heart failure treatment found that the most commonly cited reason for participating was recommendation by their clinician (31% of respondents) (Henzlova et al. 1994). Other reasons were to contribute to medical science (20%), live longer (15%), help others (12%) and feel better (10%).

Daugherty and colleagues surveyed 27 consecutive cancer patients who agreed to take part in a phase I treatment trial (Daugherty et al. 1995). Eighty five percent decided to participate because of possible therapeutic benefit, 11% because of advice from, or trust in, a clinician, and 4% because of family pressures. Slevin et al. surveyed 34 cancer patients who attended oncology outpatient departments in the UK (Slevin et al. 1995). The most attractive reasons for taking part in research were receiving treatment from a specialist and close monitoring of progress. The majority of respondents also believed that taking part in research was appealing as it contributes to research knowledge and benefits humanity (75%) and provides an opportunity to obtain new treatments (72%). This last response is particularly interesting as the least appealing aspects of taking part were the chance of having an experimental treatment, and that the treatment is chosen by the trial, not the doctor or individual.

Edwards and colleagues have recently reviewed the literature relevant to the ethics of randomized controlled trials (Edwards et al. 1998). They found that a large number of participants expect to benefit from taking part, and that their motive for participation is self interest, rather than altruism. This was the case whether the study was based on real or hypothetical scenarios. The authors express concern about the ethical implications of this finding.

It has been suggested that patients who differ in their response to invitations to participate in medical research may have different personal or psychological attributes (Schain, 1994). One of the most important of these is whether the individual is primarily altruistic or self protective. Altruistic individuals are more likely to participate in a scientific experiment, and gain some gratification from contributing to future knowledge. The self protective individual is more likely to act in their own self interest. One study of cancer
patients’ willingness to take part in a hypothetical clinical trial found that patients who would decline also tended to be less willing to give away treatment decision making to the clinician (Llewellyn-Thomas et al. 1991). It is possible that those who agree to take part in research may therefore place more reliance on suggestions or recommendations made by their clinician.

**Patient understanding of medical research**

The issue of informed consent is central to the preservation of patient autonomy and dignity in the conduction of research studies. The use of written consent forms as part of the recruitment of study subjects is an accepted standard. There has been a recent debate over informed consent to medical research, which has highlighted the ethical and practical issues involved (Doyal, 1998).

Nealon and colleagues at the National Cancer Institute conducted a qualitative study into the needs of cancer patients who were considering participation in a clinical trial (Nealon et al. 1985). They found the following issues to be common: patients who are considering a clinical trial are often under great stress and have difficulty grasping and remembering information; patients have little or no understanding of what clinical trials are; often don’t know what questions to ask; fear they will be used as “guinea pigs”; but view clinical trials as important for medical progress.

Larson and McGuire used a questionnaire to measure in-patient attitudes, knowledge and involvement in research at an academic medical center in Baltimore (Larson and McGuire, 1990). They found that 24% of respondents thought that patients had no choice about participating in research, and 12% reported that they thought they would be used as a “guinea pig” whilst in hospital. Attitudes toward research were generally positive. However, 22% of respondents thought that research studies should not involve sick people. Twenty six percent said they would join a study only if it had personal benefit, and 14% stated that they would not consider joining a study at all. Subjects with higher levels of education were significantly more likely to participate in research than those with less education.
Kass and colleagues conducted in depth interviews of 103 patients taking part in cancer treatment studies (Kass et al. 1996). They found that patients were often motivated by hope, and by trust in their physician or hospital. There was also a sense of faith or trust in the research study itself, therefore patients often made up their minds to participate prior to receiving the consent form. Their reading of the consent form and attached information was affected by their earlier decision making, such that they often did not read the form, or ask questions about issues they did not understand.

Research published since this study was completed has shown that men taking part in a randomized controlled trial of interventions for benign prostatic disease found the concept of randomization difficult to accept (Featherstone and Donovan, 1998). In depth semi-structured interviews with 20 men revealed that most were able to describe the process of randomization, including the involvement of chance, comparison, and concealed allocation. However, the majority found the concept of randomization confusing, and had developed their own interpretation of the mechanism by which their treatment was selected. In many cases this included a belief that individual clinical characteristics had influenced the decision. This was compounded by the different meanings that words such as ‘trial’ and ‘random’ have to researchers and lay people.

Another recently published study has shown that parents of critically ill neonates who had consented to participation in a randomized controlled trial of different types of ventilatory support were confused about the process of randomization (Snowdon et al. 1997). Parents were not always aware that chance played a part in the allocation of treatment, or that the intervention being studied was compared with a control which was considered equally effective.

**Patients’ previous experience of taking part in research**

Participants taking part in a phase I colon cancer secondary prevention trial, which involved taking oral calcium and undergoing regular screening, were asked if they would consider taking part in a further research study (Suchanek Hudmon et al. 1996). A higher level of perceived benefits was positively associated with interest in participating in future
trials. Those participants who had experienced difficulties with the medication, or the procedures involved in the study, were less positive about participation in future trials.

Support for medical research among the general public

In 1996 the American Association of Medical Colleges (AAMC) assessed public perceptions of medical schools and teaching hospitals (McInturff, 1996). Participants believed that American medical education, care and research are among the finest in the world. The researchers found that the term ‘academic medical center’ was poorly understood. However, ‘teaching hospitals’ and ‘research’ were familiar terms. Research was regarded as a higher priority than medical education. Those surveyed seemed to have a preference for the academic medical center to deliver patient care and conduct medical research, rather than provide medical education. In addition, responders thought that education should be funded by tuition fees, whereas research is a higher priority for government funding. There were certain subgroups who had differing views. Those with a college education, and who are active in the community, believed research is a higher priority for government funding than patient care or education, as there are no other revenue sources for research, whereas health insurance pays for patient care and tuition fees pay for education. Among white respondents, medical research ranked as the most positive of the academic medical center’s missions. This was not necessarily the case with other racial or ethnic groups. Other authors have described cultural factors that influence perceptions of medical research among non-white people (Roberson, 1994). These include concerns about potential abuse of research participants, based on fears grounded in historical events.

In the AAMC study the trend towards increasing managed care was perceived negatively, because managed care results in less choice for patients, less personal care and a precedence of cost over quality. However, there was an assumption that medical advances would not be compromised by changes in the health care market, as the government and major purchasers of health care (i.e. large companies) would never let that happen.
In the UK there has been discussion in the medical literature about the role of patients in setting the research agenda (Fox, 1996) (Goodare and Smith, 1995). Chalmers quotes a consumer advocate who summarizes the arguments of the other authors succinctly: "Researchers cannot assume that their own values and priorities apply to others who do not share their world" (Chalmers, 1995). He suggests that greater lay involvement in research decision making is justified, and makes sense. In addition it may result in a lobby of well informed people to push for further resources to address the many unanswered questions about health and health care.
III. FOCUS GROUP METHODOLOGY

Formulation of research questions
The existing literature provides evidence that in the right circumstances patients are willing to participate in teaching activities. However, only two of the studies described above addressed teaching within an HMO. One of these focused on gynecology residents, and the other concentrated mainly on the perceptions of clinicians (Sheets et al. 1990)(Kirtz and Larsen, 1986). The literature on patient views about participation in research does not address the managed care setting. The available studies suggest that there are certain people who do not wish to take part in research studies, and that there are situations when it is not appropriate for patients to be approached (Harth and Thong, 1990)(Larson and McGuire, 1990).

After consideration of the literature, discussion with researchers and teachers outside the Department of Ambulatory Care and Prevention (DACP), and consultation with members of faculty and staff of the DACP and Harvard Pilgrim, the following preliminary research questions were framed:

Question 1: What are the notable features of patients' prior experience of research or teaching within Harvard Pilgrim?
What is the actual experience of patients who have been exposed to research and teaching activities? As a result of this information, how might the value of these experiences be enhanced?

Question 2: What are the perceived benefits, costs and risks for patients who participate in research or teaching activities within Harvard Pilgrim?
Participation in research or teaching activities adds an extra dimension to a patient’s interactions with Harvard Pilgrim and its providers. This may be a positive experience; patients may enjoy the contact with students and the extra time and attention they receive. Alternatively, the presence of a student may have interfered with the patient’s relationship with their clinician and raised issues about confidentiality or wasted time. Similarly, participation in research may add value to a patients experience by requesting their help
with, or opinion about, future developments in medicine or in service delivery. Such involvement may be viewed as an invasion of personal privacy by other patients.

**Question 3: What value do patients attach to different kinds of research or teaching experience?**
Different patients may feel comfortable participating in research and teaching activities that involve different levels of commitment or intervention.

**Question 4: What relative value do patients attach to different methods of invitation to participate in research or teaching activities?**
The method by which patients are approached and invited may impact their decision to participate in research or teaching activities.

**Question 5: Are there certain circumstances when patients prefer not to participate in research or teaching activities?**
There may be some situations when patients prefer not be approached to participate in research or teaching activities. For example when they are very sick, in an emergency situation, or when sensitive issues are being raised, like mental health problems, HIV disease etc. There may also be some groups of people for whom participation in research or teaching activities is not appropriate at these times. Is it possible to identify these people in advance so they are not approached inappropriately?

**Methods**
Each of the above questions was addressed with regard to teaching and research. The study was therefore divided into three arms: teaching of medical students, training of residents, and research. All three arms followed a similar design, which included focus groups followed by a questionnaire survey. The study was approved by the Harvard Pilgrim Health Care Human Studies Committee.
Focus groups

Focus groups are an accepted forum for conducting qualitative research (Krueger, 1994). A group of people with common experiences are brought together to share their perceptions and ideas on a topic. The group is intended to be representative of the study population, but does not need to be a random sample (Krueger, 1994). A moderator provides guidance for the discussion through open ended questions.

a. Discussion guides

Key informant interviews were held with members of the teaching and research faculty of the DACP, with research staff who administer studies within Harvard Pilgrim, and with clinicians and managers in the health plan. A total of eleven interviews were conducted. Detailed written notes were taken. The research questions outlined above were discussed during the interviews. As the interviews progressed the research questions were developed into a list of discussion questions for the focus groups. The research questions and draft focus group questions were then shared with Harvard Medical School researchers at an informal research meeting, with teaching staff from within and outside the DACP, and with a group of primary care residents.

Background information was also sought from the Harvard Pilgrim Clinical Quality Management and Market Research departments. Staff in the Clinical Quality Management Department conduct and analyze patient satisfaction surveys for Harvard Pilgrim. These surveys did not provide any data about teaching or research activities. The Market Research Department conducts an exit interview with a random sample of members who leave the health plan, they do not specifically gather information about teaching and research, and had no data to provide about these programs.

The focus group questions were then elaborated into discussion guides, which included examples of different types of research and teaching activity. The discussion guides were refined by the comments of the study advisers, and a small number of the key informants. The discussion guides were then sent to the University of London study adviser for comments.
The final draft of the guides was discussed with the independent focus group moderator. Her input was sought on the phrasing of questions, the use of language that would be understandable to the groups, and the refinement of the examples of research and teaching to be used in the discussions. The discussion guides are included in Appendix 1.

b. Focus group samples
The initial study design included three focus groups, one each of Harvard Pilgrim patients exposed to medical students, primary care residents, and research. After consideration of feedback from the various discussions, it was decided to include a fourth group of individuals who were not known to have been exposed to teaching or research at Harvard Pilgrim, as these people may have different perspectives of research and teaching.

1. Research focus group
Ongoing and recently completed research studies were identified from lists of all internally (Harvard Pilgrim Health Care Foundation) and externally funded projects. A sample of studies was selected using the following criteria: studies must have been ongoing in the previous six months and must have involved patient contact. The studies were selected to cover a range of different research activities, from personal interview to trials of pharmaceutical agents. Finally, the investigators were asked for permission for study participants to be contacted.

A final list of eight studies was identified. These are listed in Table 1. Three studies involved pediatric patients. Investigators running two of the studies chose to contact study participants by letter prior to the invitation to the focus group being issued. These investigators were concerned that study participants would be alarmed by a possible breach of confidentiality, and wished to reassure patients that no medical details were released to the author. No investigators declined to participate.
Table 1. Research studies included in focus group sampling

<table>
<thead>
<tr>
<th>Study</th>
<th>Study design</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparison study of the cost effectiveness of Lovastatin versus stepped-care in the treatment of Primary Hypercholesterolemia*</td>
<td>Multi center, prospective, open label, parallel study</td>
</tr>
<tr>
<td>Decision model for hormone replacement therapy use*†</td>
<td>Personal interview of peri-menopausal women</td>
</tr>
<tr>
<td>Developing and validating a dietary screening tool for primary care (Primescreen)*</td>
<td>Questionnaire in person, and blood sample</td>
</tr>
<tr>
<td>Hypertension and automated linkage of outcomes study*</td>
<td>Monitoring of compliance with treatment using special dispensing bottles</td>
</tr>
<tr>
<td>Efficacy of treatments in chronic heart failure</td>
<td>Three trials of pharmaceutical agents in chronic heart failure</td>
</tr>
<tr>
<td>Childhood asthma management program*</td>
<td>Trial of treatment and side effects in pediatric asthma patients</td>
</tr>
<tr>
<td>Development of a family support program at Harvard Pilgrim†</td>
<td>Support for families of premature infants</td>
</tr>
<tr>
<td>Access to, and use of, oral rehydration solution</td>
<td>Randomized controlled trial of oral rehydration solution in pediatric patients</td>
</tr>
</tbody>
</table>

* Study represented in final focus group sample
† Investigators contacted sample prior to focus group invitation

Details of potential participants were supplied either as medical record numbers, or as full demographic details. Telephone numbers and addresses were obtained from the automated medical record system (AMRS) which lists all members of the Health Centers Division of Harvard Pilgrim.

Potential participants were telephoned by the author or a research assistant, using the lists provided. Calls were made to people on the lists for each study until at least one person was recruited from each study. All calls were made during the evening on weekdays. A prepared telephone script was designed and tested on members of the office staff prior to use. The investigator identified herself, and then asked to speak with the Harvard Pilgrim member listed. In the case of children, the parent or guardian was approached. The member was told about the study, given a brief description of a focus group, and invited to attend. If the member was interested a written invitation was issued, including a consent form.
A telephone call was made two days prior to each focus group to remind participants about the session.

Transport was offered to members who had problems getting to and from the focus group venue, and a cash payment of $25 was paid to those who attended. A total of 14 potential participants were identified, each study was represented at least once in this sample. Seven of these people attended the group.

2. Medical student teaching focus group
Medical students in the ambulatory care clerkships for the period April 29, 1996 to August 23, 1996 were requested to keep a log of all patients they saw in internal medicine and pediatrics. Students were given data collection sheets and asked to put a patient identification sticker on the sheet for each patient seen. Thirteen of 14 students who were attached to six different health centers provided data. Member identification numbers were then entered into the Automated Medical Record System (AMRS) to obtain registration data about the members. Lists of internal medicine and pediatric members were produced. Sampling was restricted to health center division patients. Patients were randomly sorted, prior to printing the lists, to ensure a spread across students and health centers.

Members were contacted as outlined in the research focus group description. A call was made to the first person on the list, if the person was not available the caller moved on to the next person on the list. A total of 13 agreed to come, of whom seven attended the group. Two were parents of pediatric patients who had seen medical students.

3. Primary care resident focus group
A list of names and provider codes was obtained for the eight residents attached to the Primary Care Clerkship. A search of the AMRS was then conducted to find patients who had seen one of these resident physicians during the past six months. Urgent care visits were excluded. Patients were randomly sorted to ensure a spread across residents and health centers.
Members were identified and approached as outlined above. A call was made to the first person on the list, if the person was not available the caller moved on to the next person on the list. Fourteen members agreed to come. However, only three actually attended the group.

4. General member focus group

A random sample of 200 Harvard Pilgrim Health Centers Division members over 18 years of age was identified from the AMRS. Members of all health centers in the Greater Boston area were included. Members who appeared in the three samples above were excluded from the sampling frame.

A list of the random sample was produced, this included the name, telephone number, address and health center of each individual. Telephone calls inviting members to attend were conducted as outlined above. A call was made to the first person on the list, if the person was not available the caller moved on to the next person on the list. Calls continued until eleven members were found who were willing to come. Approximately seventy telephone conversations took place to secure this number of positive responses. Five of these members actually attended the group.

c. Conduction and analysis of focus groups

The focus groups were conducted in the early evening at one of Harvard Pilgrim’s health centers. Each group lasted for two hours. Light refreshments were provided. A conference room was used with a one way mirror, and audio-taping facilities. An independent external focus group moderator was used as there was concern that the author’s association with Harvard Medical School, as a teacher and research fellow, may bias the discussions. The moderator was an experienced qualitative researcher and focus group facilitator, who was not connected with Harvard Pilgrim or Harvard Medical School.

A consent form and letter of explanation had been sent to participants prior to the groups. Both explained that audio-taping would be used to record the discussions. Participants were asked to sign the consent form prior to the sessions.
All groups were observed by the author from behind the one way mirror, and detailed field notes were made during the discussion. Before concluding each session the moderator left the room to consult with the author regarding any issues that required clarification or merited further discussion. The tapes were checked immediately after the group to ensure that the recording of discussions was complete.

The tapes were copied and analyzed independently by the author, the focus group moderator, and one of the local study advisers (Professor T.S. Inui). Independent analysis of qualitative data by more than one researcher is recommended as a technique to ensure that interpretation of findings is not biased by individual interpretation (Knodel, 1993), it is one method of triangulation (Miles and Huberman, 1994).

A complete transcript of the discussions was not produced, as resources were not available for this. However, the detailed field notes, made during the sessions, were typed on a word processing package (Microsoft Word) on a personal computer. The author then reviewed each tape twice, in detail, and made additional notes of the discussions, including direct quotes where appropriate. Each comment was attributed to the relevant participant and interactions and emotional responses in the group (e.g. laughter, anger) were noted. The data was then reviewed in depth prior to coding. The audio-tapes were referred to when the meaning of the written notes was unclear, or further detail was required.

A content analysis of the data was conducted manually by the author. Content analysis is a recognized method of conducting analysis of qualitative data (Morse and Field, 1995) (Miles and Huberman, 1994). Content analysis is essentially analysis by topic. The data is divided by topic into categories, which may be further subdivided into sub-categories. Analysis of the data is conducted until saturation is reached (i.e. no new data is emerging) (Morse and Field, 1995). The data may be further examined by investigating the relationship of one category to another.

The data for each focus group were initially coded into broad categories. In order to do this, the written notes were marked with highlighters and margin notes to delineate the
different categories (Knodel, 1993). Information pertinent to each category was then grouped together. The ‘cut and paste’ feature of the word processing program was used to facilitate this. Initially the categories were broad, e.g. the impact of medical students on patient care. The categories were then further developed into narrower sub-categories as the data was examined in more depth, e.g. impact on time spent at a visit, impact of discussion between clinician and student on the patient.

The characteristics relating to the particular category or sub-category were then noted, including the relationship between variables, e.g. the circumstances of exposure to medical students and the impact of medical students on the patients. A simple two-dimensional matrix was used to record this information in note form. The use of matrices to display qualitative data is an accepted technique (Miles and Huberman, 1994). Formal counting of the number of times that concepts were raised was not conducted. However, an indication of the strength of feeling or interest in the group was gained by noting the number of people who expressed similar opinions (Krueger, 1994). In addition, some non-verbal communication had been recorded in the field notes e.g. if all of the group members nodded in agreement. In those instances where group members had different opinions about an issue, the differing views were recorded.

The data were reviewed for commonalities and differences between the experiences and views of participants (Miles and Huberman, 1994). In some cases the context of comments made by individuals at different points in the discussions contributed to the interpretation of the information, particularly where differing views were expressed within the group e.g. When asked if anyone in the group discussing medical student teaching would be uncomfortable with a medical student looking through his/her history a 68 year old lady responded: “Without my permission? Yes! It’s a privacy issue. You are supposed to have privacy with the doctor!” A number of other participants in this particular group would be uncomfortable but did not express such strong feelings as this lady. The remaining participants did not feel that they would be uncomfortable. Earlier in the discussion the 68 year old lady said “It is harmful to the patient and family to have students standing in the hallways of [a teaching hospital] saying Mrs Smith got...... Did
you see Mr ……?” This lady described overhearing a conversation of this type between medical students in a lift, whilst visiting a family member in hospital.

As the data were reviewed some common themes were noted from the focus group discussions. Thematic analysis of qualitative data involves the identification of common threads that extend through a discussion or series of discussions (Morse and Field, 1995). Thematic analysis therefore requires that the data is reflected on as a whole. A number of themes were identified, these were concepts that recurred in the focus group discussions, and often were common to more than one discussion topic. Sometimes they were not directly expressed, but were underlying comments e.g. it is important for the doctor to ask the patient if a medical student may be present, and, if the patient’s regular clinician suggests participation in a research study the patient may be more interested in participating. These comments, and others, suggested that an invitation from a trusted clinician is an important factor in a patient’s decision to participate in a teaching or research activity.

The author met with the moderator and the local study adviser after the initial analysis to discuss the findings, including a review of the information obtained by independent content analysis of the discussions. The moderator and the adviser agreed with the main findings of the focus groups. A number of additional points and queries were made and the tapes were subsequently reviewed for clarification of these issues. A draft written report of the findings was then produced. This was reviewed by the focus group moderator and the adviser for verification of the findings.

Copies of the final report were sent to two focus group participants from each group approximately six weeks after the groups, with the request that they comment on how well they felt the reports captured the focus group discussion, and highlight any missing information that they may recall. The group members were chosen because they appeared to have a balanced and objective view of the discussion during the session. No formal feedback was received from these individuals, despite reminder telephone calls requesting a response.
IV. FOCUS GROUP FINDINGS

The focus group findings are reported separately for the four groups: medical student teaching, resident training, research, and general members. The fourth group addressed all three areas, and had many findings in common with the groups which discussed a single topic.

1. Research
The focus group consisted of three men and four women. Members of the focus group had participated at some time during the past year in one of the following studies: the hypertension and automated linkage of outcomes study (HALO), childhood asthma management program (CAMP), decision model for hormone replacement therapy (HRT) use, a dietary screening study, and a trial of cholesterol lowering drugs. All participants were patients of greater Boston health centers and ages ranged from 30s to mid 60s (some individuals were retired). One was a parent of a pediatric member. There were five Caucasians and two African Americans.

Views of research
Participants were strongly in favor of the conduction of research in HMOs in general. They believed research is necessary because it helps maintain and improve the quality of care and creates new advances in treatment. Some participants believed Harvard Pilgrim should pay for research in order to control the type and design of studies, and others felt Harvard Pilgrim should seek external funding so membership premiums would not have to be raised. All participants had a generally positive experience of research at Harvard Pilgrim and would take part in research again. They believed that research educated them about medical care, provided them with information to make independent decisions, and in some cases enhanced their personal health. Several members said it was gratifying that someone asked about their opinions and feelings.

The negative consequences of participating in research were loss of control over health care, in particular the necessity of submitting to study rules that were sometimes “ regimented” and “inflexible”. Several participants cited instances when study protocols conflicted with their established daily routines. They expressed concern that their lack of
compliance with study protocols may produce invalid results. One mother of two asthmatic sons explained that the protocol required that she do her son's asthma tests at bedtime even though bedtimes varied. Another participant said “I had to open a pill bottle just once a day. The researchers got a false result from me because I use a seven-day dispenser. They need to get a device that fits the established habit of the participant. Otherwise findings will be distorted.”

**Reasons for participating in research**

Focus group members would be motivated to participate in research primarily for the following reasons: (1) improvement in personal health; (2) a trusted primary care provider invites them to participate in a research project; (3) they feel good about being asked; and (4) they have a desire to contribute to advances in medical treatment. Individuals would be more likely to participate if the researcher is informative, pleasant, and low key, and if the organization agrees to inform them of the final results of the research project. Incentives such as money and free medication may sometimes be a factor in the decision to participate, but were considered to be less important than the influences mentioned above.

**Views about research methods**

Examples of different types of research studies were explained to participants in order to ascertain their comfort level with commonly used research methods. Questionnaires, interviews, extra clinical visits, x-rays, and drug trials were included in the discussions.

Participants in general were comfortable with mailed questionnaires and in-person interviews as long as it is convenient for them and they are not approached under trying or painful circumstances. One participant associated research surveys with junk mail. Three participants objected to telephone research, considering it to be intrusive. They also raised the point that phone calls could lead to flawed research because individuals may give cursory answers to get rid of the caller. Discussion about a questionnaire or survey about services provided, e.g. an urgent care visit, focused on suitable timing. Some individuals preferred to be contacted after the event, e.g. two weeks later, others thought that this was too late and they would be unable to remember the relevant information. One individual said that such research is a waste of time "Harvard is not
responsive in the least. I’ve done 10-15 large and small questionnaires over the last 25 years about waiting time. It always stinks.”

In a scenario describing an ankle problem, all participants would agree to an extra visit, examination, or x-ray of the ankle as part of a research study if the researcher is personable, explains the study rationale, and stresses that the patient’s medical care takes firm priority over any research needs. In the case of x-ray investigation, there was some fear of excessive radiation exposure and also the effect in pregnancy. This discomfort increased if the extra x-rays might be near internal organs. Even if a participant was generally agreeable to this type of research, their mood, or time pressures, on any given day could cause them to decline to participate.

The taking of a new drug as part of a trial of treatment for high blood pressure provoked a mixed response. One key factor in the decision making would be trust in the individual doctor, especially a known clinician. However, some people would find it frightening: “It’s a frightening thing to be asked. Why are they asking me? How many people are they approaching? Why do they need this trial?” One woman stated: “This is my body. I have to ask questions so my decision will be based on knowledge.” Participants were confused about whether the drugs being tested would all be equally effective: they didn’t want to switch to a new drug unless it is as effective as the one they are already taking. Individuals sceptical about drug trials were concerned about getting the less effective drug, worried about side effects, and uncomfortable about getting a placebo. If there were any danger signals that the drug wasn’t working, they wanted to be able to pull out of the study immediately. They stressed the need for thorough and clear explanations of these studies in order to clarify the central issue of drug efficacy.

**Randomized drug trials**

Some participants felt they would accept the methodology of a randomized control trial for the purpose of helping future patients. More sceptical participants said they might agree to participate in this type of research if it involved a possible breakthrough for a very serious illness. One female breast cancer survivor stated: “I would do it for something serious like cancer. But with high blood pressure, there are so many good drugs around, why relinquish your power?” Participants felt that drug trials, particularly
randomized drug trials, can be difficult for patients to understand. They felt it was important for potential subjects to be educated about the drugs being tested, the possible risks, and the rationale of the study.

**Circumstances under which research is inappropriate**

Participants stressed that if their current treatment was working well, there was no reason for them to participate in research that will change their treatment. "Why fix what’s not broken?" said one participant. Participants said they did not want to be approached about any kind of research when they are rushed, in physical pain, or going through a difficult emotional situation.

Participants generally do not like to be approached in urgent care because they have probably waited longer than normal for an appointment, and are often stressed, or in pain. It is an inconvenient time to be approached for an interview or questionnaire. However, if the study involves questions about satisfaction or the quality of care, the majority decided they wanted to be contacted within a week or they would forget their impressions of the experience. Contact could take the form of mailed surveys or personal interviews if the participant dislikes telephone surveys.

**Medical records**

Focus group members were all happy with the concept that Harvard Pilgrim reviews member records and used information from records for research purposes. This issue did not provoke an extended discussion, it was accepted by the group as necessary for furthering medical knowledge.

**Other issues raised during the group**

Members felt they would like more information about the research being conducted at Harvard Pilgrim. Both for general interest, and because they may wish to become involved. It would also highlight the importance of research, so members will appreciate the contribution their fellow patients have made to improving care.
One focus group member had ceased to have coverage with Harvard Pilgrim (for personal reasons) whilst he was taking part in a drug trial. He continued to receive his medication and some care from the researchers. However, he had no health insurance. Participants felt that those participating in a study should be guaranteed cover for the duration of the research.

2. Medical student teaching
A sample of six women and one man participated in the focus group. The group had documented exposure to students and was concerned only with members’ reactions to medical students. All participants were patients of greater Boston health centers. There was a mix of ages, occupations, and ethnicity, and careers spanned law, day care provision, teaching, homemaking, social work and administration. Two participants were parents of pediatric patients. Two participants were retired. Most of the sample were satisfied or very satisfied with the care they receive.

Many participants had experiences with medical students in teaching hospitals as well as at Harvard Pilgrim and this coloured their perceptions of all students.

General view of medical students
Most participants expressed support for medical student training in HMOs. This kind of teaching was seen to offer essential “real-world” training to students and create opportunities for Harvard Pilgrim to recruit well trained physicians in the future.

“Students learn from looking and listening, not just from textbooks,” said one participant.

Some group members were aware of the financial pressures on teaching hospitals: “In the New York Times it said there won’t be the money for training doctors. The hospitals are squeezed to be more profitable. Therefore, the educational function is going elsewhere.”

Despite their general approval of medical student training, participants had reservations about the role of students in patient care. They expressed concern that students may infringe on patient privacy, prolong appointment times, use too much physician time, and have inappropriate access to confidential medical records.
Medical student involvement in care

Participants' comfort with medical students strongly depended on the type of care received as well as their mood, schedule, and health state at the time of the visit. Generally, they were comfortable having students present for routine, non-invasive care; less comfortable for chronic care; and opposed to student presence during visits involving treatment for serious conditions. It was perceived that when a patient is being investigated for a serious condition, they are already vulnerable and anxious and student presence may provoke more anxiety, inhibit communication, and violate their privacy. The majority of participants objected to student presence during internal exams or mental health sessions. Several participants with chronic health problems found it frustrating and time consuming to reiterate their medical history to the student during the appointment. One woman who had willingly talked to a student about her health acknowledged, "It was stressful to remember all the times migraines interfered with my life." If participants are not feeling well or pressed for time, they may refuse to see a student even if they are generally agreeable to the idea.

Impact of medical students on patient care

Participants expressed a variety of views about medical student impact on patient care. It was pointed out that it is important to remember that a patient’s view of a medical student encounter depends strongly on their outlook, mood, and the specific circumstance of their medical visit. "It depends on the discussion. I’m comfortable if it’s a broken arm. But, if it’s internally, marital or emotional problems, then ‘good-bye.’"

On the positive side, participants liked contributing to the education of a future physician and also felt that the interaction of the student and physician may help them learn more about their medical condition. In addition, it was felt that teaching sharpens and updates the skills of the primary care physician.

On the negative side, participants expressed strong concern about the amount of time medical student teaching adds on to the clinical visit. They may have to “tell their story twice” and wait longer for the student to interact with them and then consult with the primary care physician. Some participants felt pressured to agree to the inclusion of a medical student because they did not want to offend their physician. One participant (a
senior citizen) felt that older patients were raised in an era where it was impolite to say “no” to a doctor and therefore many would agree to see a student even if they were inwardly reluctant. There was some discomfort about the disclosure of personal and/or sensitive information in the presence of a “stranger,” and some patients would feel embarrassed about undressing in front of a student. Also, some participants expressed reluctance to have a student view their confidential medical record.

If a family member accompanies a sick and vulnerable patient, participants felt this individual should be able to help the patient give a medical history without being interrupted or ignored by the student. For pediatric visits, participants preferred that the child (if he or she is old enough to understand and answer questions) be asked whether he or she is willing to see a medical student.

One participant felt medical student training had no impact on his care because the situation is arranged to benefit the medical student, not the patient. “When a medical student joins my doctor in an office visit, the student benefits, not me or my care.”

**Impact on clinicians who teach**

Participants were somewhat divided about the impact of medical student teaching on precepting clinicians. They wondered whether physicians choose to take on medical students or had students “foisted” on them by Harvard Pilgrim administrators. Several participants felt that primary care physicians were already busy enough taking care of their patients and would be burdened by the additional responsibility of mentoring medical students. Medical students could conceivably take precious physician time away from patient care. Other participants felt that physicians would be energized by the mentor role and would responsibly and effectively incorporate teaching into their clinical practices.

**Patient perspectives**

Participants felt strongly that medical student activities need to be carefully circumscribed during teaching visits. Students should not diagnose or design treatment plans. “I don’t want to get a ten cent treatment for twenty dollars,” one participant said. Most participants preferred that the physician be present at all times to supervise care and
answer student and patient questions. They also preferred that the physician and student
discuss patient cases in the room in front of the patient. This gives the message that “we
are all part of this process” and makes medical student teaching a potential learning
opportunity for the patient as well. Participants said they would be too anxious and
vulnerable during visits to specialists for serious conditions to feel comfortable with a
medical student. It may be appropriate to have a student present when the physician is
explaining a diagnosis, but only if the student has participated in previous clinical visits
with the patient. “This is no time to have a stranger in the room,” said one participant.

The importance of appropriate medical student demeanor during clinical encounters was
stressed. The student should be pleasant and respectful and should always thank the
patient for agreeing to see them.

Participants expected to be asked in advance by the physician or medical assistant whether
they agreed to having a medical student present. There should be no pressure on the
patient to accept the presence of a student. Many participants thought it would save time
and be less stressful if they were asked when they called for the appointment if they
wanted a student present during the visit. Despite this prior consent, a patient may not be
willing to see a student on a given day because of mood, time pressures, or other factors.

Most participants felt that Harvard Pilgrim should not expand its medical student
program. One woman who was generally supportive of medical student training put it
succinctly: “Don’t push it. You will turn people off. Members will feel this idea is being
forced on them.”

3. Resident training
A sample of one man and two women participated in the focus group. This was a
disappointingly low attendance given the number of people who had agreed to attend the
group. Focus groups with as few as four members are considered acceptable by some
authors (Krueger, 1994). However, in this case the small number of participants has an
impact on the interpretation of the focus group findings, as the total range of experience
of the group is limited.
All three individuals had been exposed to residents. All participants were members of greater Boston health centers, one middle aged woman worked for a charity, one woman was retired, the male group member was in his thirties and worked in sales. Two members were African-Americans, the third was Caucasian. All members were satisfied with their care.

General view of residents
Participants all agreed that health maintenance organizations like Harvard Pilgrim should train primary care residents. This kind of training was perceived as giving new physicians experience with patients in an outpatient setting and contributing to the future of health care. Advantages of primary care residents were seen to be their up to date medical training, their fresh perspective, and their strong motivation to provide thorough and high quality care. Two members felt that residents are more attentive to patients, spend more time with patients, and have better listening skills than more experienced physicians. As one woman said: “My resident physician never seemed to be rushing to another patients. She always took the time to listen.” The third member had not previously realized that her primary care doctor was a resident.

Members knowledge about the role of Residents
Group participants felt that Harvard Pilgrim members are not well informed about the residency program and often unaware they are being treated by a resident. There was some confusion about the definition of a resident and the status and role of residents at Harvard Pilgrim. One member understood that residents were in training, but was unaware that residents are fully qualified doctors who will take their boards in internal medicine after a three year stay at Harvard Pilgrim. Participants suggested that Harvard Pilgrim should do a better job informing members about the residency program and identifying and describing resident physicians. The two female group members were disappointed that their resident physicians would move on and leave Harvard Pilgrim. As one woman who had had a succession of four resident physicians as her primary care provider said: “It hurts each time they move on. I’m happy for them but sad. I cry. Someone has to get to know me and my body all over again.”
Impact on patient care
Participant comfort with being treated by residents depended on their medical condition and the level of care provided. Generally, participants expressed comfort with residents for routine and chronic care. However, there was concern over residents caring for people who are seriously ill. An exception would be a new disease such as AIDS, where residents are perceived to have the advantage because of their more recent medical training in new treatments. Participants felt strongly that residents should adhere to certain limits when treating patients, particularly in situations where sensitive information is being imparted or someone is in the final stages of a terminal illness. Residents should not “take over” in these circumstances - only trusted, known caregivers should handle these situations. Some typical comments were: “Residents should never come in when someone is on their deathbed,” and “Residents should never break bad news, for example, telling parents their child has cancer.” Participants stressed that it is crucial that residents be able to get a second opinion from a senior physician at all times. All participants agreed that residents should thoroughly review a patient’s medical record before the first visit to ensure continuity and quality of care.

Roles of residents
Participants had a mixed reaction to the idea of seeing residents when their primary care doctor was busy, but they may enhance care by bringing in a new perspective and more up-to-the minute knowledge. Participants were aware that residents help staff Harvard Pilgrim’s urgent care system and they recognize that this is a good opportunity for residents to get clinical experience. They were aware of the trade off they are making when they seek immediate care from an unknown physician rather than delayed care from their regular primary care clinician.

Perceptions of preceptors
Participants had a favorable view of physicians who precept residents. They believed the responsibility of teaching forces these senior physicians to keep up with the medical literature on new research and treatment methods.
4. General member group
The sample of three men and two women participated in one focus group. All participants were members of greater Boston health centers. Careers included manufacturing, photography, financial services, engineering and homemaking. All the group members were Caucasian.

Research
None of the participants had participated in a research study. Although one had been invited to take part in a study of dietary habits, he had declined because of lack of time. All participants were supportive of health maintenance organizations such as Harvard Pilgrim, conducting research.

Individuals positively inclined towards participating in a research study would be more likely to actually participate if the researcher is informative and pleasant, and informs them of the final results of the research project.

Telephone research was universally disliked by participants. They considered it an invasion of privacy to receive such calls at home, and often inconvenient in terms of timing.

The more intrusive or invasive forms of research such as those involving investigations or new treatments were on the whole considered to be acceptable, as long as participation was strictly voluntary. The use of x-rays, for example, was only unacceptable to one participant if the extra x-rays might be near internal organs. Even if a participant was generally agreeable to research, their mood, or time pressures, on any given day could cause them to decline to participate.

When drug trials were discussed, the group was divided into those who tended to trust their physician and the HMO to look after their best interests health wise, and those who were more distrustful. Some individuals were likely to agree to a drug trial on the advice of a trusted physician. Others were much more sceptical and questioning and would need
to be well briefed before they agreed to participate in any study that involves taking drugs or changing their current drug.

Discussion of randomized controlled drug trials elicited conflicting and sometimes emotional responses. Several participants would vehemently refuse to take part in this type of research because it would strip them of control over their medical treatment, provoking feelings of “fear of the unknown”, and make them feel like a “guinea pig.”

Confidentiality of medical record information was also a controversial topic. Some individuals generally felt it is necessary and appropriate for Harvard Pilgrim to review medical records to identify suitable subjects. In contrast, several participants expressed concern that inappropriate access to records violated patient confidentiality. This is a particular problem if the patient’s name and address are available.

Several participants expressed a desire for research into alternative therapies, such as acupuncture and herbal remedies. They were not interested in participating in drug trials and would prefer to explore more natural remedies for their health problems.

Medical student teaching

Two of the five participants had previously been involved with medical student teaching at Harvard Pilgrim. All participants were supportive of training doctors at Harvard Pilgrim: “Why should an HMO be different?” There was some confusion about medical students and residents, and their level of training. This was clarified by the moderator.

The most positive aspect of teaching at Harvard Pilgrim was thought to be the learning of a good “bedside manner”. The importance of seeing problems at first hand, rather than in a textbook was raised by three participants. Negative aspects were seen to be the impact on patient time, and the fact that patients may not be informed or asked about student participation.

Participants had varying levels of comfort with medical student participation in their care. For example, one female would be comfortable with a student observing, interviewing and
examining her, including an internal (vaginal) examination. “I would be pretty comfortable with the person doing an internal exam. I would do it for science.” However, her consent would be dependent on her feelings on the day, her mood, and her impression of the student.

All other participants would be comfortable with a student observing, interviewing and examining them, except an internal examination. They would not wish this to be repeated twice at a visit. Two would be more comfortable if the doctor was present for the entire consultation. Participants seemed to be comfortable with third and fourth year students, but wouldn’t want to be “the first person they [the student] had ever examined”.

The importance of good information was stressed. Patients should be asked before they see the student. Some would prefer that the doctor does this. One member said: “If the doctor asks, it makes all the difference.”

**Resident training**

Three participants had exposure to residents outside Harvard Pilgrim. Towards the end of the session one participant realized that her primary care doctor was probably a resident.

While participants were generally either favorable towards, or tolerant of, residents, they stressed that it is important that residents “know their limits” and consult with more senior clinicians when necessary.

Participant comfort with being treated by residents depended on their medical condition and the level of care provided. Generally, participants expressed comfort with residents for routine and chronic care. However, there was less comfort with residents for the treatment of serious conditions, such as cancer. For these conditions, they expected to see a physician with more experience in diagnosis, treatment planning, and optimizing long-term outcomes.
The main disadvantage of residents was perceived as their lack of clinical experience and seasoned judgment, and, for this reason, participants expressed some reluctance to consult residents for treatment of more serious conditions. One man said about prostate cancer: "In the medical profession, there is a division about treatments and tests. There are tough choices. A resident may not have enough experience to decide."

In order to ensure good quality care, participants stressed the importance of residents reviewing the medical record prior to treatment and the necessity of having an experienced physician available at all times for consultation and oversight of the resident. They also wanted to be able to follow up quickly with their regular primary care clinician after seeing a resident in urgent care.

One participant urged that Harvard Pilgrim do a better job informing members about the residency program and identifying and describing resident physicians. She suggested that explanatory materials and short biographies of resident physicians be given to patients at the time they are required to choose a primary care physician.
Member surveys were conducted for each of the three arms of the study: research, medical student teaching, and resident training. Questionnaires were sent by mail to samples of Harvard Pilgrim members. Separate versions of the research and medical student surveys were developed for the parents or guardians of pediatric patients. There are no residents providing pediatric care at Harvard Pilgrim.

Surveys were sent to two groups of individuals within each arm of the study; those who had documented exposure to one of the research or teaching activities at Harvard Pilgrim, and a group of individuals who had no documented exposure to these activities.

**Development of survey instruments**

The major points and findings from each focus group were documented in matrices and in a report as outlined above. This information was verified at the time by the focus group moderator and a study adviser. Survey questions were then developed around each of the these issues, using language directly from the focus groups wherever possible (O'Brien, 1993). Different types of question and answer format were required to address the variety of topics that were to be included in the survey instruments. A number of different question and answer formats were therefore initially created, using basic principles of question design (Fowler, 1993)(Streiner and Norman, 1995). A number of short scenarios were also developed, which were based on the questions piloted in the focus groups. These question formats were presented for comment to the study advisers and fellow researchers at Harvard Medical School. Subsequently, the questionnaires were developed using these formats.

The draft questionnaires were initially reviewed for content validity and for appropriateness of question design by academic staff involved with teaching and research in the DACP. The input of the external focus group moderator and a psychologist with expertise in research and questionnaire design was then sought. Each questionnaire went through several iterations as improvements were made.
The focus group findings and draft questionnaires were presented to an external research meeting of researchers and clinicians from other institutions in Boston. The comments and discussion points from this meeting were included in the questionnaire design. The focus group findings and draft questionnaires were also reviewed by the external (University of London) study adviser.

The demographic questions contained in the questionnaires were standard questions used in the Harvard Pilgrim Member Satisfaction Survey.

Pilot study
Each of the five survey instruments was sent to between ten and fifteen members for pilot testing. The intention of piloting the questionnaires was primarily to check for ease of understanding by members. The sample included both exposed and unexposed members selected from the lists of potential focus group participants, and included a small number of focus group participants. Members were asked whether the instructions, questions and answer formats were clear and easy to understand, using a three point answer scale (yes/somewhat/no). The time taken to complete the survey was also noted by respondents. The majority of questionnaires returned were received within two weeks.

A further copy of the survey instruments was sent to a small number of respondents after two weeks, in order to estimate test - retest reliability of the questionnaires. Recipients of the follow up questionnaire were offered a $10 payment if they completed and returned the second questionnaire.

Pilot study results
Response rates to the pilot study are shown in Tables 2 and 3.

Table 2. Pilot study questionnaire response rates

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>n sent</th>
<th>n returned</th>
<th>% response rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>resident</td>
<td>15</td>
<td>5</td>
<td>33</td>
</tr>
<tr>
<td>research adult</td>
<td>14</td>
<td>8</td>
<td>57</td>
</tr>
<tr>
<td>research pediatric</td>
<td>13</td>
<td>7</td>
<td>54</td>
</tr>
<tr>
<td>medical student adult</td>
<td>10</td>
<td>4</td>
<td>40</td>
</tr>
<tr>
<td>medical student pediatric</td>
<td>10</td>
<td>2</td>
<td>20</td>
</tr>
</tbody>
</table>
Table 3. Pilot study follow up questionnaire response rates

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>n sent</th>
<th>n returned</th>
</tr>
</thead>
<tbody>
<tr>
<td>resident</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>research adult</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>research pediatric</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>medical student adult</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>medical student pediatric</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

The range of time taken to complete the questionnaires was reported to be between three and 15 minutes. Times were similar for all five questionnaires. The average time recorded by respondents was between eight and nine minutes.

One person found the pediatric research questionnaire instructions only somewhat easy to understand. All other respondents found the instructions easy to understand. Three respondents found the questions only somewhat easy to understand, two from the pediatric research sample, and one from the pediatric medical student sample. One respondent to the adult research survey found that the questions were not easy to understand.

Four respondents commented that the format for providing answers was only somewhat easy to understand, two from the pediatric research sample, one from the pediatric medical student group, and one adult research respondent. The comments of these individuals, and of the other respondents mentioned above focused on four questions. In three cases these were the relevant forms of the same question:

Initial version:
If you have had experience of medical students both at Harvard Pilgrim and elsewhere, which experience made the greater impression on your views of medical students?
(circle one response)

- Experience with medical students at Harvard Pilgrim 1
- Experience with medical students elsewhere 2
- Both experiences had a similar impact 3
- Not applicable (no experience with medical students) 4
Revised version:

Which experience made the greatest impression on your views of medical students?

(circle one response)

Experience with medical students at Harvard Pilgrim 1
Experience with medical students elsewhere 2
Experiences with medical students at Harvard Pilgrim
and elsewhere had a similar impact 3
No experience with medical students 4

Similar amendments were made to the questionnaires on research and resident training.
The fourth problem related to the need to include a response option for those parents and
children who had both been involved in research or teaching.

The questionnaires were amended accordingly. The modified formats were informally
tested on members of staff prior to finalization.

Reliability

Test-retest reliability for a pair of questionnaires can be calculated using the Spearman
Correlation Coefficient. A correlation coefficient measures the magnitude and direction
of association between two variables. The Spearman correlation coefficient is appropriate
when both variables are measured on ordinal scales. An ordinal scale has the following
properties: the values are distinguishable, they are ordered but the intervals between the
points are not equidistant nor is there a meaningful zero point (Polgar and Thomas,
1991). The values of the Spearman coefficient range from +1 to -1, where +1 means a
perfect positive correlation, 0 means no correlation at all and -1 a perfect negative
correlation.

However, the number of pairs of questionnaires returned was very small for all of the pilot
questionnaires, so that meaningful interpretation of test-retest reliability was not possible.

Qualitative inspection of the responses to the research adult questionnaire revealed that
responses to the initial and follow up questionnaires were similar for each of the five pairs.
However, in the case of the research pediatric questionnaire one of the five pairs of
questionnaires appeared to have been completed by different respondents (based on the demographic information recorded by the respondent). The other four pairs of questionnaires had similar responses on each occasion.

The internal consistency of the questionnaires was calculated using the main survey data and is discussed below.

**Poor response to the pilot study**
Response rates to the pilot study were disappointing. The number of responses were not sufficiently large to allow assessment of the reliability of the instruments. A further sample, including assessment of test-retest reliability should have been conducted at the time. The fact that this was not done should be considered when interpreting the results of the main study.

It was originally hoped that a response rate of at least 60% could be achieved for the main study. In view of this, a number of techniques were employed to increase response rates (Fowler, 1993). The letter of invitation was rewritten to be more inviting. This included amending the wording to be more informal, the use of bold print to highlight important information, and the decision to hand sign all letters. One problem with the pediatric surveys was that the letter had to be addressed to the parent or guardian of the child. Attempts were made to find out if it was possible to obtain the details of the parent or guardian from the child's medical records. However, this was not feasible. It was not possible to link the child with other family members covered by the same insurance premium.

The questionnaires used in the pilot study were printed on a personal computer. The survey layout and printing format was amended for the main study to be as clear and inviting as possible. Professional typesetters and printers were used for this work. Changes included the use of the Harvard Pilgrim crest on the questionnaire, shaded boxes to highlight information, different fonts and the use of a separate column for coding purposes to one side of the page.
The advice of the study advisers, other researchers and the Clinical Quality Management Department at Harvard Pilgrim was sought regarding response rates. One follow up intervention was planned, this was consistent with other studies and the member surveys conducted by the Clinical Quality Management Department. The reminder could have taken one of three forms: a postcard reminder, a telephone call, or a further letter. It was decided to use the latter, as it presented the opportunity to send another copy of the questionnaire, in case the original had been discarded.
Main survey
The main survey was mailed to members in November 1996. Each member was sent a letter explaining the study and inviting their participation, a copy of the questionnaire, and a stamped addressed envelope for return of the survey. If members preferred not to participate they were asked to return the blank questionnaire in the envelope provided. A mailed follow up reminder was sent after two to three weeks to those members who did not respond. A Microsoft Access database was used to keep track of responders and non responders.

The survey questionnaires are included in Appendix 2.

Survey samples

1. Research survey samples
Exposed members were recruited from sampling of lists of participants in existing research projects. Projects were identified from a list of studies approved by the Harvard Pilgrim Health Care Human Studies Committee. This list was more comprehensive than that used for the pilot study. A total of 96 studies were identified that were current at the time of sampling. These were narrowed to those that included patient contact. Sixteen investigators were contacted, several of whom had multiple ongoing studies. A number had studies involving only a few patients, or were at a phase when patient contact by the study team was considered unsuitable by the investigators, either because it may interfere with the study design, or it was too early in terms of patient involvement. Two studies of substance abuse were considered, but were not included because of specific confidentiality clauses in the consent forms. Permission was sought from the principal investigators of the selected studies prior to sampling. Investigators provided lists of participants including either member identification numbers, or name and demographic details. Member identification numbers were used to search the AMRS.

Both adult and pediatric projects were included and are listed in Table 4.
### Table 4. Studies included in member survey, research sample

<table>
<thead>
<tr>
<th>Study</th>
<th>Study design, and sampling method</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparison study of the cost effectiveness of Lovastatin versus stepped-care in the treatment of primary hypercholesterolemia</td>
<td>Multi center, prospective, open label, parallel study. Sample provided by investigators</td>
<td>23</td>
</tr>
<tr>
<td>Decision model for hormone replacement therapy use</td>
<td>Personal interview of perimenopausal women. All participants (who were contacted and did not decline)</td>
<td>21</td>
</tr>
<tr>
<td>Developing and validating a dietary screening tool for primary care</td>
<td>Questionnaire in person, and blood sample</td>
<td>40</td>
</tr>
<tr>
<td>Hypertension and automated linkage of outcomes study</td>
<td>Monitoring of compliance with treatment.</td>
<td>40</td>
</tr>
<tr>
<td>Oncology/hematology chemotherapy and radiotherapy trials</td>
<td>Patients enrolled in a number of treatment protocols. Random sample of list provided by investigators</td>
<td>40</td>
</tr>
<tr>
<td>HIV studies</td>
<td>Patients enrolled in trials of therapy for patients with AIDS. Patients contacted prior to survey by investigators</td>
<td>28</td>
</tr>
<tr>
<td>Attention deficit hyperactivity disorder study</td>
<td>Study of family, genetic and psychosocial risk factors for girls aged 6-17 years All Harvard Pilgrim patients involved in study</td>
<td>14</td>
</tr>
<tr>
<td>Childhood asthma management program</td>
<td>Trial of treatment and side effects in pediatric asthma patients.</td>
<td>57</td>
</tr>
<tr>
<td>Clinical quality management (CQM) pediatric asthma survey</td>
<td>Annual mail survey of pediatric asthma patients, addressing quality of care. Random sample</td>
<td>35</td>
</tr>
<tr>
<td>Access to and use of oral rehydration solution</td>
<td>Randomized controlled trial of prescribed oral rehydration solution in pediatric patients. Random sample</td>
<td>40</td>
</tr>
</tbody>
</table>

A control group of unexposed members was identified from the AMRS. Unexposed members were frequency matched with exposed members on the basis of age (pediatric with pediatric, deciles for adults), diagnosis that made the patient eligible for the study (if
relevant), health center, and gender. All controls had been members for at least one year. Criteria for matching are shown in Table 5.

Table 5. Criteria of matching for controls for research surveys (in addition to age, gender and health center)

<table>
<thead>
<tr>
<th>Study</th>
<th>Criteria for matching controls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Comparison study of the cost effectiveness of Lovastatin versus stepped-care in the treatment of primary hypercholesterolemia</td>
<td>Diagnosis code for hypertension</td>
</tr>
<tr>
<td>Decision model for hormone replacement therapy use</td>
<td>No disease match</td>
</tr>
<tr>
<td>Developing and validating a dietary screening tool for primary care</td>
<td>No disease match</td>
</tr>
<tr>
<td>Hypertension and automated linkage of outcomes study</td>
<td>Diagnosis code for hypertension</td>
</tr>
<tr>
<td>Oncology/hematology chemotherapy and radiotherapy trials</td>
<td>Oncology patients</td>
</tr>
<tr>
<td>HIV studies</td>
<td>Diagnosis code for HIV</td>
</tr>
<tr>
<td>Attention deficit hyperactivity disorder study</td>
<td>Diagnosis code for allergic conditions in pediatric patients</td>
</tr>
<tr>
<td>Childhood asthma management program</td>
<td>Diagnosis code for asthma in pediatric patients</td>
</tr>
<tr>
<td>CQM pediatric asthma survey</td>
<td>Diagnosis code for asthma in pediatric patients</td>
</tr>
<tr>
<td>Access to and use of oral rehydration solution</td>
<td>No disease match</td>
</tr>
</tbody>
</table>

A number of exposed members were eliminated because they were not Health Centers Division members and could not be matched with a control on a sample site. One case was lost for this reason from each of the following studies: decision model for HRT use, dietary screening tool, HIV studies, oncology studies, oral rehydration, CQM asthma survey, and the Childhood asthma management program.

In total, 188 questionnaires were sent to exposed adult members, and 188 to the sample of control adult members. The pediatric version of the survey was sent to parents or guardians of 143 exposed pediatric members, and to a sample of 143 parents or guardians of control pediatric members. The total number of questionnaires sent was 376 adult and 286 pediatric.
A follow up letter and second copy of the questionnaire was sent after two weeks to members who had not responded to the first questionnaire. A total of 238 reminders were sent to adults and 247 to parents or guardians of children. The follow up letter requested return within two weeks, and, as with the first, asked members who were not interested in participating to return the blank questionnaire.

The number of surveys sent was based on sample size calculations and estimated response rates of approximately 60%. The original sample size calculations suggested that the adult sample should be in the order of 130 exposed patients and 130 matched unexposed patients.

This sample size was estimated using the following principles. The calculations were based on detecting a difference in the responses of two groups to a dichotomous question. The probability of a Type I (α) error was set at 0.05 (one-tailed), i.e. there would be a 5% chance of wrongly concluding there is a difference between the two groups. The Type II (β) error was set at 0.2 i.e. there would be an 80% chance of finding a significant difference between the two groups.

There was no data from previous studies on which to base estimation of effect size. Discussions with the study advisors and a statistician resulted in basing the sample size calculations on an estimation of differing response in a proportion of 0.15 to 0.2 of respondents.

Using these parameters, sample size tables were consulted (Hulley and Cummings, 1988). If P1 is the proportion of subjects expected to have the outcome in one group and P2 in the second group, then a sample of 130 in each group would be adequate to detect a difference between the two groups of 0.15. This sample size of 260 would also be large enough to determine whether a different response to a dichotomous question by a proportion of 0.2 of respondents is significant (95% confidence interval 0.15, 0.25).

In the pediatric group a sample of 92 exposed and 92 unexposed respondents would provide a sample of 184, large enough to determine whether a different response to a
dichotomous question by a proportion of 0.15 of respondents is significant (95% confidence interval (0.08, 0.23). Detection of a difference between exposed and unexposed groups of 0.2 would be possible with a power of 95%.

2. Medical student teaching survey samples
Exposed members were recruited from lists of members seen by medical students during August, September and October 1996. As with the focus group sample, medical students were asked to keep a log of patients they saw during the Ambulatory Clerkship. A total of 14 out of 15 medical students kept logs during this period. They were placed at six health centers. Both internal medicine and pediatrics were included. Urgent care patients were not included. Demographic details of the members were retrieved from the AMRS.

The control groups of unexposed members were identified from Health Centers Division patients, using the AMRS. Samples were matched with exposed members on the basis of age (pediatric with pediatric, deciles for adults), gender, and health center. Unexposed members had seen either an internal medicine physician or pediatrician at one of the health centers during the same time period. All patients of preceptors of medical students, residents and preceptors of residents were excluded from the control group.

Questionnaires were sent to a sample of 244 internal medicine patients identified by students, and the parents or guardians of 149 pediatric patients identified by students. Two hundred and fifty internal medicine patients were selected at random from the lists of patients seen by students during the study period, six patients were eliminated from the sample, either because they could not be identified from the details provided by the students, or because the patients were duplicated in the lists. One pediatric patient could not be identified. The same number of questionnaires were sent to age and sex matched internal medicine patients and parents or guardians of pediatric patients identified from the AMRS. The total number of questionnaires sent was 488 to internal medicine patients, and 298 to parents or guardians of pediatric patients.

A follow up letter and second copy of the questionnaire were sent to 350 internal medicine patients, and 223 parents or guardians of pediatric patients who had not responded after three weeks.
The sample size was determined in part by the number of students participating in the ambulatory clerkship during the study period. Under optimal circumstances a larger number of students would have been included. However, the number of students in the Ambulatory Care Clerkship for August, September and October 1996 was only fifteen. There is a risk that this group of students was not representative, or that member perceptions of one 'outlier' student could bias results.

The number of questionnaires sent was higher than that estimated in the original sample size calculation, because of the low response rates seen in the pilot study. The sample size estimations were carried out as for the research surveys, described above. Original sample size calculations suggested the following. A final sample of 92 exposed, and 92 unexposed adult members would provide a sample of 184, large enough to determine whether a different response to a dichotomous question by a proportion of 0.15 of respondents is significant (95% confidence interval 0.08, 0.23). Detection of a difference between exposed and unexposed groups of 0.2 would be possible with a power of 95%.

In the pediatric group a sample of 57 in each of the exposed and unexposed groups would provide a sample of 114, large enough to determine whether a different response to a dichotomous question by a proportion of 0.2 of respondents is significant (95% confidence interval 0.8, 0.28). Detection of a difference between groups of 0.2 would be possible with a power of 95%.

3. **Primary care resident training survey sample**

Member perceptions of residents and the care they deliver was ascertained by a survey of patients seen by residents and attending physicians at the same Harvard Pilgrim health centers. Each patient visit to a clinician is logged on the AMRS. Residents have their own codes on this system, allowing patients who have seen them to be identified. The sample of primary care residents was larger for the survey than for the focus group as residents attached to the Cambridge primary care residency program were included. Four of these doctors were attached to a Harvard Pilgrim health center during the study period. This increased the number of residents to 12.
The exposed group comprised all health center division members who visited primary care (internal medicine) residents during the month of September 1996. Patients were identified using encounter data recorded on the AMRS. Urgent care visits were excluded. This group included members for whom the resident is their regular doctor, and those who were making a “one off” acute visit to the resident.

The control group of unexposed members was identified from the AMRS lists of patients seen by other physicians within the same health center who were not acting as preceptors to residents or medical students at that time. This group was matched with the exposed group on gender and age (deciles).

Questionnaires were sent to 250 members who had seen residents during the month of September 1996, and 250 members matched from the AMRS. The total number of questionnaires sent was 500.

A second reminder letter and further copy of the questionnaire were sent to 396 members who had not responded within three weeks of the first questionnaire being sent.

Given a response rate of approximately 60%, the final sample size for the exposed group was estimated at 165 respondents. The sample size recruited for the unexposed group was to be similar. Sample size estimations were conducted as for the research sample. A sample of this size would be large enough to determine whether a different response to a dichotomous question by up to 40% of respondents is significant (95% confidence interval 0.33, 0.48). Detection of a difference of 0.15 between unexposed and exposed groups can be made with 95% power.

**Response rates**

Response rates to the five mail surveys are shown in Table 6.
Table 6. Response rates to mail surveys

<table>
<thead>
<tr>
<th>Survey</th>
<th>total n sent (1)</th>
<th>n not delivered (2)</th>
<th>n returned blank</th>
<th>n returned completed (3)</th>
<th>% response rate (3/1-2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident</td>
<td>500</td>
<td>17</td>
<td>19</td>
<td>184</td>
<td>38</td>
</tr>
<tr>
<td>Research adult</td>
<td>376</td>
<td>11</td>
<td>6</td>
<td>207</td>
<td>57</td>
</tr>
<tr>
<td>Research pediatric</td>
<td>286</td>
<td>13</td>
<td>7</td>
<td>96</td>
<td>35</td>
</tr>
<tr>
<td>Medical student adult</td>
<td>488</td>
<td>14</td>
<td>37</td>
<td>217</td>
<td>46</td>
</tr>
<tr>
<td>Medical student pediatric</td>
<td>298</td>
<td>5</td>
<td>7</td>
<td>125</td>
<td>43</td>
</tr>
</tbody>
</table>

Follow up of non-responders

In view of the low response rates, it was decided to follow up a small number of non-responders by telephone, in order to ascertain whether this group differed significantly from the responder group. A random sample of 10% of non-responders was contacted for each arm of the study. This number was limited because of the resources available. In order to do this, a random sample of 20% of non-responders was selected from the databases of recipients of each of the surveys. The Microsoft Access database of responders was used to do this. Telephone numbers for these individuals were downloaded from the AMRS.

Members were then called, using a telephone script based on four or five of the questions in the mailed survey. Calls were made by the author, or one of two research assistants. The questions selected were chosen as key items in assessing the opinions of members. They included one general question about research or teaching at Harvard Pilgrim, and a question about exposure to these activities. The telephone survey scripts are included in Appendix 3. Either a telephone response was elicited, or information that indicated a reason for non-response was recorded, e.g. returned mail questionnaire, left the plan, not obtainable at the address and telephone number recorded in the AMRS. Response rates to the telephone survey are shown in Table 7.
Table 7. Response to telephone follow-ups

<table>
<thead>
<tr>
<th>Survey</th>
<th>telephone questions completed</th>
<th>returned mail survey</th>
<th>moved or not obtainable</th>
<th>left plan</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident</td>
<td>23</td>
<td>2</td>
<td>7</td>
<td>0</td>
<td>32</td>
</tr>
<tr>
<td>Research adult</td>
<td>16</td>
<td>2</td>
<td>1</td>
<td>0</td>
<td>19</td>
</tr>
<tr>
<td>Research Pediatric</td>
<td>12</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>20</td>
</tr>
<tr>
<td>Medical student adult</td>
<td>24</td>
<td>1</td>
<td>3</td>
<td>2</td>
<td>30</td>
</tr>
<tr>
<td>Medical student pediatric</td>
<td>15</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>18</td>
</tr>
</tbody>
</table>

Internal consistency

The internal consistency of a number of questions for each of the main survey instruments was calculated using Cronbach's alpha. The data was read into the Statistical Analysis System (SAS) from a Microsoft Access database. Cronbach's alpha is equal to the average of all the possible split-half correlation coefficients for a scale. Split-half reliability involves randomly dividing the scale into halves, and then measuring the correlation between the two halves. Split-half reliability alone does not indicate which item(s) may be contributing to a low reliability. The SAS program allows all possible split-half reliabilities for a scale with n items to be calculated n times, each time omitting one item. If Cronbach's alpha increases substantially when a specific item is left out, this would indicate that the exclusion of this item would increase the homogeneity of the scale.

Cronbach's alpha is dependent on the correlation of each item with each other item, and on the number of items in the scale. Cronbach's alpha is not dependent on the numbers of responses to the questions in the scale, i.e. on sample size (Streiner and Norman, 1995). Results for the main survey questionnaires are shown in Table 8.
Table 8. Internal consistency of questionnaires

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>n</th>
<th>Questions/sub questions</th>
<th>Cronbach's alpha</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research adult</td>
<td>207</td>
<td>01, 07, 08, 09, 10, 11, 12</td>
<td>0.77</td>
</tr>
<tr>
<td>Research pediatric</td>
<td>96</td>
<td>01, 07, 08, 09, 10, 11, 12</td>
<td>0.70</td>
</tr>
<tr>
<td>Medical student adult</td>
<td>217</td>
<td>02, 07, 08, 09, 10, 11, 12</td>
<td>0.82</td>
</tr>
<tr>
<td>Medical student pediatric</td>
<td>125</td>
<td>02, 07, 08, 09, 10, 11, 12</td>
<td>0.73</td>
</tr>
<tr>
<td>Resident</td>
<td>184</td>
<td>01, 08, 09, 10, 11, 12, 13, 15</td>
<td>0.70</td>
</tr>
</tbody>
</table>

Exclusion of individual items did not substantially affect the alpha coefficients of any of the scales.

The results suggest that the questionnaires had a satisfactory degree of internal consistency. For comparing groups of individuals, alpha values of 0.7 to 0.8 are generally regarded as acceptable (Bland and Altman, 1997). All questionnaires had values that were within, or slightly higher than, this range. According to different authors, much higher values of alpha (greater than 0.90) may indicate optimal internal consistency (Bland and Altman, 1997), or the presence of redundant items (Streiner and Norman, 1995).

Analysis of survey data

Questionnaires were marked with coding numbers for each question. Each questionnaire had a unique identifier which included a three digit study number and a code for the member’s health center. Data was entered directly from the questionnaires on to a Microsoft Access database by the author, or one of two research assistants. Coder accuracy was assessed by double coding of 20 questionnaires by the three independent coders. Accuracy for this group of questionnaires was two errors in 600 observations (error rate 0.33%).

The five member surveys produced quantitative data that was analyzed separately for each survey. The data was read from the Microsoft Access database into the SAS statistical
software system on a personal computer linked to a mainframe, thereby producing a SAS dataset. The SAS statistical software system was used to produce descriptive and univariate statistics. The initial analysis was conducted according to the following plan:

Case = exposed as defined by study sample
Control = unexposed as defined by study sample
Exposed = member response of exposure on questionnaire
Unexposed = member response of no exposure on questionnaire

For each set of questionnaires (five in total):
1. Overall frequencies of each variable
2. Comparison of responses to each variable by cases and controls
3. Comparison of responses to each variable by exposed and unexposed
4. Comparison of documented cases and members who considered themselves exposed
5. Comparison of those who agreed, were neutral or disagreed with research or teaching in principle on their responses to the other variables
6. Comparison of responses by demographic characteristics
7. Comparison of those exposed at Harvard Pilgrim who had greatest impressions from Harvard Pilgrim and those with greatest impressions from elsewhere.
8. Comparison of adult and pediatric responses to general policy questions
9. Comparison of responders and non responders by case/control, age and sex

Missing values were coded as such, and represented as missing in the SAS dataset.

Collapsing of data
Frequency tables were produced for all responses to all variables using the frequency table function of the SAS system. The frequency tables were inspected, and were discussed with the internal study adviser and a statistician.

Several questions at the beginning of each of the questionnaires had a five point response format. After inspection of the frequency tables it was decided to collapse these as follows:
This decision was made because, in view of the low response rates, it was thought that to make a fine distinction between those who agreed or strongly agreed, and those who disagreed or strongly disagreed, may be artificial.

A number of questions e.g. Question 3 on the Member Research Survey (Pediatric) (see Appendix 2) had a seven point response scale:

I believe that taking part in medical research:

would make me or my child feel uncomfortable

This question had the following distribution of responses (n=91):

<table>
<thead>
<tr>
<th>Uncollapsed data</th>
<th>Collapsed data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strongly agree</td>
<td>Strongly agree and agree</td>
</tr>
<tr>
<td>Agree</td>
<td>Neither agree nor disagree</td>
</tr>
<tr>
<td>Neither agree nor disagree</td>
<td>Disagree and strongly disagree</td>
</tr>
<tr>
<td>Disagree</td>
<td></td>
</tr>
<tr>
<td>Strongly disagree</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percent</th>
<th>Response</th>
<th>Frequency</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6</td>
<td>7</td>
<td>1 and 2</td>
<td>8</td>
<td>9</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>5</td>
<td>6</td>
<td>3, 4, and 5</td>
<td>57</td>
<td>63</td>
</tr>
<tr>
<td>4</td>
<td>27</td>
<td>30</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>25</td>
<td>28</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>14</td>
<td>15</td>
<td>6 and 7</td>
<td>26</td>
<td>29</td>
</tr>
<tr>
<td>7</td>
<td>12</td>
<td>13</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
It was felt that it was difficult to discriminate between the seven response categories. Therefore, the responses were collapsed into those at the two extreme ends of the scale, i.e. responses 1 and 2, and 6 and 7, as these included those who had expressed a strong opinion. The centre point, and the response either side were collapsed to form a category that ‘would neither feel uncomfortable nor at ease’.

An alternative was considered, which was to collapse the data into five categories. However, the categories for this seemed less clear. Possible splits were 1; 2 and 3; 4; 5 and 6; 7 or 1 and 2; 3; 4; 5; 6 and 7. The first one of these options discriminated between those at the extreme of the scale and the adjacent response, but this was thought to be making too fine a distinction. The second would allow discrimination of those who responded in a slightly positive or negative manner, but it was thought that this may be a false discrimination between individuals who did not feel strongly about the question.

This collapsing of data into three categories may have resulted in some loss of discrimination, as those who answered 3 or 5 to questions may not have been indicating a neutral response. However, in cases where there was a significant difference between groups this would tend to result in underestimation of effect.

Responses to two of the demographic questions were also collapsed. Length of membership was collapsed to less than five years, five to 14 years, and 15 years or longer. These distinctions were somewhat arbitrary, and were intended to categorize members by their length of experience with Harvard Pilgrim. The age of respondents was also categorized as follows: less than 40 years, 40 to 64 years, 65 and over. These categories were chosen to delineate the retired population (over 65s who receive health care funded by Medicare), and younger people who may have had different exposure to health care than those in middle age.

No other data was collapsed. The data was collapsed using the SAS system, by writing codes to combine response categories.
Percentages presented in the results section have been rounded to whole numbers. In some instances the total percent may therefore appear to be greater or less than 100.

Univariate analysis
The comparison of cases and controls, exposed and unexposed, those who agreed and disagreed with teaching, and those with different demographic characteristics required univariate analysis. The data is categorical in nature, i.e. it is not continuous but classified into categories. It is non-parametric. The appropriate methods of analysis for this data are those that test the null hypothesis that the distribution of a discontinuous variable is the same in two (or more) independent samples.

For the purposes of the univariate analysis, data was displayed in the form of contingency tables. A contingency table is a two way table showing the relationship between two or more variables. The variables are mutually exclusive. The cells of the contingency table show the frequency of cases falling into each joint category. The row and column marginal scores are the sums of the relevant frequencies. Both the row and column marginals add up to \( n \), which is the sample size.

In the majority of cases there were two samples of data e.g. cases and controls. In this case the number of response categories varied from two to four. In a small number of situations there were three samples, e.g. respondents age, and the number of response categories similarly varied from two to four. The contingency tables therefore varied in size from to 2x2 to RxC (row x column).

The methods of statistical inference for 2x2 tables, and RxC tables, where R and C are greater than two, differ. For a 2x2 contingency table appropriate methods of analysis include the Chi-square test and Fisher's exact test. The Chi-square test compares the observed contingency table with an expected table, which is the table that would be expected if there were no relationship between the two variables. Calculation of Chi-square therefore involves the calculation of the expected values for each cell in the table. The expected value for a cell is calculated by multiplying the relevant row margin by the
relevant column margin and then dividing by the total n. Chi-square ($\chi^2$) is then calculated using the following equation:

$$\chi^2 = \sum \frac{(\text{observed}-\text{expected})^2}{\text{expected}}$$

A P value is given by the area to the right of $\chi^2$ under a $\chi^2$ distribution. The Chi-square test can only be used if none of the expected values is less than five.

If the contingency table is an RxC table, where R and C correspond to 2xk, and k is greater than 2, a version of the Chi-square test can also be used. In this situation a Chi-square test for trend in binomial proportions may be used. This test cannot be used if any of the expected values is less than five.

If the contingency table is an RxC table where R and C are both greater than two, then a Chi-square test for heterogeneity may be used. This tests for any differences in proportions, where the proportions may follow any pattern. This test may only be used if no more than one fifth of the cells have expected values less than five, and no cell has an expected value of less than one (Rosner, 1995).

An alternative test that may be used with 2x2 and RxC contingency tables is Fisher’s exact test. Fisher’s exact test has the advantage that it can be used in situations where tables may have small expected values, i.e. when the Chi-square test is not appropriate. For tables in which Chi-square is appropriate the two tests give similar values.

Fisher’s exact test uses the following methodology. All possible tables with the same row and column margins as the observed table are enumerated. The exact probability of each table is then calculated. A P value is calculated from the probability of obtaining a table as extreme as the observed table. A P value of $<0.05$ means that the observed table would have arisen by chance on less than one occasion in 20.

In an RxC table when R and C are both greater than two, both the Chi-square test and Fisher’s exact test are non-specific, i.e. if independence is rejected it could be for a number of reasons depending on the distribution of the data. However, the Fisher’s
exact test is preferable to the Chi-square test in this situation, not only because it does not depend on minimum cell counts, but because it provides a more accurate estimate of independence (Orav E.J., 1996, personal communication).

Contingency tables were produced using the SAS program. The program produces a table and the requested statistical test. If Chi-square is calculated, the program also indicates how many cells, if any, have expected counts less than five. Both Chi-square and Fisher's exact test can be calculated where appropriate.

Because the expected frequency of some of the cells in the contingency tables was too small it was not possible to use the Chi-square test in a number of cases. Fisher's exact test was a valid test in these cases (Rosner, 1995). Fisher's exact test was also used in preference to Chi-square in contingency tables where both the number of rows and the number of columns were greater than two.

For tables in which the use of the Chi-square test was appropriate, similar results were obtained for the Chi-square test and Fisher's exact test. There were no situations in which the results of the Chi-square test and Fisher's exact test were conflicting in terms of statistical significance. Therefore, for the sake of consistency, the Fisher's exact test (2 tail) is reported throughout the results section for the main survey.
VI. SURVEY RESULTS

1. Adult Research Survey

Overall frequencies of each variable
The final number of completed responses was 207. Approximately half of the respondents (96, 46%) remembered participating in research at Harvard Pilgrim. Seventy nine respondents (38%) also had experience of research outside Harvard Pilgrim. In the majority of situations (n=129) the research had involved the adult who responded to the questionnaire (123, 95%) rather than a child (three, 2%), or both the adult and their child (three, 2%).

Eighty three respondents (40%) had been Harvard Pilgrim members for 15 years or more, 78 (38%) for 5 to 14 years, and 46 (22%) for less than 5 years. There were 92 males, and 102 females. Thirteen respondents did not give their gender. The largest age group represented was 40 to 64 years (106, 51%), followed by those under 40 (61, 29%), and the over 65s (40, 19%). One hundred and eleven (54%) had at least a four year college degree. The majority of the 194 respondents who answered the question on racial group were white (135, 70%), a further 35 (18%) were African American.

The majority of respondents agreed or strongly agreed that Harvard Pilgrim should actively participate in research (Table 9). A majority also agreed that research should be more visible to members, and that Harvard Pilgrim should conduct research on alternative medicine. A large proportion of respondents agreed that research should be carried out with information from member's medical records, with safeguards for confidentiality.

Responses to questions about the funding of research were more diverse, with a majority of respondents agreeing that research should be paid for by funding organizations other than Harvard Pilgrim. Only a third of respondents agreed that Harvard Pilgrim should pay for research itself.
Table 9. Harvard Pilgrim members’ views about the organization’s involvement in research
(figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Question</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Missing value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP should actively participate in research n=188</td>
<td>177 (94)</td>
<td>8 (4)</td>
<td>3 (2)</td>
<td>19</td>
</tr>
<tr>
<td>Research should be paid for by HP n=193</td>
<td>64 (33)</td>
<td>78 (40)</td>
<td>51 (27)</td>
<td>14</td>
</tr>
<tr>
<td>Research should be paid for by organizations other than HP n=193</td>
<td>114 (59)</td>
<td>67 (35)</td>
<td>12 (6)</td>
<td>14</td>
</tr>
<tr>
<td>Research should be more visible to members n=194</td>
<td>155 (80)</td>
<td>37 (19)</td>
<td>2 (1)</td>
<td>13</td>
</tr>
<tr>
<td>Research should include alternative medicine n=195</td>
<td>168 (86)</td>
<td>24 (12)</td>
<td>3 (2)</td>
<td>12</td>
</tr>
<tr>
<td>Research should be carried out with information from member’s medical records n=195</td>
<td>150 (77)</td>
<td>20 (10)</td>
<td>25 (13)</td>
<td>12</td>
</tr>
</tbody>
</table>

In the majority of cases respondents believed that taking part in research would increase patient’s understanding of health problems (121, 63%), and would not make them feel uncomfortable (186, 96%), or anxious (175, 92%) (Table 10). Research was believed to be either neutral (106, 55%) or to facilitate (75, 39%) the usual health care routine, and to improve (81, 42%) or have a neutral impact (93, 48%) on health. Overall only 11 (6%) people believed that taking part in research would be a bad experience.

Table 10. Impact of research on medical care
(figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Impact on care</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Missing value</th>
</tr>
</thead>
<tbody>
<tr>
<td>reduces understanding of health problems n=193</td>
<td>3 (2)</td>
<td>69 (36)</td>
<td>121 (63)</td>
<td>14</td>
</tr>
<tr>
<td>makes the patient feel uncomfortable n=193</td>
<td>7 (4)</td>
<td>108 (56)</td>
<td>78 (40)</td>
<td>14</td>
</tr>
<tr>
<td>is anxiety relieving n=191</td>
<td>41 (22)</td>
<td>134 (70)</td>
<td>16 (8)</td>
<td>16</td>
</tr>
<tr>
<td>interferes with the usual health care routine n=191</td>
<td>10 (5)</td>
<td>106 (55)</td>
<td>75 (39)</td>
<td>16</td>
</tr>
<tr>
<td>improves health n=193</td>
<td>81 (42)</td>
<td>93 (48)</td>
<td>19 (10)</td>
<td>14</td>
</tr>
<tr>
<td>is a good experience n=193</td>
<td>85 (44)</td>
<td>97 (50)</td>
<td>11 (6)</td>
<td>14</td>
</tr>
<tr>
<td>has no overall impact on medical care n=193</td>
<td>8 (4)</td>
<td>62 (32)</td>
<td>123 (64)</td>
<td>14</td>
</tr>
</tbody>
</table>
Members were presented with a number of scenarios, or examples of situations when they may encounter research. The first of these asked about a visit satisfaction survey after an appointment with the primary care clinician (Table 11). In order of preference, the majority of respondents replied that they would prefer to answer a written survey sent to them in the mail, followed by a written survey at the end of the visit, and a telephone survey.

**Table 11. Member preferences for survey about satisfaction with a primary care visit**

<table>
<thead>
<tr>
<th>Survey format</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Written survey at the end of the visit</td>
<td>38 (20)</td>
</tr>
<tr>
<td>Written survey sent by mail</td>
<td>94 (49)</td>
</tr>
<tr>
<td>Telephone survey</td>
<td>16 (8)</td>
</tr>
<tr>
<td>No special preference for any of the above</td>
<td>34 (18)</td>
</tr>
<tr>
<td>Not to complete any survey</td>
<td>9 (5)</td>
</tr>
</tbody>
</table>

Respondents were then presented with two scenarios. One that involved giving a blood sample for a study about diet and health, and a second that involved a treatment study for hypertension. They were asked to indicate how different factors would affect their decision to participate (Tables 12 and 13). Four potential influences on participation were included: written information, a request from the clinician, financial incentive, and feedback about the study. The strongest incentives were written information, a request from the clinician, and feedback about the study.

**Table 12. Willingness to participate in a study that involves giving a blood sample**

(figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Variable</th>
<th>More likely to participate</th>
<th>Neutral</th>
<th>Less likely to participate</th>
<th>Missing value</th>
</tr>
</thead>
<tbody>
<tr>
<td>written information was provided n=193</td>
<td>129 (67)</td>
<td>50 (26)</td>
<td>14 (7)</td>
<td>14</td>
</tr>
<tr>
<td>request came from clinician n=193</td>
<td>130 (67)</td>
<td>50 (26)</td>
<td>13 (7)</td>
<td>14</td>
</tr>
<tr>
<td>financial incentive n=191</td>
<td>79 (41)</td>
<td>84 (44)</td>
<td>28 (15)</td>
<td>16</td>
</tr>
<tr>
<td>no direct benefit for health n=189</td>
<td>72 (38)</td>
<td>83 (44)</td>
<td>34 (18)</td>
<td>18</td>
</tr>
</tbody>
</table>
Table 13. Willingness to participate in a study that involves taking a drug for high blood pressure
(figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Variable</th>
<th>More likely to participate</th>
<th>Neutral</th>
<th>Less likely to participate</th>
<th>Missing value</th>
</tr>
</thead>
<tbody>
<tr>
<td>written information was provided n=191</td>
<td>126 (66)</td>
<td>52 (27)</td>
<td>13 (7)</td>
<td>16</td>
</tr>
<tr>
<td>request came from clinician n=192</td>
<td>129 (67)</td>
<td>52 (27)</td>
<td>11 (6)</td>
<td>15</td>
</tr>
<tr>
<td>financial incentive n=188</td>
<td>77 (41)</td>
<td>87 (46)</td>
<td>24 (13)</td>
<td>19</td>
</tr>
<tr>
<td>no direct benefit for health n=191</td>
<td>43 (23)</td>
<td>96 (50)</td>
<td>52 (27)</td>
<td>16</td>
</tr>
<tr>
<td>cannot determine which treatment n=190</td>
<td>38 (20)</td>
<td>83 (44)</td>
<td>69 (36)</td>
<td>17</td>
</tr>
<tr>
<td>feedback would be provided n=192</td>
<td>138 (72)</td>
<td>41 (21)</td>
<td>13 (7)</td>
<td>15</td>
</tr>
</tbody>
</table>

Patient propensity to participate if there was no benefit to their health was higher in the study that involved a blood test (72, 38%) than in the study that required taking a trial of treatment (43, 23%). If the member was unable to determine which treatment they would receive (i.e. the study was a randomized trial) the number of people likely to participate fell further to 38 (20%).

Respondents were asked whether exposure at Harvard Pilgrim or elsewhere had made the greater impression on them (Table 14). Twenty five percent had their greatest impression from Harvard Pilgrim and 30% from elsewhere. Eleven percent had a similar impact from exposure at Harvard Pilgrim and elsewhere, and 34% had no research experience.

Table 14. Which experience made the greater impression on member’s view of research
n=189

<table>
<thead>
<tr>
<th>Experience</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research at Harvard Pilgrim</td>
<td>47 (25)</td>
</tr>
<tr>
<td>Research elsewhere</td>
<td>57 (30)</td>
</tr>
<tr>
<td>Harvard Pilgrim and elsewhere had similar impact</td>
<td>21 (11)</td>
</tr>
<tr>
<td>No experience with research</td>
<td>64 (34)</td>
</tr>
</tbody>
</table>
Cases and exposed members

There was a significant difference between those who were documented cases identified from lists of study participants, and those who replied that they had been exposed to research at Harvard Pilgrim (Fisher’s exact test (2 Tail) p<0.01). Twenty seven (25%) of 108 cases who answered the question, responded that they had not been exposed to research at Harvard Pilgrim, 81 cases (75%) had been exposed. Thirteen (15%) of 87 controls who answered the question, had been exposed to research at Harvard Pilgrim, 74 (85%) had not been exposed.

Cases who thought they were unexposed to research were involved in the following studies: hypertension and automated linkage of outcomes study, dietary screening tool, decision model for hormone replacement therapy, treatment trial for hypercholesterolemia, and oncology treatment studies.

Differences between cases and controls

There were 114 cases among the respondents, and 93 controls. As may be expected, cases drew their greatest impression of research from Harvard Pilgrim, and controls from elsewhere (Fisher’s exact test (2 Tail) p<0.0001 Table 15).

Table 15. Greatest impressions of research amongst cases and controls

<table>
<thead>
<tr>
<th>Greatest impressions of research*</th>
<th>Harvard Pilgrim</th>
<th>Elsewhere</th>
<th>HP and elsewhere similar impact</th>
<th>No experience with research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases n=105</td>
<td>42 (40)</td>
<td>26 (25)</td>
<td>17 (16)</td>
<td>20 (19)</td>
</tr>
<tr>
<td>Controls n=84</td>
<td>5 (6)</td>
<td>31 (37)</td>
<td>4 (5)</td>
<td>44 (52)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.0001

Controls were significantly more likely to think that research would interfere with their usual health care routine, cases to think it would facilitate their health care routine (Fisher’s exact test (2 Tail) p< 0.05, Table 16).
Table 16. Would participation in research interfere with or facilitate my usual health care routine?

n= 191 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect on health care*</th>
<th>Interfere with routine</th>
<th>Neither interfere nor facilitate</th>
<th>Facilitate routine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases n=106</td>
<td>2 (2%)</td>
<td>57 (54%)</td>
<td>47 (44%)</td>
</tr>
<tr>
<td>Controls n=85</td>
<td>8 (9%)</td>
<td>49 (58%)</td>
<td>28 (33%)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.05

There were no other significant differences between cases and controls.

Differences between exposed and unexposed

There were 101 documented exposed amongst the respondents and 96 unexposed.

Exposed members were significantly more likely to have gained their greatest impressions of research from Harvard Pilgrim (Fisher’s exact test (2 Tail) p<0.001, Table 17).

Table 17. Greatest impressions of research among exposed and unexposed

n=189 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Greatest impressions of research*</th>
<th>Harvard Pilgrim</th>
<th>Elsewhere</th>
<th>HP and elsewhere similar impact</th>
<th>No experience with research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed n=93</td>
<td>45 (48)</td>
<td>19 (20)</td>
<td>21 (23)</td>
<td>8 (9)</td>
</tr>
<tr>
<td>Unexposed n=96</td>
<td>2 (2)</td>
<td>38 (40)</td>
<td>0 (0)</td>
<td>56 (58)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.001

There were several other statistically significant differences between the exposed and unexposed. Exposed members were more likely to believe that participating in research would be a good experience (Fisher’s exact test (2 Tail) p<0.05, Table 18).
Table 18. Views about whether participating in research is a good or bad experience in the exposed and unexposed

n=193 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Taking in part in research is a...*</th>
<th>Good experience</th>
<th>Neither a good or a bad experience</th>
<th>Bad experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed n=94</td>
<td>51 (54)</td>
<td>37 (39)</td>
<td>6 (6)</td>
</tr>
<tr>
<td>Unexposed n=99</td>
<td>34 (34)</td>
<td>60 (61)</td>
<td>5 (6)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.05

The exposed were more likely to participate than the unexposed if written information is provided about either a study involving a blood test (Fisher’s exact test (2 Tail) p<0.01, Table 19), or treatment for high blood pressure (Fisher’s exact test (2 Tail) p<0.05, Table 20).

Table 19. Views about the impact of written information on participation of the exposed and unexposed in research involving a blood test

n=193 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Research involving a blood test*</th>
<th>Likely to participate</th>
<th>Neither likely nor unlikely to participate</th>
<th>Unlikely to participate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed n=95</td>
<td>73 (77)</td>
<td>19 (20)</td>
<td>3 (3)</td>
</tr>
<tr>
<td>Unexposed n=98</td>
<td>56 (57)</td>
<td>31 (32)</td>
<td>11 (11)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.01

Table 20. Views about the impact of written information on participation of the exposed and unexposed in research involving taking a treatment for high blood pressure

n=191 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Research involving a treatment for blood pressure*</th>
<th>Likely to participate</th>
<th>Neither likely nor unlikely to participate</th>
<th>Unlikely to participate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed n=94</td>
<td>71 (76)</td>
<td>20 (21)</td>
<td>3 (3)</td>
</tr>
<tr>
<td>Unexposed n=97</td>
<td>55 (57)</td>
<td>32 (33)</td>
<td>10 (10)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.05
More unexposed than exposed were unlikely to participate if a financial incentive was offered in both research scenarios (Fisher's exact test (2 Tail) p<0.05, Table 21 and Fisher's exact test (2 Tail) p<0.05, Table 22).

**Table 21. Views about the impact of a financial incentive on participation of the exposed and unexposed in research involving a blood test**

n=191 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Research involving a blood test*</th>
<th>Likely to participate</th>
<th>Neither likely nor unlikely to participate</th>
<th>Unlikely to participate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed n=94</td>
<td>39 (41)</td>
<td>48 (51)</td>
<td>7 (7)</td>
</tr>
<tr>
<td>Unexposed n=97</td>
<td>40 (41)</td>
<td>36 (37)</td>
<td>21 (22)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.05

**Table 22. Views about the impact of a financial incentive on participation of the exposed and unexposed in research involving taking a treatment for high blood pressure**

n=188 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Research involving a treatment for blood pressure*</th>
<th>Likely to participate</th>
<th>Neither likely nor unlikely to participate</th>
<th>Unlikely to participate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed n=94</td>
<td>37 (39)</td>
<td>50 (53)</td>
<td>7 (7)</td>
</tr>
<tr>
<td>Unexposed n=94</td>
<td>40 (43)</td>
<td>37 (39)</td>
<td>17 (18)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.05

An invitation from the clinician to participate in the study involving a blood test was also more likely to result in participation among the exposed (Fisher’s exact test (2 Tail) p<0.01, Table 23).
Table 23. Views about the impact of a request from the clinician on participation of the exposed and unexposed in research involving a blood test

n=193 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Research involving a blood test*</th>
<th>Likely to participate</th>
<th>Neither likely nor unlikely to participate</th>
<th>Unlikely to participate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed n=95</td>
<td>71 (75)</td>
<td>23 (24)</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Unexposed n=98</td>
<td>59 (60)</td>
<td>27 (28)</td>
<td>12 (12)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.01

There were no other significant differences between exposed and unexposed.

Responses of those who disagree with research at Harvard Pilgrim

There were only three respondents who did not agree that Harvard Pilgrim should actively participate in research. This was an insufficient number to allow valid analysis and interpretation of differences between this group and those who agreed with research being conducted at Harvard Pilgrim.

Comparison of those exposed at Harvard Pilgrim who had greatest impressions from Harvard Pilgrim versus those with greatest impressions from elsewhere.

There were significant differences between the responses of these two groups on the following two questions: exposed members who had greatest impressions from Harvard Pilgrim (HP) more frequently responded that taking part in medical research would put them at ease (Fisher’s exact test (2 Tail) p<0.01, Table 24), and would be anxiety relieving (Fisher’s exact test (2 Tail) p<=0.01, Table 25).
Table 24. Whether taking part in research would put respondents exposed at Harvard Pilgrim at ease or make them uncomfortable, according to source of greatest impressions about research
n=64 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect of taking part in research*</th>
<th>Make me uncomfortable</th>
<th>Neither uncomfortable nor at ease</th>
<th>Put me at ease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greatest impressions from HP n=45</td>
<td>1 (2)</td>
<td>16 (36)</td>
<td>28 (62)</td>
</tr>
<tr>
<td>Greatest impressions from elsewhere n=19</td>
<td>1 (5)</td>
<td>15 (79)</td>
<td>3 (16)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.01

Table 25. Whether taking part in research would be anxiety relieving or producing for respondents exposed at Harvard Pilgrim, according to source of greatest impressions about research
n=64 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect of taking part in research*</th>
<th>Anxiety relieving</th>
<th>Neither anxiety relieving or producing</th>
<th>Anxiety producing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greatest impressions from HP n=45</td>
<td>19 (42)</td>
<td>23 (51)</td>
<td>3 (7)</td>
</tr>
<tr>
<td>Greatest impressions from elsewhere n=19</td>
<td>1 (5)</td>
<td>16 (84)</td>
<td>2 (11)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.01

There were no other statistically significant differences between these two sub groups.

Demographic differences in response
Younger members (under 65) were more likely to agree that organizations other than Harvard Pilgrim should pay for research (Fisher’s exact test (2 Tail) p<0.05, Table 26).
Table 26. Whether research should be paid for by funding organizations other than Harvard Pilgrim, by respondent age
n=194 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Research should be paid for by other organizations*</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age under 40 years n=50</td>
<td>30 (60)</td>
<td>15 (30)</td>
<td>5 (10)</td>
</tr>
<tr>
<td>Age 40 to 64 years n=105</td>
<td>68 (65)</td>
<td>31 (30)</td>
<td>6 (6)</td>
</tr>
<tr>
<td>Age 65 years and older n=38</td>
<td>16 (42)</td>
<td>21 (55)</td>
<td>1 (3)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.05

More women than men agreed that research should be funded by organizations other than Harvard Pilgrim (Fisher’s exact test (2 Tail) p<0.05, Table 27).

Table 27. Funding of research by organizations other than Harvard Pilgrim, by gender of respondent
n=191 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Research should be paid for by other organizations*</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male n=91</td>
<td>49 (54)</td>
<td>39 (43)</td>
<td>3 (3)</td>
</tr>
<tr>
<td>Female n=100</td>
<td>64 (64)</td>
<td>27 (27)</td>
<td>9 (9)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.05

Women were also more likely to think that participation in research would interfere with their usual care (Fisher’s exact test (2 Tail) p< 0.05, Table 28). A clinician request was less likely to result in women participating in research (Fisher’s exact test (2 Tail) p<0.05, Table 29).
Table 28. Effect of participation in research on usual health care routine, by gender of respondent

n=189 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect of research on usual health care routine*</th>
<th>Would interfere with my usual health care routine</th>
<th>Neither interfere nor facilitate</th>
<th>Would facilitate my usual health care routine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male n=91</td>
<td>1 (1)</td>
<td>53 (58)</td>
<td>37 (41)</td>
</tr>
<tr>
<td>Female n=98</td>
<td>9 (9)</td>
<td>51 (52)</td>
<td>38 (39)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.05

Table 29. Effect of clinician request on likelihood of participation in research involving taking a treatment for high blood pressure, by gender

n=190 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Likelihood of participation*</th>
<th>Likely to participate</th>
<th>Neither likely nor unlikely</th>
<th>Unlikely to participate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male n=91</td>
<td>66 (73)</td>
<td>24 (26)</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Female n=99</td>
<td>62 (63)</td>
<td>28 (28)</td>
<td>9 (9)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.05

There were no significant differences by the length of membership.
2. Pediatric Research Survey

Overall frequencies of each variable

The total number of completed responses was 96. Ninety respondents answered the questions about participation in research at Harvard Pilgrim and elsewhere. Approximately half of these respondents (43, 48%) remembered participating in research at Harvard Pilgrim. Forty two (47%) respondents also had experience of research outside Harvard Pilgrim. Eighty seven respondents answered the question about who was involved in the research. Experience involved the member’s child in 23 cases (26%), the adult member in 17 (20%), and both adult and child in 18 (21%) cases. Twenty nine (33%) of the 87 had no research experience.

Thirty two (33%) respondents had been Harvard Pilgrim members for 15 years or more, 50 (52%) for 5 to 14 years, and 14 (15%) for less than 5 years. There were 14 males, and 76 females. Age was known for all 96 parents or guardians. The largest age group represented was 40 to 64 years (54, 56%), followed by those under 40 (42, 44%). Fifty parents (52%) had at least a four year college degree. Race was known for 86 parents. The majority were white (69, 80%), a further eight (9%) were African American.

The majority of respondents agreed that Harvard Pilgrim should actively participate in research. They also agreed that research should be more visible to members, and that Harvard Pilgrim should include research on alternative medicine. There was strong support for research carried out with information from member’s medical records (Table 30).

As in the adult version of the survey, responses to questions about the funding of research were more diverse, with a majority (56, 64%) of respondents agreeing that research should be paid for by funding organizations other than Harvard Pilgrim. Only 35 (40%) respondents agreed that Harvard Pilgrim should pay for research itself (Table 30).
Table 30. Parent’s or guardian’s views about Harvard Pilgrim’s involvement in research
(figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Question</th>
<th>Agree</th>
<th>Neutral</th>
<th>Disagree</th>
<th>Missing value</th>
</tr>
</thead>
<tbody>
<tr>
<td>HP should actively participate in research n=84</td>
<td>82 (98)</td>
<td>2 (2)</td>
<td>0</td>
<td>12</td>
</tr>
<tr>
<td>Research should be paid for by HP n=88</td>
<td>35 (40)</td>
<td>32 (36)</td>
<td>21 (24)</td>
<td>8</td>
</tr>
<tr>
<td>Research should be paid for by organizations other than HP n=88</td>
<td>56 (64)</td>
<td>24 (27)</td>
<td>8 (9)</td>
<td>8</td>
</tr>
<tr>
<td>Research should be more visible to members n=89</td>
<td>80 (90)</td>
<td>9 (10)</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Research should include alternative medicine n=89</td>
<td>84 (94)</td>
<td>5 (6)</td>
<td>0</td>
<td>7</td>
</tr>
<tr>
<td>Research should be carried out with information from member’s medical records n=90</td>
<td>63 (70)</td>
<td>12 (13)</td>
<td>15 (17)</td>
<td>6</td>
</tr>
</tbody>
</table>

Members were asked whether they believed their child taking part in medical research would affect their care (Table 31). The majority (62, 68%) believed that taking part in research would increase understanding of health care, and would either have little effect (50, 55%) or would facilitate (37, 41%) their child’s usual health care routine. More respondents thought that they or their child would feel at ease (26, 29%) rather than uncomfortable (8, 9%), with the majority being neither at ease, nor uncomfortable (57, 63%). Similar results were seen with regard to anxiety, with more people thinking that participation would be anxiety relieving (27, 30%) than producing (11, 12%), but the majority (52, 58%) were in between.

A majority of members considered that participation in research would improve health (48, 53%), with 31 (34%) feeling neutral. Similarly, a majority (46, 51%) thought research would be a good experience, or neutral (36, 40%). The majority (66, 73%) also thought that research would have a major impact on medical care.
Table 31. Impact of research on medical care
(figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Impact on care</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Missing value</th>
</tr>
</thead>
<tbody>
<tr>
<td>reduces understanding of health problems n=91</td>
<td>1 (1)</td>
<td>28 (31)</td>
<td>62 (68)</td>
<td>5</td>
</tr>
<tr>
<td>makes the child feel uncomfortable n=91</td>
<td>8 (9)</td>
<td>57 (63)</td>
<td>26 (29)</td>
<td>5</td>
</tr>
<tr>
<td>is anxiety relieving n=90</td>
<td>27 (30)</td>
<td>52 (58)</td>
<td>11 (12)</td>
<td>6</td>
</tr>
<tr>
<td>interferes with the usual health care routine n=91</td>
<td>4 (4)</td>
<td>50 (55)</td>
<td>37 (41)</td>
<td>5</td>
</tr>
<tr>
<td>improves health n=91</td>
<td>48 (53)</td>
<td>31 (34)</td>
<td>12 (13)</td>
<td>5</td>
</tr>
<tr>
<td>is a good experience n=91</td>
<td>46 (51)</td>
<td>36 (40)</td>
<td>9 (10)</td>
<td>5</td>
</tr>
<tr>
<td>has no overall impact on medical care n=91</td>
<td>4 (4)</td>
<td>21 (23)</td>
<td>66 (73)</td>
<td>5</td>
</tr>
</tbody>
</table>

Respondents were asked what type of survey they and their child would prefer to answer after a visit to the pediatrician (Table 32). The majority preferred to answer a mailed survey, followed by an interview at the end of the visit, and a written survey at the end of the visit.

Table 32. Member preferences for survey about satisfaction with a visit to the pediatrician

<table>
<thead>
<tr>
<th>Survey format</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Interview at the end of the visit</td>
<td>21 (24)</td>
</tr>
<tr>
<td>Written survey at the end of the visit</td>
<td>14 (16)</td>
</tr>
<tr>
<td>Written survey sent by mail</td>
<td>35 (41)</td>
</tr>
<tr>
<td>No special preference for any of the above</td>
<td>14 (16)</td>
</tr>
<tr>
<td>Not to complete any survey</td>
<td>2 (2)</td>
</tr>
</tbody>
</table>

Members were presented with two scenarios, one that involved an extra visit to the pediatrician to learn about a new ‘game’ to help children learn about asthma, and one a study of pediatric asthma treatment (Tables 33 and 34). The potential influences on participation were written information about the study, invitation by the clinician, financial incentive, feedback about results, and interest on the part of the child. The strongest motivators to participate in the ‘asthma game’ and asthma treatment study were written information, clinician request, interest on the part of the child and also feedback of results.
Table 33. Willingness to participate in a study to help children learn about asthma
(figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Variable</th>
<th>More likely to participate</th>
<th>Neither</th>
<th>Less likely to participate</th>
<th>Missing value</th>
</tr>
</thead>
<tbody>
<tr>
<td>written information was provided n=90</td>
<td>69 (77)</td>
<td>16 (18)</td>
<td>5 (6)</td>
<td>6</td>
</tr>
<tr>
<td>request came from clinician n=90</td>
<td>68 (76)</td>
<td>17 (19)</td>
<td>5 (6)</td>
<td>6</td>
</tr>
<tr>
<td>financial incentive n=90</td>
<td>51 (57)</td>
<td>32 (36)</td>
<td>7 (8)</td>
<td>6</td>
</tr>
<tr>
<td>no direct benefit for child’s health n=90</td>
<td>19 (21)</td>
<td>44 (49)</td>
<td>27 (30)</td>
<td>6</td>
</tr>
<tr>
<td>child is interested in taking part n=90</td>
<td>67 (74)</td>
<td>18 (20)</td>
<td>5 (6)</td>
<td>6</td>
</tr>
</tbody>
</table>

Table 34. Willingness to participate in a study of asthma treatment in children
(figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Variable</th>
<th>More likely to participate</th>
<th>Neither</th>
<th>Less likely to participate</th>
<th>Missing value</th>
</tr>
</thead>
<tbody>
<tr>
<td>written information was provided n=90</td>
<td>62 (69)</td>
<td>23 (26)</td>
<td>5 (6)</td>
<td>6</td>
</tr>
<tr>
<td>request came from clinician n=90</td>
<td>64 (71)</td>
<td>22 (24)</td>
<td>4 (4)</td>
<td>6</td>
</tr>
<tr>
<td>financial incentive n=90</td>
<td>38 (42)</td>
<td>42 (47)</td>
<td>10 (11)</td>
<td>6</td>
</tr>
<tr>
<td>no direct benefit for child’s health n=89</td>
<td>15 (17)</td>
<td>38 (43)</td>
<td>36 (40)</td>
<td>7</td>
</tr>
<tr>
<td>child is interested in taking part n=90</td>
<td>57 (63)</td>
<td>26 (29)</td>
<td>7 (8)</td>
<td>6</td>
</tr>
<tr>
<td>cannot determine which treatment n=90</td>
<td>20 (22)</td>
<td>44 (49)</td>
<td>26 (29)</td>
<td>6</td>
</tr>
<tr>
<td>feedback would be provided n=89</td>
<td>63 (71)</td>
<td>19 (21)</td>
<td>7 (8)</td>
<td>7</td>
</tr>
</tbody>
</table>

Parents were less likely to participate if there was no direct benefit for their child’s health (19, 21% in asthma game, 15, 17% in asthma treatment trial). If the parent was unable to determine what treatment the child will receive the percentage likely to participate was also low (20, 22%).
Eighty seven respondents replied to the question about greatest impressions of research. Respondents had their greatest impressions of research from Harvard Pilgrim in 19 (22%) cases, from elsewhere in 22 (25%), and from both in 14 (16%). Thirty two (37%) had no research experience.

**Comparison of cases with exposed members**

Approximately one third of documented cases (17, 31%) classified themselves as unexposed to research. Seven controls had been exposed to research at Harvard Pilgrim. The cases who considered themselves to be unexposed were involved in the following studies CQM pediatric asthma survey, oral rehydration study, childhood asthma management program and attention deficit hyperactivity disorder study.

**Comparison of cases and controls**

There were 55 cases and 41 controls in the respondent group. Cases had their greatest impressions of research from different sources to controls (Table 35).

**Table 35. Greatest impressions of research among cases and controls**

<table>
<thead>
<tr>
<th>Source of impressions*</th>
<th>Harvard Pilgrim</th>
<th>Elsewhere</th>
<th>Similar</th>
<th>No experience</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cases n=51</strong></td>
<td>16 (32)</td>
<td>12 (24)</td>
<td>8 (16)</td>
<td>15 (29)</td>
</tr>
<tr>
<td><strong>Controls n=36</strong></td>
<td>3 (8)</td>
<td>10 (28)</td>
<td>6 (17)</td>
<td>17 (47)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.05

Cases and controls had significantly different responses to a number of the questions about effects of research on their child’s health care (Tables 36, 37, 38, 39).
Table 36. Effect of participation in research on understanding of health care
n=91 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect on understanding*</th>
<th>Reduces</th>
<th>Neither reduces nor increases</th>
<th>Increases</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases n=53</td>
<td>1 (2)</td>
<td>10 (19)</td>
<td>42 (79)</td>
</tr>
<tr>
<td>Controls n=38</td>
<td>0 (0)</td>
<td>18 (47)</td>
<td>20 (53)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.01

Table 37. Effect of participation in research on anxiety
n=90 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect on anxiety*</th>
<th>Anxiety relieving</th>
<th>Neither anxiety relieving nor producing</th>
<th>Anxiety producing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases n=52</td>
<td>22 (42)</td>
<td>25 (48)</td>
<td>5 (10)</td>
</tr>
<tr>
<td>Controls n=38</td>
<td>5 (13)</td>
<td>27 (71)</td>
<td>6 (16)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.05

Table 38. Effect of participation in research on usual health care routine
n=91 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect on health care routine*</th>
<th>Interferes</th>
<th>Neither interferes nor facilitates</th>
<th>Facilitates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases n=53</td>
<td>4 (8)</td>
<td>23 (43)</td>
<td>26 (49)</td>
</tr>
<tr>
<td>Controls n=38</td>
<td>0 (0)</td>
<td>27 (71)</td>
<td>11 (29)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.05

Table 39. Participation in research would be a good or bad experience
n=91 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Experience*</th>
<th>Good experience</th>
<th>Neither good nor bad</th>
<th>Bad experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases n=53</td>
<td>33 (62)</td>
<td>14 (26)</td>
<td>6 (11)</td>
</tr>
<tr>
<td>Controls n=38</td>
<td>13 (34)</td>
<td>22 (58)</td>
<td>3 (8)</td>
</tr>
</tbody>
</table>

Fisher’s exact test (2 Tail) p<0.05
Cases were significantly more likely than controls to participate in the asthma ‘game’ if their child is interested in taking part (Fisher’s exact test (2 Tail) p< 0.05, Table 40).

**Table 40. Views about the child’s interest in taking part in an ‘asthma game’ study, by cases and controls**

n= 90 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Child is interested in participating*</th>
<th>Likely to participate</th>
<th>Neither likely nor unlikely to participate</th>
<th>Unlikely to participate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases n=53</td>
<td>44 (83)</td>
<td>6 (11)</td>
<td>3 (6)</td>
</tr>
<tr>
<td>Controls n=37</td>
<td>23 (62)</td>
<td>12 (32)</td>
<td>2 (5)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.05

There were no other significant differences between cases and controls.

**Comparison of exposed and unexposed**

There were 43 exposed and 47 unexposed in the respondent group, six respondents were unsure if they had been exposed to research at Harvard Pilgrim. The 45 unexposed who answered the question either had no impressions of research (29, 64%), had greatest impressions from elsewhere (11, 24%), from Harvard Pilgrim and elsewhere (3, 7%), and Harvard Pilgrim (2, 4%). Exposed individuals had greatest impressions from Harvard Pilgrim in 17 cases (41%), elsewhere in 11 (26%), and both Harvard Pilgrim and elsewhere in 11 (26%). Three exposed individuals (7%) responded that they had no experience with research and one did not respond to this question.

Exposed individuals were more likely to participate in the ‘asthma game’ study than unexposed if written information is given (Fisher’s exact test (2 Tail) p<0.05, Table 41).
Table 41. Views about the impact of written information on likelihood of participation in an ‘asthma game’ study, by exposed and unexposed

\( n=89 \) (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Written information is provided*</th>
<th>Likely to participate</th>
<th>Neither likely nor unlikely to participate</th>
<th>Unlikely to participate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed ( n=43 )</td>
<td>38 (88)</td>
<td>5 (12)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Unexposed ( n=46 )</td>
<td>31 (67)</td>
<td>10 (22)</td>
<td>5 (11)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) \( p<0.05 \)

Exposed individuals were more likely to think that participation in research increases parent and patient understanding of health care (Fisher’s exact test (2 Tail) \( p<0.01 \), Table 42)

Table 42. Effect of participation in research on patient or parent understanding of health problems, by exposed and unexposed

\( n=90 \) (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect of research on understanding*</th>
<th>Would reduce understanding</th>
<th>Neither reduce nor increase understanding</th>
<th>Would increase understanding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed ( n=43 )</td>
<td>0 (0)</td>
<td>7 (16)</td>
<td>36 (84)</td>
</tr>
<tr>
<td>Unexposed ( n=47 )</td>
<td>1 (2)</td>
<td>20 (43)</td>
<td>26 (55)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) \( p<0.01 \)

There were no other significant differences between exposed and unexposed groups.

Responses of those who disagree with research at Harvard Pilgrim

There were no statistically significant differences between this group and those who agreed, or neither agreed nor disagreed with research at Harvard Pilgrim.
Comparison of those exposed at Harvard Pilgrim who had greatest impressions from Harvard Pilgrim versus those with greatest impressions from elsewhere
There were insufficient numbers who disagreed with research at Harvard Pilgrim to test for statistically significant differences between sub groups.

Demographic differences in responses
Older respondents were significantly more likely to agree that Harvard Pilgrim should conduct research using members medical records (Fisher’s exact test (2 Tail) \(p<0.01\), Table 43).

Table 43. Whether Harvard Pilgrim should conduct research on information from member’s medical records, by respondent age
\(n=90\) (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>HP should conduct research on medical records*</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age under 40 years n=36</td>
<td>18 (50)</td>
<td>8 (22)</td>
<td>10 (28)</td>
</tr>
<tr>
<td>Age 40 to 64 years n=54</td>
<td>45 (83)</td>
<td>4 (7)</td>
<td>5 (9)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) \(p<0.01\)

Comparison of adult and pediatric responses to general questions about research
Responses to the general questions about research at Harvard Pilgrim on the adult and pediatric questionnaires (Questions 1 and 2) were similar in both groups.
3. Adult Medical Student Teaching Survey

Overall frequencies of each variable

The total number of completed responses received was 217. Of the 201 respondents who answered the question, a majority (118, 59%) remembered a visit to Harvard Pilgrim when a medical student was present. The remainder were unsure (17, 8%) or could not remember a student encounter (66, 33%). The majority of these visits (113, 96%) were for the respondent rather than a child (5, 4%). The reason for the visit was given in 123 cases. This was a physical exam or check up (51, 41%), a first visit for an illness (27, 22%), or a return visit (45, 37%).

A large number of the 209 respondents, who answered the relevant question, had seen students at other places (105, 50%). Two hundred respondents answered the question about the source of their greatest impressions about medical students. Fifty six (28%) respondents had their greatest impressions of medical students from Harvard Pilgrim, from elsewhere in 66 (33%) cases, and a similar impact from Harvard Pilgrim and elsewhere in 39 (20%) cases. Thirty nine (20%) had no experience of students.

Sixty eight (31%) respondents had been Harvard Pilgrim members for 15 years or more, 85 (39%) for 5 to 14 years, and 64 (30%) for less than 5 years. There were 96 males, and 114 females, seven respondents did not record their gender. The largest age group represented was 40 to 64 years (108, 50%), followed by those under 40 (67, 31%), and the over 65s (42, 19%). One hundred and fifteen (55%) had at least a four year college degree. Of the 203 respondents who recorded their racial group the majority were white (140, 69%), a further 27 (13%) were African American.

Two hundred and thirteen people answered the question about whether teaching medical students at Harvard Pilgrim is a good idea. One hundred and sixty five (78%) respondents agreed that teaching medical students at Harvard Pilgrim is a good idea. Thirty three people neither agreed nor disagreed (16%), and fifteen disagreed (7%) (Table 44). The reasons why members agreed that teaching should be conducted are shown in Table 45.
Table 44. Agreement with teaching medical students at Harvard Pilgrim

<table>
<thead>
<tr>
<th>Agreement with teaching at HP</th>
<th>Strongly agree or agree</th>
<th>Neither agree nor disagree</th>
<th>Strongly disagree or disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>n (%)</td>
<td>165 (77)</td>
<td>33 (16)</td>
<td>15 (7)</td>
</tr>
</tbody>
</table>

Table 45. Reasons why members thought that Harvard Pilgrim should train medical students

<table>
<thead>
<tr>
<th>Reason why Harvard Pilgrim should train medical students</th>
<th>Number of members who agreed (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create better doctors</td>
<td>135 (84)</td>
</tr>
<tr>
<td>Contribute to future of medicine</td>
<td>115 (71)</td>
</tr>
<tr>
<td>Teach about HMOs and managed care</td>
<td>111 (69)</td>
</tr>
<tr>
<td>Hire future doctors</td>
<td>66 (41)</td>
</tr>
</tbody>
</table>

The majority of respondents thought that teaching increases the clinical skills of clinicians (74%). A minority thought that teaching increases cost to members (18%), and affects the confidentiality of patient information (28%) (Table 46).

Table 46. Effects of teaching medical students at Harvard Pilgrim
(figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Possible effect</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Missing values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increases cost to members n=205</td>
<td>36 (18)</td>
<td>83 (40)</td>
<td>86 (42)</td>
<td>12</td>
</tr>
<tr>
<td>Affects confidentiality of patient information n=202</td>
<td>56 (28)</td>
<td>52 (26)</td>
<td>94 (47)</td>
<td>15</td>
</tr>
<tr>
<td>Increases the clinical skill of teaching clinicians n=205</td>
<td>151 (74)</td>
<td>33 (16)</td>
<td>21 (10)</td>
<td>12</td>
</tr>
</tbody>
</table>

Fifty five (26%) respondents did not know, and sixty six (31%) were not sure, what medical students are allowed to do while participating in medical care. Ninety two (43%) knew what medical students are allowed to do. Four of the 217 respondents did not answer this question.

Effect of medical student participation on medical care

Members were asked about the effects of medical student teaching on their care (Table 47). The majority in each case tended to answer in the middle of the scale, indicating a
neutral or small effect. More thought that teaching increases (50, 25%), rather than reduces (11, 5.5%) patient understanding. Teaching was thought to enhance communication (55, 27%) by more people than to impair communication (30, 15%). More thought it would be a good experience (64, 32%), than bad (25, 12%), and would have a major impact on care (66, 33%), rather than no overall impact (16, 8%). Slightly more respondents would be at ease (40, 20%) than uncomfortable (30, 15%). Similar numbers thought teaching anxiety relieving (25, 13%) and producing (33, 17%). However, teaching was seen as time consuming (54, 27%), rather than time saving (20, 10%).

**Table 47. Effect of medical student participation on medical care**
(figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect on care</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Missing values</th>
</tr>
</thead>
<tbody>
<tr>
<td>reduces patient’s understanding of problems n=199</td>
<td>11 (6)</td>
<td>138 (69)</td>
<td>50 (25)</td>
<td>18</td>
</tr>
<tr>
<td>would make the patient feel uncomfortable n=204</td>
<td>30 (15)</td>
<td>134 (66)</td>
<td>40 (20)</td>
<td>13</td>
</tr>
<tr>
<td>is anxiety relieving n=197</td>
<td>25 (13)</td>
<td>139 (71)</td>
<td>33 (17)</td>
<td>20</td>
</tr>
<tr>
<td>is time saving n=200</td>
<td>20 (10)</td>
<td>126 (63)</td>
<td>54 (27)</td>
<td>17</td>
</tr>
<tr>
<td>impairs communication with the clinician n=202</td>
<td>30 (15)</td>
<td>117 (58)</td>
<td>55 (27)</td>
<td>15</td>
</tr>
<tr>
<td>is a good experience n=202</td>
<td>64 (32)</td>
<td>113 (56)</td>
<td>25 (12)</td>
<td>15</td>
</tr>
<tr>
<td>has no overall impact on care n=201</td>
<td>16 (8)</td>
<td>119 (59)</td>
<td>66 (33)</td>
<td>16</td>
</tr>
</tbody>
</table>

Members were asked who they would like to ask them if a medical student could be present during a routine physical, and when they would prefer to be asked (Tables 48 and 49). The majority would prefer to be asked by the clinician, rather than the person who shows them to the examination room, or the receptionist.

**Table 48. Who would members prefer to ask them if a medical student can participate in their visit?**

<table>
<thead>
<tr>
<th>Who should invite participation</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receptionist</td>
<td>19 (9)</td>
</tr>
<tr>
<td>Person who shows you to the exam room</td>
<td>30 (15)</td>
</tr>
<tr>
<td>Clinician</td>
<td>113 (56)</td>
</tr>
<tr>
<td>No special preference</td>
<td>40 (20)</td>
</tr>
</tbody>
</table>
When the request should be made was less clear, with similar numbers preferring when the appointment is made, when they arrive at the office, and when they first see the clinician. A much smaller number preferred to be asked during a reminder phone call.

**Table 49. When should the request for medical student participation be made?**

<table>
<thead>
<tr>
<th>When should request be made?</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>When appointment is made</td>
<td>57 (28)</td>
</tr>
<tr>
<td>When reminder telephone call is made the day before</td>
<td>14 (7)</td>
</tr>
<tr>
<td>When patient arrives at the office</td>
<td>42 (20)</td>
</tr>
<tr>
<td>When patient first sees clinician</td>
<td>55 (27)</td>
</tr>
<tr>
<td>No special preference</td>
<td>38 (18)</td>
</tr>
</tbody>
</table>

Members were then asked about aspects of a visit that may make them more or less comfortable with a medical student being present (Table 50). The aspects that made respondents more uncomfortable were: if they wished to discuss an emotional problem with their clinician, and if they needed an internal examination (vaginal examination for women, rectal examination for men). Factors that made respondents more comfortable were more information about medical students, knowing and trusting the primary care clinician, and knowing the primary care clinician will supervise all aspects of the visit.

**Table 50. Aspects of a visit that may affect patient comfort**

(figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Aspect of visit</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
<th>Missing values</th>
</tr>
</thead>
<tbody>
<tr>
<td>new problem n=208</td>
<td>61 (29)</td>
<td>91 (44)</td>
<td>56 (27)</td>
<td>9</td>
</tr>
<tr>
<td>emotional problem n=209</td>
<td>101 (48)</td>
<td>66 (32)</td>
<td>42 (20)</td>
<td>8</td>
</tr>
<tr>
<td>student is of different gender n=207</td>
<td>53 (26)</td>
<td>97 (47)</td>
<td>57 (28)</td>
<td>10</td>
</tr>
<tr>
<td>internal exam n=210</td>
<td>99 (47)</td>
<td>72 (34)</td>
<td>39 (19)</td>
<td>7</td>
</tr>
<tr>
<td>information about student activities is given n=203</td>
<td>21 (10)</td>
<td>95 (47)</td>
<td>87 (43)</td>
<td>14</td>
</tr>
<tr>
<td>know and trust clinician n=206</td>
<td>18 (9)</td>
<td>67 (33)</td>
<td>121 (59)</td>
<td>11</td>
</tr>
<tr>
<td>clinician will supervise all aspects n=206</td>
<td>18 (9)</td>
<td>64 (31)</td>
<td>124 (60)</td>
<td>11</td>
</tr>
</tbody>
</table>
Respondents were asked about various student activities that may make them feel more or less comfortable (Table 51). The majority of respondents either were comfortable with, or did not have strong feelings about: the student observing; asking questions while the clinician listens; and discussing the patient's health with the clinician in front of the patient. There was no clear majority about the student doing a physical exam while the clinician observes. However, a majority of respondents were not comfortable with the student asking questions and examining while the clinician is out of the room, then the clinician repeating these tasks. Nor were they comfortable with the clinician and student leaving the examination room to discuss their case.

Table 51. Student activities that affect patient comfort
(figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Student activity</th>
<th>Uncomfortable</th>
<th>Neither</th>
<th>Comfortable</th>
<th>Missing values</th>
</tr>
</thead>
<tbody>
<tr>
<td>student observes n=210</td>
<td>31 (15)</td>
<td>93 (44)</td>
<td>86 (41)</td>
<td>7</td>
</tr>
<tr>
<td>student asks questions, clinician observes n=211</td>
<td>34 (16)</td>
<td>93 (44)</td>
<td>84 (40)</td>
<td>6</td>
</tr>
<tr>
<td>student does physical, clinician observes n=210</td>
<td>67 (32)</td>
<td>86 (41)</td>
<td>57 (27)</td>
<td>7</td>
</tr>
<tr>
<td>student questions and examines, clinician is out of room then repeats both n=211</td>
<td>119 (56)</td>
<td>58 (28)</td>
<td>34 (16)</td>
<td>6</td>
</tr>
<tr>
<td>clinician and student discuss in front of you n=211</td>
<td>26 (12)</td>
<td>74 (35)</td>
<td>111 (53)</td>
<td>6</td>
</tr>
<tr>
<td>clinician and student leave room to discuss n=207</td>
<td>105 (51)</td>
<td>72 (35)</td>
<td>30 (14)</td>
<td>10</td>
</tr>
</tbody>
</table>

If an internal examination is necessary respondents were more comfortable with the student leaving the room (Table 52). The student observing the examination produced less discomfort than the student, or student and clinician performing the examination.
Table 52. Internal examinations and patient comfort
(figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Student activity</th>
<th>Uncomfortable</th>
<th>Neither</th>
<th>Comfortable</th>
<th>Missing values</th>
</tr>
</thead>
<tbody>
<tr>
<td>student observes n=211</td>
<td>80 (38)</td>
<td>76 (36)</td>
<td>55 (26)</td>
<td>6</td>
</tr>
<tr>
<td>student does exam with close supervision n=210</td>
<td>114 (54)</td>
<td>59 (28)</td>
<td>37 (18)</td>
<td>7</td>
</tr>
<tr>
<td>student and clinician both do exam n=207</td>
<td>105 (51)</td>
<td>66 (32)</td>
<td>36 (17)</td>
<td>10</td>
</tr>
<tr>
<td>student leaves room before exam n=206</td>
<td>19 (9)</td>
<td>88 (43)</td>
<td>99 (48)</td>
<td>11</td>
</tr>
</tbody>
</table>

Cases and exposed members
Fifteen (13%) cases described themselves as unexposed to medical student teaching at Harvard Pilgrim. Twenty four (24%) controls had been exposed to medical students at Harvard Pilgrim. The control group therefore had considerable experience of medical students within the organization.

Differences between cases and controls
There were 118 cases in the respondent group, and 99 controls. Some cases had their strongest impressions from Harvard Pilgrim, but others had greatest impression from elsewhere (Table 53).

Table 53. Greatest impressions of medical students among cases and controls
n= 199 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Source of impressions*</th>
<th>Cases n= 112</th>
<th>Controls n=87</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvard Pilgrim</td>
<td>46 (41)</td>
<td>9 (10)</td>
</tr>
<tr>
<td>Elsewhere</td>
<td>24 (21)</td>
<td>42 (48)</td>
</tr>
<tr>
<td>Experience at HP and elsewhere similar impact</td>
<td>27 (24)</td>
<td>12 (14)</td>
</tr>
<tr>
<td>No experience</td>
<td>15 (13)</td>
<td>24 (28)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.0001

Cases were less uncomfortable with a visit that might include an internal exam (Fisher’s exact test (2 Tail) p<0.05, Table 54). There were no other significant differences between cases and controls.
Table 54. Degree of comfort with a visit requiring an internal exam among cases and controls

n= 209 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Degree of comfort with internal exam*</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases n=114</td>
<td>45 (39)</td>
<td>47 (41)</td>
<td>22 (19)</td>
</tr>
<tr>
<td>Controls n=95</td>
<td>53 (56)</td>
<td>25 (26)</td>
<td>17 (18)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.05

Differences between exposed and unexposed

Respondents who have been exposed to students at Harvard Pilgrim were significantly more likely to prefer that the clinician ask them if a medical student can be present during a visit (Fisher’s exact test (2 Tail) p<0.05, Table 55). A larger proportion of the exposed would prefer that they be asked when they first see the clinician, whereas a larger proportion of the unexposed preferred to be asked when they made the appointment (Fisher’s exact test (2 Tail) p<0.05, Table 56).

Table 55. Who should ask if a medical student can participate in the visit, by exposed and unexposed

n= 190 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Who should ask*</th>
<th>Receptionist</th>
<th>Person who shows patient to exam room</th>
<th>Clinician</th>
<th>No preference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed n=111</td>
<td>8 (7)</td>
<td>18 (16)</td>
<td>71 (64)</td>
<td>14 (13)</td>
</tr>
<tr>
<td>Unexposed n=79</td>
<td>10 (13)</td>
<td>10 (13)</td>
<td>37 (47)</td>
<td>22 (28)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.05

Table 56. When should a patient be asked if a medical student can participate in the visit, by exposed and unexposed

n= 193 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>When patient should be asked*</th>
<th>Make the appointment</th>
<th>Reminder telephone call</th>
<th>Arrive at office</th>
<th>First see clinician</th>
<th>No preference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed n=111</td>
<td>25 (22)</td>
<td>5 (4)</td>
<td>28 (25)</td>
<td>38 (34)</td>
<td>17 (15)</td>
</tr>
<tr>
<td>Unexposed n=79</td>
<td>28 (35)</td>
<td>8 (10)</td>
<td>12 (15)</td>
<td>14 (18)</td>
<td>18 (23)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.05
The exposed had formed their greatest impressions of medical students from Harvard Pilgrim in 50 (43%) cases, elsewhere in 19 (17%), and both Harvard Pilgrim and elsewhere in 36 (31%) (Table 57).

**Table 57. Greatest impressions of medical students among exposed and unexposed**

n= 190 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Source of impressions*</th>
<th>Exposed n= 115</th>
<th>Unexposed n= 75</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvard Pilgrim</td>
<td>50 (43)</td>
<td>1 (1)</td>
</tr>
<tr>
<td>Elsewhere</td>
<td>19 (17)</td>
<td>44 (59)</td>
</tr>
<tr>
<td>Experience at HP and elsewhere similar impact</td>
<td>36 (31)</td>
<td>2 (3)</td>
</tr>
<tr>
<td>No experience</td>
<td>10 (9)</td>
<td>28 (37)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.0001

There were no other significant differences between exposed and unexposed.

**Difference in responses of those who agree and disagree with medical student teaching at Harvard Pilgrim**

Those who agreed with teaching at Harvard Pilgrim were significantly more likely to understand what medical students are allowed to do, compared with those who disagreed, or neither agreed nor disagreed (Fisher’s exact test (2 Tail) p<0.0001, Table 58). A lower percentage of those who agreed thought that teaching affects patient confidentiality (Fisher’s exact test (2 Tail) p<0.0001, Table 59). Those who agreed were more likely to think that teaching increases clinician skill (Fisher’s exact test (2 Tail), p<0.0001, Table 60).

**Table 58. Understanding about what medical students are allowed to do, among those who agreed and disagreed with teaching**

n= 211 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Understanding about what medical students do*</th>
<th>Yes</th>
<th>No</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with teaching at HP n=164</td>
<td>83  (51)</td>
<td>39  (24)</td>
<td>42  (26)</td>
</tr>
<tr>
<td>Neither agreed nor disagreed with teaching at HP n=33</td>
<td>4  (12)</td>
<td>20  (61)</td>
<td>9   (27)</td>
</tr>
<tr>
<td>Disagree with teaching at HP n=14</td>
<td>5   (36)</td>
<td>5   (36)</td>
<td>4   (29)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.0001
Table 59. Does teaching medical students affect the confidentiality of patient information, by those who agreed and disagreed with teaching

<table>
<thead>
<tr>
<th>Teaching affects confidentiality*</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with teaching at HP n=158</td>
<td>32 (20)</td>
<td>39 (25)</td>
<td>87 (55)</td>
</tr>
<tr>
<td>Neither agreed nor disagreed with teaching at HP n=31</td>
<td>16 (52)</td>
<td>10 (32)</td>
<td>5 (16)</td>
</tr>
<tr>
<td>Disagree with teaching at HP n=13</td>
<td>8 (62)</td>
<td>3 (23)</td>
<td>2 (15)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.0001

Table 60. Does teaching medical students increase clinician skill, by those who agreed and disagreed with teaching

<table>
<thead>
<tr>
<th>Teaching increases clinician skill*</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with teaching at HP n=160</td>
<td>133 (83)</td>
<td>17 (11)</td>
<td>10 (6)</td>
</tr>
<tr>
<td>Neither agreed nor disagreed with teaching at HP n=31</td>
<td>14 (45)</td>
<td>12 (39)</td>
<td>5 (16)</td>
</tr>
<tr>
<td>Disagree with teaching at HP n=14</td>
<td>4 (29)</td>
<td>4 (29)</td>
<td>6 (43)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.0001

Those who disagreed with teaching had a more negative view of the effect of medical students on a visit, when compared with those who agreed, or who neither agreed nor disagreed, with teaching at Harvard Pilgrim (Tables 61, 62, 63, 64 and 65). Overall they thought a visit that included medical student participation would be more likely to be a bad experience than a good experience (Fisher’s exact test (2 Tail) p<0.001, Table 66).
Table 61. Does medical student involvement in care affect patient's understanding of health problems, by those who agreed and disagreed with teaching

n= 199 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect on patient understanding*</th>
<th>Reduces understanding</th>
<th>Neither reduces nor increases understanding</th>
<th>Increases understanding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with teaching at HP n=156</td>
<td>4 (3)</td>
<td>106 (68)</td>
<td>46 (29)</td>
</tr>
<tr>
<td>Neither agreed nor disagreed with teaching at HP n=29</td>
<td>2 (7)</td>
<td>23 (79)</td>
<td>4 (14)</td>
</tr>
<tr>
<td>Disagree with teaching at HP n=14</td>
<td>5 (36)</td>
<td>9 (64)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

* Fisher's exact test (2 Tail) p<0.0001

Table 62. Does medical student involvement in care affect patient's comfort, by those who agreed and disagreed with teaching

n= 204 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect on patient comfort*</th>
<th>Make patient feel uncomfortable</th>
<th>Neither uncomfortable nor at ease</th>
<th>Make patient feel at ease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with teaching at HP n=159</td>
<td>8 (5)</td>
<td>115 (72)</td>
<td>36 (23)</td>
</tr>
<tr>
<td>Neither agreed nor disagreed with teaching at HP n=30</td>
<td>10 (33)</td>
<td>16 (53)</td>
<td>4 (13)</td>
</tr>
<tr>
<td>Disagree with teaching at HP n=15</td>
<td>12 (80)</td>
<td>3 (20)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

* Fisher's exact test (2 Tail) p<0.0001

Table 63. Does medical student involvement in care affect patient's anxiety, by those who agreed and disagreed with teaching

n= 197 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect on patient anxiety*</th>
<th>Anxiety relieving</th>
<th>Neither anxiety relieving nor producing</th>
<th>Anxiety producing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with teaching at HP n=153</td>
<td>22 (14)</td>
<td>119 (78)</td>
<td>12 (8)</td>
</tr>
<tr>
<td>Neither agreed nor disagreed with teaching at HP n=30</td>
<td>1 (3)</td>
<td>17 (57)</td>
<td>12 (40)</td>
</tr>
<tr>
<td>Disagree with teaching at HP n=14</td>
<td>2 (14)</td>
<td>3 (21)</td>
<td>9 (64)</td>
</tr>
</tbody>
</table>

* Fisher's exact test (2 Tail) p<0.0001
Table 64. Does medical student involvement in care affect time, by those who agreed and disagreed with teaching

n= 200 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect on time*</th>
<th>Time saving</th>
<th>Neither time saving nor time consuming</th>
<th>Time consuming</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with teaching at HP n=156</td>
<td>18 (12)</td>
<td>108 (69)</td>
<td>30 (19)</td>
</tr>
<tr>
<td>Neither agreed nor disagreed with teaching at HP n=29</td>
<td>1 (3)</td>
<td>15 (52)</td>
<td>13 (45)</td>
</tr>
<tr>
<td>Disagree with teaching at HP n=15</td>
<td>1 (7)</td>
<td>3 (20)</td>
<td>11 (73)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.0001

Table 65. Does medical student involvement in care affect communication, by those who agreed and disagreed with teaching

n= 202 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect on time*</th>
<th>Impairs communication</th>
<th>Neither impairs nor enhances communication</th>
<th>Enhances communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with teaching at HP n=157</td>
<td>12 (8)</td>
<td>93 (59)</td>
<td>52 (33)</td>
</tr>
<tr>
<td>Neither agreed nor disagreed with teaching at HP n=30</td>
<td>8 (27)</td>
<td>20 (67)</td>
<td>2 (7)</td>
</tr>
<tr>
<td>Disagree with teaching at HP n=15</td>
<td>10 (67)</td>
<td>4 (27)</td>
<td>1 (7)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.0001

Table 66. Is medical student involvement in care a good experience, a bad experience or neither, by those who agreed and disagreed with teaching

n= 202 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Medical student involvement*</th>
<th>Good experience</th>
<th>Neither a good or a bad experience</th>
<th>Bad experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with teaching at HP n=157</td>
<td>58 (37)</td>
<td>87 (55)</td>
<td>12 (8)</td>
</tr>
<tr>
<td>Neither agreed nor disagreed with teaching at HP n=30</td>
<td>4 (13)</td>
<td>20 (67)</td>
<td>6 (20)</td>
</tr>
<tr>
<td>Disagree with teaching at HP n=15</td>
<td>2 (13)</td>
<td>6 (40)</td>
<td>7 (47)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.001
Individuals who did not agree with teaching tended to be more uncomfortable with all student activities than those who agreed, or neither agreed nor disagreed, except in the situation where the student and clinician leave the room to discuss the case. Significant differences were observed for the following situations: student observing (Fisher’s exact test (2 Tail) p<0.0001, Table 67), asking questions (Fisher’s exact test (2 Tail) p<0.0001, Table 68), doing a physical exam in the presence of the clinician (Fisher’s exact test (2 Tail) p<0.0001, Table 69) and while the clinician is out of the room (Fisher’s exact test (2 Tail) p<0.001, Table 70), and with the clinician and student discussing the case in front of the member (Fisher’s exact test (2 Tail) p<0.0001, Table 71).

**Table 67. Patient comfort with medical student observing while clinician asks questions and examines, by those who agreed and disagreed with teaching**

<table>
<thead>
<tr>
<th>Patient comfort*</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with teaching at HP n=161</td>
<td>10 (6)</td>
<td>71 (44)</td>
<td>80 (50)</td>
</tr>
<tr>
<td>Neither agreed nor disagreed with teaching at HP n=33</td>
<td>11 (33)</td>
<td>17 (52)</td>
<td>5 (15)</td>
</tr>
<tr>
<td>Disagree with teaching at HP n=15</td>
<td>9 (60)</td>
<td>5 (33)</td>
<td>1 (7)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.0001

**Table 68. Patient comfort with medical student asking questions while clinician listens, by those who agreed and disagreed with teaching**

<table>
<thead>
<tr>
<th>Patient comfort*</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with teaching at HP n=163</td>
<td>15 (9)</td>
<td>70 (43)</td>
<td>78 (48)</td>
</tr>
<tr>
<td>Neither agreed nor disagreed with teaching at HP n=32</td>
<td>9 (28)</td>
<td>18 (56)</td>
<td>5 (16)</td>
</tr>
<tr>
<td>Disagree with teaching at HP n=15</td>
<td>9 (60)</td>
<td>5 (33)</td>
<td>1 (7)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.0001
Table 69. Patient comfort with medical student doing a physical while clinician observes, by those who agreed and disagreed with teaching

<table>
<thead>
<tr>
<th>Patient comfort*</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with teaching at HP n=161</td>
<td>33 (20)</td>
<td>75 (47)</td>
<td>53 (33)</td>
</tr>
<tr>
<td>Neither agreed nor disagreed with teaching at HP n=33</td>
<td>20 (61)</td>
<td>10 (30)</td>
<td>3 (9)</td>
</tr>
<tr>
<td>Disagree with teaching at HP n=15</td>
<td>13 (87)</td>
<td>1 (7)</td>
<td>1 (7)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.0001

Table 70. Patient comfort with medical student asking questions and doing a physical while clinician is out of the room, then clinician repeating both, by those who agreed and disagreed with teaching

<table>
<thead>
<tr>
<th>Patient comfort*</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with teaching at HP n=162</td>
<td>78 (48)</td>
<td>53 (33)</td>
<td>31 (19)</td>
</tr>
<tr>
<td>Neither agreed nor disagreed with teaching at HP n=33</td>
<td>25 (76)</td>
<td>5 (15)</td>
<td>3 (9)</td>
</tr>
<tr>
<td>Disagree with teaching at HP n=15</td>
<td>15 (100)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.001

Table 71. Patient comfort with clinician and medical student discussing patient’s health in front of the patient, by those who agreed and disagreed with teaching

<table>
<thead>
<tr>
<th>Patient comfort*</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with teaching at HP n=163</td>
<td>6 (4)</td>
<td>57 (35)</td>
<td>100 (61)</td>
</tr>
<tr>
<td>Neither agreed nor disagreed with teaching at HP n=33</td>
<td>11 (33)</td>
<td>12 (36)</td>
<td>10 (30)</td>
</tr>
<tr>
<td>Disagree with teaching at HP n=14</td>
<td>8 (57)</td>
<td>5 (36)</td>
<td>1 (7)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.0001
Those who did not agree with teaching at Harvard Pilgrim were also significantly more uncomfortable than those who agreed, or neither agreed nor disagreed, with all situations involving an internal examination, except where the student left the room. Significant differences were found in the following situations: student observing (Fisher’s exact test (2 Tail) p<0.0001, Table 72), student doing the examination (Fisher’s exact test (2 Tail) p<0.0001, Table 73), both the student and clinician doing the examination (Fisher’s exact test (2 Tail) p<0.0001, Table 74).

Table 72. Patient comfort with medical student observing an internal examination, by those who agreed and disagreed with teaching
n= 210 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Patient comfort*</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with teaching at HP n=163</td>
<td>44 (27)</td>
<td>66 (40)</td>
<td>53 (33)</td>
</tr>
<tr>
<td>Neither agreed nor disagreed with teaching at HP n=32</td>
<td>21 (66)</td>
<td>9 (28)</td>
<td>2 (6)</td>
</tr>
<tr>
<td>Disagree with teaching at HP n=15</td>
<td>14 (93)</td>
<td>1 (7)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.0001

Table 73. Patient comfort with medical student doing an internal exam with close supervision by the clinician, by those who agreed and disagreed with teaching
n= 209 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Patient comfort*</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with teaching at HP n=162</td>
<td>74 (46)</td>
<td>52 (32)</td>
<td>36 (22)</td>
</tr>
<tr>
<td>Neither agreed nor disagreed with teaching at HP n=32</td>
<td>24 (75)</td>
<td>7 (22)</td>
<td>1 (3)</td>
</tr>
<tr>
<td>Disagree with teaching at HP n=15</td>
<td>15 (100)</td>
<td>0 (0)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.0001
Table 74. Patient comfort with medical student and clinician both doing an internal exam, by those who agreed and disagreed with teaching
n= 206 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Patient comfort*</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with teaching at HP n=160</td>
<td>66 (41)</td>
<td>60 (38)</td>
<td>34 (21)</td>
</tr>
<tr>
<td>Neither agreed nor disagreed with teaching at HP n=31</td>
<td>24 (77)</td>
<td>5 (16)</td>
<td>2 (6)</td>
</tr>
<tr>
<td>Disagree with teaching at HP n=15</td>
<td>14 (93)</td>
<td>1 (7)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

* Fisher's exact test (2 Tail) p<0.0001

Comparison of those exposed at Harvard Pilgrim who had greatest impressions from Harvard Pilgrim versus those with greatest impressions from elsewhere
Cases who had greatest impressions from Harvard Pilgrim were significantly more likely to be uncomfortable in the situation where the clinician and student leave the room to discuss their case than cases who had their greatest impressions from elsewhere (Fisher’s exact test (2 Tail) p<0.05, Table 75).

Table 75. Cases comfort with clinician and medical student leaving the room to discuss the patient case, by source of greatest impressions of medical student teaching
n= 64 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Patient comfort*</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greatest impressions from HP n=46</td>
<td>26 (57)</td>
<td>14 (30)</td>
<td>6 (13)</td>
</tr>
<tr>
<td>Greatest impressions from elsewhere n=18</td>
<td>4 (22)</td>
<td>11 (61)</td>
<td>3 (17)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.0001

Demographic differences in responses
A significantly higher percentage of those who have been Harvard Pilgrim members for less than 5 years understood what medical students are allowed to do (Fisher’s exact test (2 Tail) p<0.05, Table 76). Similarly, a significantly higher number of younger members (under 40 years) understood what students are allowed to do (Fisher’s exact test (2 Tail) p<0.05, Table 77).
Table 76. Understanding about what medical students are allowed to do, by length of membership of Harvard Pilgrim

<table>
<thead>
<tr>
<th>Understanding about what medical students do*</th>
<th>Yes</th>
<th>No</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Member for less than 5 years n=62</td>
<td>34 (55)</td>
<td>13 (21)</td>
<td>15 (24)</td>
</tr>
<tr>
<td>Member for 5 to 15 years n=83</td>
<td>35 (42)</td>
<td>32 (39)</td>
<td>16 (19)</td>
</tr>
<tr>
<td>Member for over 15 years n=68</td>
<td>23 (34)</td>
<td>21 (31)</td>
<td>24 (35)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.05

Table 77. Understanding about what medical students are allowed to do, by age

<table>
<thead>
<tr>
<th>Understanding about what medical students do*</th>
<th>Yes</th>
<th>No</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age less than 40 years n=63</td>
<td>32 (51)</td>
<td>19 (30)</td>
<td>12 (19)</td>
</tr>
<tr>
<td>Age 40 to 64 years n=108</td>
<td>44 (41)</td>
<td>39 (36)</td>
<td>25 (23)</td>
</tr>
<tr>
<td>Age 65 years and over n=42</td>
<td>16 (38)</td>
<td>8 (19)</td>
<td>18 (43)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.05

Older members tended to be more comfortable with the student and clinician leaving the room to discuss their case than younger members (Fisher’s exact test (2 Tail) p<0.05, Table 78).

Table 78. Patient comfort with student and clinician leaving the room to discuss their case, by age

<table>
<thead>
<tr>
<th>Patient comfort*</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age less than 40 years n=62</td>
<td>31 (50)</td>
<td>25 (40)</td>
<td>6 (10)</td>
</tr>
<tr>
<td>Age 40 to 64 years n=105</td>
<td>58 (55)</td>
<td>36 (34)</td>
<td>11 (10)</td>
</tr>
<tr>
<td>Age 65 years and over n=39</td>
<td>16 (41)</td>
<td>11 (28)</td>
<td>12 (31)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.05
More female than male members thought that medical students reduce patient understanding of health care (Fisher's exact test (2 Tail) p<0.05, Table 79), and are time consuming (Fisher's exact test (2 Tail) p<0.05, Table 80).

Table 79. Effect of medical student involvement in care on patient understanding of health problems, by gender

<table>
<thead>
<tr>
<th>Patient understanding*</th>
<th>Reduces understanding</th>
<th>Neither reduces nor increases understanding</th>
<th>Increases understanding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male n=88</td>
<td>1 (1)</td>
<td>61 (69)</td>
<td>26 (30)</td>
</tr>
<tr>
<td>Female n=107</td>
<td>10 (9)</td>
<td>75 (70)</td>
<td>22 (21)</td>
</tr>
</tbody>
</table>

* Fisher's exact test (2 Tail) p<0.05

Table 80. Effect of medical student involvement in care on time, by gender

<table>
<thead>
<tr>
<th>Effect on time*</th>
<th>Time saving</th>
<th>Neither time saving nor consuming</th>
<th>Time consuming</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male n=89</td>
<td>13 (15)</td>
<td>60 (67)</td>
<td>16 (18)</td>
</tr>
<tr>
<td>Female n=108</td>
<td>7 (7)</td>
<td>64 (59)</td>
<td>37 (34)</td>
</tr>
</tbody>
</table>

* Fisher's exact test (2 Tail) p<0.05

Women were more uncomfortable with a student performing a physical exam, whether the clinician is present (Fisher's exact test (2 Tail) p<0.01, Table 81) or not (Fisher's exact test (2 Tail) p<0.01, Table 82). Women were also more uncomfortable than men if the student and clinician were to leave the room to discuss their case (Fisher's exact test (2 Tail) p<0.05, Table 83).

Table 81. Patient comfort with medical student doing a physical while clinician observes, by gender

<table>
<thead>
<tr>
<th>Patient comfort*</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male n=93</td>
<td>20 (22)</td>
<td>42 (45)</td>
<td>31 (33)</td>
</tr>
<tr>
<td>Female n=113</td>
<td>47 (42)</td>
<td>42 (37)</td>
<td>24 (21)</td>
</tr>
</tbody>
</table>

* Fisher's exact test (2 Tail) p<0.01
Table 82. Patient comfort with medical student asking questions and doing a physical while clinician is out of the room, then clinician repeating both, by gender

n= 207 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Patient comfort*</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male n=94</td>
<td>42 (45)</td>
<td>31 (33)</td>
<td>21 (22)</td>
</tr>
<tr>
<td>Female n=113</td>
<td>75 (66)</td>
<td>26 (23)</td>
<td>12 (11)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.01

Table 83. Patient comfort with clinician and medical student leaving the room to discuss the patient, by gender

n= 203 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Patient comfort*</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male n=90</td>
<td>35 (39)</td>
<td>39 (43)</td>
<td>16 (18)</td>
</tr>
<tr>
<td>Female n=113</td>
<td>68 (60)</td>
<td>32 (28)</td>
<td>13 (12)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.05
4. Pediatric Medical Student Survey

Overall frequencies of each variable
The total number of respondents was 125. One hundred and nineteen responded to the question about exposure to students at Harvard Pilgrim. Approximately half of these (66, 55%) remembered participating in medical student teaching at Harvard Pilgrim. Forty eight (40%) could not remember such a visit, and five (4%) were unsure. In the majority of the 66 situations (56, 85%) the teaching visit was for a child. The remainder were for the adult themselves (10, 15%). Reasons for the 66 visits were: a routine check up (32, 49%), a first visit for illness or injury (23, 35%), and a return visit (11, 17%). One hundred and twenty two respondents answered the question about exposure to medical student teaching elsewhere. Eighty (66%) had experience of medical student teaching outside Harvard Pilgrim. Thirty five (29%) could not remember an encounter with a student, and seven (6%) were unsure. This was therefore an experienced group in terms of medical student exposure.

Twenty nine (23%) respondents had been Harvard Pilgrim members for 15 years or more, 73 (58%) for 5 to 14 years, and 23 (18%) for less than 5 years. There were 20 males, and 105 females. The largest age group represented was those under 40 (74, 59%), followed by 40 to 64 years (51, 41%). Eighty four (66%) had at least a four year college degree. The majority were white (82, 67%), a further 18 (15%) were African American.

One hundred and twenty respondents answered the question about which experience had the greatest impression on their views of medical students. Forty six (38%) respondents had received their greatest impression of medical students from outside Harvard Pilgrim. Twenty two (18%) had their greatest impression from Harvard Pilgrim, and twenty nine (24%) had a similar impact from Harvard Pilgrim and elsewhere. Twenty three had no experience (19%).

The majority of respondents agreed that teaching medical students at Harvard Pilgrim is a good idea (102, 86%) (Table 84). The reasons why they thought so are shown in Table 85. Five (4%) disagreed that teaching was a good idea, and 12 (10%) neither agreed nor
disagreed. Six respondents did not answer this question, or made responses that could not be coded.

**Table 84. Agreement with teaching medical students at Harvard Pilgrim**

<table>
<thead>
<tr>
<th>Agreement with teaching at HP</th>
<th>Strongly agree or agree</th>
<th>Neither agree not disagree</th>
<th>Strongly disagree or disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>n (%)</td>
<td>102 (86)</td>
<td>12 (10)</td>
<td>5 (4)</td>
</tr>
</tbody>
</table>

**Table 85. Reasons why members thought that Harvard Pilgrim should train medical students**

<table>
<thead>
<tr>
<th>Reason why Harvard Pilgrim should train medical students</th>
<th>Number of members who agreed (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Create better doctors</td>
<td>78 (76)</td>
</tr>
<tr>
<td>Teach about HMOs and managed care</td>
<td>63 (62)</td>
</tr>
<tr>
<td>Contribute to future of medicine</td>
<td>61 (60)</td>
</tr>
<tr>
<td>Hire future doctors</td>
<td>44 (43)</td>
</tr>
</tbody>
</table>

The majority of respondents thought that teaching increases the clinical skills of precepting clinicians (72%). A minority thought that teaching increases cost to members (13%), and affects the confidentiality of patient information (21%) (Table 86). These results are similar to those seen in the adult version of the survey.

**Table 86. Effects of teaching medical students at Harvard Pilgrim**

(figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Possible effect</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Missing values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increases cost to members n=122</td>
<td>16 (13)</td>
<td>55 (45)</td>
<td>51 (42)</td>
<td>3</td>
</tr>
<tr>
<td>Affects confidentiality of patient information n=122</td>
<td>26 (21)</td>
<td>29 (24)</td>
<td>67 (55)</td>
<td>3</td>
</tr>
<tr>
<td>Increases the clinical skill of teaching clinicians n=122</td>
<td>88 (72)</td>
<td>27 (22)</td>
<td>7 (6)</td>
<td>3</td>
</tr>
</tbody>
</table>

One hundred and eighteen respondents answered the question on what medical students are allowed to do. A similar number of respondents felt they knew what medical students are allowed to do and either did not know or were not sure. Fifty nine (50%) knew what medical students are allowed to do, 29 (25%) did not know, and 30 (25%) were not sure.
Effect of medical student participation on child's medical care

Respondents were asked about the effects of medical student teaching on their child's care (Table 87). The majority in each case tended to answer in the middle of the scale, indicating a neutral or small effect. More thought that teaching increases (21, 18%), rather than reduces (6, 5%) patient understanding. Teaching was thought to enhance communication (22, 18%) by more people than to impair communication (12, 10%). More thought it would be a good experience (37, 30%), than bad (10, 8%), and have a major impact on care (23, 19%), rather than no overall impact (14, 12%). A similar number of respondents would be at ease (14, 12%) and uncomfortable (15, 12%). More parents thought that teaching would be anxiety producing (17, 14%) than relieving (9, 7%). The percentage of parents who thought teaching would be anxiety producing was higher than that in the adult survey. Teaching was seen as time consuming (46, 38%), rather than time saving (3, 2%).

Table 87. Effect of medical student participation on child's medical care
(figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect on care</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Missing values</th>
</tr>
</thead>
<tbody>
<tr>
<td>reduces patient or parent’s understanding of problems n=120</td>
<td>6 (5)</td>
<td>93 (78)</td>
<td>21 (18)</td>
<td>5</td>
</tr>
<tr>
<td>would make the patient or parent feel uncomfortable n=122</td>
<td>15 (12)</td>
<td>93 (76)</td>
<td>14 (12)</td>
<td>3</td>
</tr>
<tr>
<td>is anxiety relieving n=122</td>
<td>9 (7)</td>
<td>96 (79)</td>
<td>17 (14)</td>
<td>3</td>
</tr>
<tr>
<td>is time saving n=122</td>
<td>3 (2)</td>
<td>73 (60)</td>
<td>46 (38)</td>
<td>3</td>
</tr>
<tr>
<td>impairs communication with the clinician n=122</td>
<td>12 (10)</td>
<td>88 (72)</td>
<td>22 (18)</td>
<td>3</td>
</tr>
<tr>
<td>is a good experience n=122</td>
<td>37 (30)</td>
<td>75 (62)</td>
<td>10 (8)</td>
<td>3</td>
</tr>
<tr>
<td>has no overall impact on care n=121</td>
<td>14 (12)</td>
<td>84 (69)</td>
<td>23 (19)</td>
<td>4</td>
</tr>
</tbody>
</table>

Respondents were asked who they would like to ask them if a medical student could be present during a routine physical for their child and when they would prefer to be asked (Tables 88 and 89). The majority (57%) would prefer to be asked by the clinician. When the request should be made was less clear, with similar numbers preferring when the appointment is made, when they arrive at the office, and when they first see the clinician. These figures are similar to those for the adult survey.
Table 88. Who would members prefer to ask them if a medical student can participate in their child’s visit?

<table>
<thead>
<tr>
<th>Who should invite participation</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Receptionist</td>
<td>14 (12)</td>
</tr>
<tr>
<td>Person who shows you to the exam room</td>
<td>17 (14)</td>
</tr>
<tr>
<td>Clinician</td>
<td>70 (57)</td>
</tr>
<tr>
<td>No special preference</td>
<td>21 (17)</td>
</tr>
</tbody>
</table>

Table 89. When should the request for medical student participation be made?

<table>
<thead>
<tr>
<th>When should request be made?</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>When appointment is made</td>
<td>34 (28)</td>
</tr>
<tr>
<td>When reminder telephone call is made the day before</td>
<td>9 (8)</td>
</tr>
<tr>
<td>When parent and child arrive at the office</td>
<td>29 (24)</td>
</tr>
<tr>
<td>When parent and child first see clinician</td>
<td>33 (28)</td>
</tr>
<tr>
<td>No special preference</td>
<td>15 (13)</td>
</tr>
</tbody>
</table>

Parents were also asked how they would prefer to be invited to have a medical student take part in the visit (Table 90). The majority (73%) preferred that both they and their child were asked, assuming the child is old enough to understand. Fifty nine percent of responders (n=73) thought an eight year old child should be asked if a medical student can be present. Thirty seven percent (n=45) thought that a child aged five should be asked.

Table 90. How would members prefer to be asked if a medical student can participate in their child’s visit?

<table>
<thead>
<tr>
<th>How should invitation be made</th>
<th>n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Child is asked in presence of parent</td>
<td>13 (11)</td>
</tr>
<tr>
<td>Child and parent are asked</td>
<td>90 (73)</td>
</tr>
<tr>
<td>Parent only is asked</td>
<td>15 (12)</td>
</tr>
<tr>
<td>No special preference</td>
<td>5 (4)</td>
</tr>
</tbody>
</table>

Parent and patient comfort with different student activities

Members were asked how comfortable they and their child would be with certain student activities (Table 91). Respondents either were comfortable with, or did not have strong feelings about a student observing the visit, the student asking the adult questions while the clinician listens, the student asking the child questions, and the student examining the child’s heart and lungs, or ears. Parents were more uncomfortable with the student asking
questions and examining the heart and lungs while the clinician was out of the room, even though the clinician would repeat both.

Table 91. Student activities that affect patient or parent comfort
(figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Student activity</th>
<th>Uncomfortable</th>
<th>Neither</th>
<th>Comfortable</th>
<th>Missing values</th>
</tr>
</thead>
<tbody>
<tr>
<td>student observes n=122</td>
<td>4 (3)</td>
<td>36 (30)</td>
<td>82 (67)</td>
<td>3</td>
</tr>
<tr>
<td>student asks parent questions, clinician observes n=123</td>
<td>15 (12)</td>
<td>43 (35)</td>
<td>65 (53)</td>
<td>2</td>
</tr>
<tr>
<td>student asks child questions, clinician observes n=123</td>
<td>20 (16)</td>
<td>44 (36)</td>
<td>59 (48)</td>
<td>2</td>
</tr>
<tr>
<td>student examines heart and lungs under supervision n=123</td>
<td>12 (10)</td>
<td>49 (40)</td>
<td>62 (50)</td>
<td>2</td>
</tr>
<tr>
<td>student questions and examines, clinician is out of room then repeats both n=123</td>
<td>41 (33)</td>
<td>43 (35)</td>
<td>39 (32)</td>
<td>2</td>
</tr>
<tr>
<td>student examines ears n=123</td>
<td>25 (20)</td>
<td>59 (48)</td>
<td>39 (32)</td>
<td>2</td>
</tr>
<tr>
<td>student and clinician both examine ears n=123</td>
<td>7 (6)</td>
<td>29 (24)</td>
<td>87 (71)</td>
<td>2</td>
</tr>
</tbody>
</table>

Cases and exposed members
Ten cases, who had documented exposure to medical students classified themselves as unexposed (20%). There is a possibility that the respondent was not the parent or guardian who accompanied the child on the visit. Twenty four controls had seen a medical student with their child at Harvard Pilgrim (33%).

Differences between cases and controls
There were 51 cases and 74 controls in the respondent group. Fewer controls understood what medical students are allowed to do (Fisher’s exact test (2 Tail) p< 0.05, Table 92 ).

129
Table 92. Whether parents understood what medical students are allowed to do while participating in patient care, by cases and controls

n=117 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Understanding of what medical students are allowed to do*</th>
<th>Yes</th>
<th>No</th>
<th>Not sure</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cases n=46</td>
<td>27  (59)</td>
<td>5  (11)</td>
<td>14  (30)</td>
</tr>
<tr>
<td>Controls n=71</td>
<td>32  (45)</td>
<td>23 (32)</td>
<td>16  (23)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.05

There were no other significant differences between cases and controls.

Differences between exposed and unexposed

Sixty four exposed members (of 66 total), and fifty one unexposed (of 59) answered the question on where they obtained their greatest impressions of medical students. There was a significant difference between the two groups (Fisher’s exact test (2 Tail) p<0.001) (Table 93).

Table 93. Greatest impressions of medical students among exposed and unexposed

n=115 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Source of impressions*</th>
<th>Exposed n= 64</th>
<th>Unexposed n= 51</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvard Pilgrim</td>
<td>20 (31)</td>
<td>1 (2)</td>
</tr>
<tr>
<td>Elsewhere</td>
<td>13 (20)</td>
<td>33 (65)</td>
</tr>
<tr>
<td>Experience at HP and elsewhere similar impact</td>
<td>26 (41)</td>
<td>3 (6)</td>
</tr>
<tr>
<td>No experience</td>
<td>5 (8)</td>
<td>14 (27)</td>
</tr>
</tbody>
</table>

* Fisher’s exact test (2 Tail) p<0.001

More exposed members thought that medical student teaching increases clinician skills (Fisher’s exact test (2 Tail) p<0.05, Table 94). There were no other significant differences between exposed and unexposed.
Table 94. Whether parents believed that teaching medical students at Harvard Pilgrim increases the clinical skill of teaching clinicians, by exposed and unexposed

\[\text{n=116 (figures in brackets are percentages)}\]

<table>
<thead>
<tr>
<th>Teaching increases clinician skill*</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed (n=64)</td>
<td>53 (83)</td>
<td>10 (16)</td>
<td>1 (2)</td>
</tr>
<tr>
<td>Unexposed (n=52)</td>
<td>32 (62)</td>
<td>16 (31)</td>
<td>4 (8)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) \(p<0.05\)

Responses of those who disagree with medical student teaching at Harvard Pilgrim

Only five parents or guardians disagreed with teaching at Harvard Pilgrim. In view of the small number of respondents in this category meaningful interpretation of differences between this group and those who agreed with teaching cannot be made.

Comparison of those exposed at Harvard Pilgrim who had greatest impressions from Harvard Pilgrim versus those with greatest impressions from elsewhere.

There were no statistically significant differences between sub groups.

Demographic differences in responses

There was a statistical difference between male and female respondents in that a greater percentage of males agreed that teaching increases cost to members (Fisher’s exact test (2 Tail) \(p<0.05\), Table 95).

Table 95. Whether parents believed that teaching medical students at Harvard Pilgrim increases the cost to members, by gender of respondent

\[\text{n=122 (figures in brackets are percentages)}\]

<table>
<thead>
<tr>
<th>Teaching increases cost to members*</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male (n=20)</td>
<td>6 (30)</td>
<td>6 (30)</td>
<td>8 (40)</td>
</tr>
<tr>
<td>Female (n=102)</td>
<td>10 (10)</td>
<td>49 (48)</td>
<td>43 (42)</td>
</tr>
</tbody>
</table>

Fisher’s exact test (2 Tail) \(p<0.05\)
Comparison of adult and pediatric responses to general questions about medical student teaching

Responses to the general questions about medical student teaching on the adult and pediatric questionnaires (Questions 1, 2 and 3) were similar in both groups, except for the question asking members whether they felt they knew what medical students are allowed to do. A slightly higher percentage of parents or guardians felt they knew what students were allowed to do, compared with the adult respondents (50% versus 43%).
5. Resident Training Survey

Overall frequencies of each variable

The total number of completed responses received was 184. One hundred and fifty five respondents answered the question about remembering a visit to a resident at Harvard Pilgrim. Sixty one (39%) respondents remembered seeing a resident at Harvard Pilgrim, 66 (43%) had not seen a resident, and 28 (18%) were not sure. The reason for this visit was given in 57 cases, a first visit for an illness (26, 46%), a follow up visit (19, 33%) and a routine physical (12, 21%). In 21 (37%) of these cases the resident was the patient’s primary care doctor, in 20 (35%) the resident saw the patient instead of the regular primary care doctor, and 16 (28%) visits were to urgent care.

One hundred and seventy six respondents answered the question about experience with residents elsewhere. Sixty five (37%) respondents had seen a resident elsewhere, 83 (47%) had not, and 28 (16%) were unsure.

Of the 184 respondents, eighty three (45%) had been members for less than five years, 63 (34%) for 5 to 15 years and 38 (20%) for over 15 years. A majority of the 184 respondents were under 40 years of age (108, 59%), 57 (31%) were 40 to 64, and only 19 (10%) were 65 or over. There were 104 (58%) women and 74 (42%) men. Six respondents did not give their gender. This was a highly educated group, 179 answered the question on education, 122 (68%) being four year college graduates, or having a post-graduate degree. The majority of the 177 who answered the question on racial group described their racial group as white or Caucasian (124, 70%), there were 23 (13%) respondents of African American race.

One hundred and sixty nine respondents answered the question on the experience which had made the greatest impressions on their views of residents. The number of responders who had their greatest impressions from residents at Harvard Pilgrim (45, 27%) was similar to the number who had their greatest impression from elsewhere (51, 30%). A small number (12, 7%) described having a similar impact from experiences at Harvard Pilgrim and elsewhere. Sixty one (36%) had no experience with residents.
The majority of the 176 respondents who answered the question (124, 70%) agreed that residents should train to be primary care physicians at Harvard Pilgrim (Table 96). Fourteen respondents (8%) disagreed. Thirty eight (22%) neither agreed nor disagreed. The perceptions of respondents about resident training at Harvard Pilgrim are shown in Table 97.

Table 96. Agreement with training residents at Harvard Pilgrim

<table>
<thead>
<tr>
<th>Agreement with teaching at HP</th>
<th>Strongly agree or agree</th>
<th>Neither agree nor disagree</th>
<th>Strongly disagree or disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>n (%)</td>
<td>124 (70)</td>
<td>38 (22)</td>
<td>14 (8)</td>
</tr>
</tbody>
</table>

Table 97. Aspects of resident training at Harvard Pilgrim
(figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Aspect of training</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Missing values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaches good bedside manners n=180</td>
<td>114 (63)</td>
<td>56 (31)</td>
<td>10 (6)</td>
<td>4</td>
</tr>
<tr>
<td>Potentially lowers the quality of care n=179</td>
<td>42 (23)</td>
<td>50 (28)</td>
<td>87 (49)</td>
<td>5</td>
</tr>
<tr>
<td>Increases the expertise of clinicians who teach n=178</td>
<td>120 (67)</td>
<td>45 (25)</td>
<td>13 (7)</td>
<td>6</td>
</tr>
<tr>
<td>Activity not widely known among members n=177</td>
<td>113 (64)</td>
<td>46 (26)</td>
<td>18 (10)</td>
<td>7</td>
</tr>
<tr>
<td>Can disrupt continuity of care n=175</td>
<td>50 (27)</td>
<td>66 (38)</td>
<td>59 (34)</td>
<td>9</td>
</tr>
<tr>
<td>Promotes up to date, state of the art care n=177</td>
<td>106 (60)</td>
<td>57 (32)</td>
<td>14 (8)</td>
<td>7</td>
</tr>
</tbody>
</table>

Training residents at Harvard Pilgrim was perceived by a small majority of respondents to: teach residents good bedside manners (114, 63%), increase the expertise of clinicians who teach (120, 67%), and promote up to date, state of the art care (106, 60%). Resident training is an activity that is not widely known to members (113, 64%).

Some respondents thought that training residents potentially lowers the quality of care (42, 23%), and can disrupt patient’s continuity of care (50, 29%).

Respondents were asked how they believed receiving care from a resident would affect their care (Table 98). The majority of responses were around the centre of a seven point scale, indicating a neutral, or small effect. More respondents thought that resident care increases (32, 18%) rather than decreases (16, 9%) patient understanding of their health.
problems. Similar numbers thought resident care would make them feel uncomfortable (28, 16%) and at ease (32, 18%), relieve (24, 14%) or produce (21, 12%) anxiety, and impair (30, 17%) or enhance (31, 18%) communication. More people thought that receiving care from a resident would be time consuming (41, 23%) rather than time saving (15, 9%). More respondents thought it would be a good experience (47, 27%) than a bad one (14, 8%), and that seeing a resident would have a major impact on medical care (36, 21%), rather than no overall impact (22, 13%).

Table 98. Effect of resident physician on medical care
(figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect on care</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
<th>Missing values</th>
</tr>
</thead>
<tbody>
<tr>
<td>reduces patient’s understanding of problems n=178</td>
<td>16 (9)</td>
<td>130 (73)</td>
<td>32 (18)</td>
<td>6</td>
</tr>
<tr>
<td>would make the patient feel uncomfortable n=176</td>
<td>28 (16)</td>
<td>116 (66)</td>
<td>32 (18)</td>
<td>8</td>
</tr>
<tr>
<td>is anxiety relieving n=175</td>
<td>24 (14)</td>
<td>130 (74)</td>
<td>21 (12)</td>
<td>9</td>
</tr>
<tr>
<td>is time consuming n=175</td>
<td>41 (23)</td>
<td>119 (68)</td>
<td>15 (9)</td>
<td>9</td>
</tr>
<tr>
<td>impairs communication with the clinician n=176</td>
<td>30 (17)</td>
<td>115 (65)</td>
<td>31 (18)</td>
<td>8</td>
</tr>
<tr>
<td>is a good experience n=177</td>
<td>47 (27)</td>
<td>116 (66)</td>
<td>14 (8)</td>
<td>7</td>
</tr>
<tr>
<td>has no overall impact on care n=172</td>
<td>22 (13)</td>
<td>114 (66)</td>
<td>36 (21)</td>
<td>12</td>
</tr>
</tbody>
</table>

A quarter of the 174 respondents to the question about seeing resident for a routine physical (43, 25%) felt they would be uncomfortable seeing a resident. Sixty one (35%) had no strong view, and 70 (40%) would be comfortable seeing a resident for a routine physical.

If the visit was for review of a chronic problem (Table 99), then more respondents were comfortable if the resident was their regular primary care physician, than if he or she had just reviewed the patient’s medical records. Similarly, for a new health problem, as shown in Table 100, more respondents were comfortable with a resident who is their regular primary care physician, than one who has reviewed the records, or who can get a second opinion.
Table 99. Comfort with seeing a resident for a chronic problem
(figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Uncomfortable</th>
<th>Neither</th>
<th>Comfortable</th>
<th>Missing values</th>
</tr>
</thead>
<tbody>
<tr>
<td>resident is primary care clinician n=179</td>
<td>21 (12)</td>
<td>67 (37)</td>
<td>91 (51)</td>
<td>5</td>
</tr>
<tr>
<td>resident has reviewed records n=179</td>
<td>64 (36)</td>
<td>86 (48)</td>
<td>29 (16)</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 100. Comfort with seeing a resident for a new health problem
(figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Variable</th>
<th>Uncomfortable</th>
<th>Neither</th>
<th>Comfortable</th>
<th>Missing values</th>
</tr>
</thead>
<tbody>
<tr>
<td>resident is primary care clinician n=177</td>
<td>26 (15)</td>
<td>66 (37)</td>
<td>85 (48)</td>
<td>7</td>
</tr>
<tr>
<td>resident has reviewed records n=180</td>
<td>70 (39)</td>
<td>83 (46)</td>
<td>27 (15)</td>
<td>4</td>
</tr>
<tr>
<td>resident can get second opinion n=180</td>
<td>86 (48)</td>
<td>77 (43)</td>
<td>17 (9)</td>
<td>4</td>
</tr>
</tbody>
</table>

Cases and exposed members
Thirty five cases who had seen a resident documented themselves as unexposed, (43% of 82 cases). Twenty five (25%) of the 99 controls had seen a resident at Harvard Pilgrim.

Differences between cases and controls
There were 82 cases and 102 controls in the respondent group. Cases and controls had impressions of resident training from both Harvard Pilgrim and elsewhere (Table 101). There was a significant difference between the groups (Fisher’s exact test (2 Tail) p<0.05), more controls having no experience of residents.
**Table 101. Greatest impressions of resident teaching**

n=166 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Source of greatest impressions*</th>
<th>Cases n = 74</th>
<th>Controls n = 92</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvard Pilgrim</td>
<td>23 (32)</td>
<td>20 (22)</td>
</tr>
<tr>
<td>Elsewhere</td>
<td>21 (28)</td>
<td>30 (33)</td>
</tr>
<tr>
<td>Experience at HP and elsewhere similar impact</td>
<td>9 (12)</td>
<td>3 (3)</td>
</tr>
<tr>
<td>No experience</td>
<td>21 (28)</td>
<td>39 (42)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.05

**Differences between exposed and unexposed**

There were 61 exposed, and 94 unexposed in the respondent group. Twenty nine respondents did not answer the question about exposure to residents at Harvard Pilgrim. Exposed patients were those who documented exposure at Harvard Pilgrim. This group was significantly more likely to believe that receiving care from a resident could increase patient understanding of their health care (Fisher’s exact test (2 Tail) p<0.01, Table 102). Overall, the exposed were more likely to think that exposure to a resident would be a good experience (Fisher’s exact test (2 Tail) p<0.01, Table 103).

**Table 102. Effect of receiving care from a resident on patient’s understanding of health problems, by exposed and unexposed.**

n=152 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect on patient understanding*</th>
<th>Reduces patient understanding</th>
<th>Neither reduces nor increases patient understanding</th>
<th>Increases patient understanding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed n=59</td>
<td>6 (10)</td>
<td>35 (59)</td>
<td>18 (31)</td>
</tr>
<tr>
<td>Unexposed n=93</td>
<td>7 (8)</td>
<td>78 (84)</td>
<td>8 (9)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.01
Table 103. Is receiving care from a resident a good or bad experience, by exposed and unexposed.

n=152 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Receiving care from a resident*</th>
<th>Good experience</th>
<th>Neither a good nor a bad experience</th>
<th>Bad experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed n=59</td>
<td>24 (41)</td>
<td>30 (51)</td>
<td>5 (8)</td>
</tr>
<tr>
<td>Unexposed n=93</td>
<td>18 (19)</td>
<td>69 (74)</td>
<td>6 (6)</td>
</tr>
</tbody>
</table>

*Fisher's exact test (2 Tail) p<0.01

The exposed were more comfortable seeing a resident for a routine physical (Fisher's exact test (2 Tail) p<0.01, Table 104). They also were more comfortable with seeing a resident, who has reviewed their records, for a new problem (Fisher's exact test (2 Tail) p<0.01, Table 105).

Table 104. Effect of seeing a resident for a routine physical on patient comfort, by exposed and unexposed.

n=149 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect on patient comfort*</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed n=59</td>
<td>11 (19)</td>
<td>14 (24)</td>
<td>34 (58)</td>
</tr>
<tr>
<td>Unexposed n=90</td>
<td>26 (29)</td>
<td>37 (41)</td>
<td>27 (30)</td>
</tr>
</tbody>
</table>

*Fisher's exact test (2 Tail) p<0.01

Table 105. Effect of seeing a resident who is not the regular primary care clinician, but has reviewed the medical records, on patient comfort, by exposed and unexposed.

n=154 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect on patient comfort*</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposed n=61</td>
<td>19 (31)</td>
<td>24 (39)</td>
<td>18 (30)</td>
</tr>
<tr>
<td>Unexposed n=93</td>
<td>42 (45)</td>
<td>43 (46)</td>
<td>8 (9)</td>
</tr>
</tbody>
</table>

*Fisher's exact test (2 Tail) p<0.01
The majority of the exposed had their greatest impressions of residents from Harvard Pilgrim, and the unexposed from elsewhere (Table 106). There were no other significant differences between exposed and unexposed.

**Table 106. Greatest impressions of resident teaching**

<table>
<thead>
<tr>
<th>Source of greatest impressions*</th>
<th>Exposed n = 58</th>
<th>Unexposed n = 88</th>
</tr>
</thead>
<tbody>
<tr>
<td>Harvard Pilgrim</td>
<td>39 (67)</td>
<td>2 (2)</td>
</tr>
<tr>
<td>Elsewhere</td>
<td>9 (16)</td>
<td>36 (41)</td>
</tr>
<tr>
<td>Experience at HP and elsewhere similar impact</td>
<td>6 (10)</td>
<td>4 (5)</td>
</tr>
<tr>
<td>No experience</td>
<td>4 (7)</td>
<td>46 (52)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.0001

**Differences in responses of those who agreed and disagreed with resident teaching at Harvard Pilgrim**

Those who disagreed with residents being trained at Harvard Pilgrim were less likely to think that training at Harvard Pilgrim teaches good bedside manners (Fisher’s exact test (2 Tail) p<0.001, Table 107), promotes up to date state of the art care (Fisher’s exact test (2 Tail) p<0.0001, Table 108), or increases the expertise of clinicians who train (Fisher’s exact test (2 Tail) p<0.01, Table 109). They were more likely to think that resident teaching potentially lowers the quality of care (Fisher’s exact test (2 Tail) p<0.01, Table 110), and disrupts the continuity of care (Fisher’s exact test (2 Tail) p<0.01, Table 111).
Table 107. Does training residents at Harvard Pilgrim teach residents good bedside manners, by agreement with training residents
n=173 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Training at HP teaches good bedside manners*</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with training at HP n=122</td>
<td>93 (76)</td>
<td>25 (20)</td>
<td>4 (3)</td>
</tr>
<tr>
<td>Neither agree nor disagree n=37</td>
<td>15 (41)</td>
<td>18 (49)</td>
<td>4 (11)</td>
</tr>
<tr>
<td>Disagree with training at HP n=14</td>
<td>4 (29)</td>
<td>8 (57)</td>
<td>2 (14)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.001

Table 108. Does training residents at Harvard Pilgrim promote up-to-date ‘state of the art’ care, by agreement with training residents
n=171 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Training at HP promotes state of the art care*</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with training at HP n=121</td>
<td>90 (74)</td>
<td>24 (20)</td>
<td>7 (6)</td>
</tr>
<tr>
<td>Neither agree nor disagree n=36</td>
<td>12 (33)</td>
<td>23 (64)</td>
<td>1 (3)</td>
</tr>
<tr>
<td>Disagree with training at HP n=14</td>
<td>3 (21)</td>
<td>5 (36)</td>
<td>6 (43)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.0001
Table 109. Does training residents at Harvard Pilgrim increase the clinical expertise of clinicians who train, by agreement with training residents
n=172 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Training at HP increases clinical expertise*</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with training at HP n=121</td>
<td>96 (79)</td>
<td>20 (17)</td>
<td>5 (4)</td>
</tr>
<tr>
<td>Neither agree nor disagree n=37</td>
<td>17 (46)</td>
<td>17 (46)</td>
<td>3 (8)</td>
</tr>
<tr>
<td>Disagree with training at HP n=14</td>
<td>4 (29)</td>
<td>5 (36)</td>
<td>5 (36)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.0001

Table 110. Does training residents at Harvard Pilgrim potentially lower the quality of care, by agreement with training residents
n=172 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Training at HP lowers the quality of care*</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with training at HP n=121</td>
<td>23 (19)</td>
<td>30 (25)</td>
<td>68 (56)</td>
</tr>
<tr>
<td>Neither agree nor disagree n=37</td>
<td>8 (22)</td>
<td>14 (38)</td>
<td>15 (41)</td>
</tr>
<tr>
<td>Disagree with training at HP n=14</td>
<td>9 (64)</td>
<td>3 (21)</td>
<td>2 (14)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.01
Table 111. Does training residents at Harvard Pilgrim disrupt patients continuity of care, by agreement with training residents
n=168 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Training at HP disrupts continuity*</th>
<th>Agree</th>
<th>Neither agree nor disagree</th>
<th>Disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with training at HP n=119</td>
<td>31 (26)</td>
<td>41 (34)</td>
<td>47 (39)</td>
</tr>
<tr>
<td>Neither agree nor disagree n=35</td>
<td>8 (23)</td>
<td>17 (49)</td>
<td>10 (29)</td>
</tr>
<tr>
<td>Disagree with training at HP n=14</td>
<td>10 (72)</td>
<td>2 (14)</td>
<td>2 (14)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.01

Greater numbers of those who disagreed with training would feel more uncomfortable seeing a resident (Fisher’s exact test (2 Tail) p<0.01, Table 112), be more anxious (Fisher’s exact test (2 Tail) p<0.0001, Table 113), and thought communication would be impaired (Fisher’s exact test (2 Tail) p<0.01, Table 114). They were more likely to think that seeing a resident would be a bad experience than those who agreed with training, or neither agreed nor disagreed (Fisher’s exact test (2 Tail) p<0.01, Table 115).
Table 112. Effect of receiving care from a resident on patient's comfort, by agreement with training residents
n=170 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect on patient comfort*</th>
<th>Make patient uncomfortable</th>
<th>Neither uncomfortable nor at ease</th>
<th>Make patient feel at ease</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with training at HP</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=120</td>
<td>12 (10)</td>
<td>82 (68)</td>
<td>26 (22)</td>
</tr>
<tr>
<td>Neither agree nor disagree n=36</td>
<td>7 (19)</td>
<td>24 (67)</td>
<td>5 (14)</td>
</tr>
<tr>
<td>Disagree with training at HP</td>
<td>8 (57)</td>
<td>5 (36)</td>
<td>1 (7)</td>
</tr>
</tbody>
</table>

*Fisher's exact test (2 Tail) p<0.01

Table 113. Effect of receiving care from a resident on patient's anxiety, by agreement with training residents
n=169 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect on patient anxiety*</th>
<th>Anxiety relieving</th>
<th>Neither anxiety relieving nor provoking</th>
<th>Anxiety provoking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with training at HP</td>
<td>22 (18)</td>
<td>91 (75)</td>
<td>8 (7)</td>
</tr>
<tr>
<td>n=121</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Neither agree nor disagree n=35</td>
<td>2 (6)</td>
<td>29 (83)</td>
<td>4 (11)</td>
</tr>
<tr>
<td>Disagree with training at HP</td>
<td>0 (0)</td>
<td>5 (38)</td>
<td>8 (62)</td>
</tr>
</tbody>
</table>

*Fisher's exact test (2 Tail) p<0.0001
Table 114. Effect of receiving care from a resident on communication between doctor and patient, by agreement with training residents
n=170 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect on communication*</th>
<th>Impairs communication</th>
<th>Neither impairs nor enhances</th>
<th>Enhances communication</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with training at HP n=121</td>
<td>16 (13)</td>
<td>77 (64)</td>
<td>28 (23)</td>
</tr>
<tr>
<td>Neither agree nor disagree n=36</td>
<td>6 (17)</td>
<td>27 (75)</td>
<td>3 (8)</td>
</tr>
<tr>
<td>Disagree with training at HP n=14</td>
<td>7 (54)</td>
<td>6 (46)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.01

Table 115. Receiving care from a resident is a good/bad experience, by agreement with training residents
n=171 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Effect on experience*</th>
<th>Good experience</th>
<th>Neither a good nor a bad experience</th>
<th>Bad experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with training at HP n=121</td>
<td>40 (33)</td>
<td>74 (61)</td>
<td>7 (6)</td>
</tr>
<tr>
<td>Neither agree nor disagree n=36</td>
<td>4 (11)</td>
<td>30 (83)</td>
<td>2 (6)</td>
</tr>
<tr>
<td>Disagree with training at HP n=14</td>
<td>3 (21)</td>
<td>7 (50)</td>
<td>4 (29)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.01

Those who disagreed with training were significantly more uncomfortable seeing a resident, even if it was their regular primary care physician, for a chronic problem (Fisher’s exact test (2 Tail) p<0.001, Table 116). Similarly, if the resident had reviewed
the medical record (Fisher’s exact test (2 Tail) p<0.05, Table 117). More of those who disagreed with training would feel uncomfortable seeing a resident for a new problem under any of the circumstances described (Table 118, Fisher’s exact test (2 Tail) p<0.001, Table 119, Fisher’s exact test (2 Tail) p<0.01, Table 120, Fisher’s exact test (2 Tail) p<0.05).

Table 116. Comfort with seeing a resident, who is the patient’s regular primary care doctor, for a review of a chronic health problem, by agreement with training residents n=171 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Patient comfort*</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with training at HP n=121</td>
<td>9 (7)</td>
<td>38 (31)</td>
<td>74 (61)</td>
</tr>
<tr>
<td>Neither agree nor disagree n=36</td>
<td>6 (17)</td>
<td>20 (56)</td>
<td>10 (28)</td>
</tr>
<tr>
<td>Disagree with training at HP n=14</td>
<td>4 (29)</td>
<td>6 (43)</td>
<td>4 (29)</td>
</tr>
</tbody>
</table>

*Fisher’s exact test (2 Tail) p<0.001
Table 117. Comfort with seeing a resident, who is not the patient's regular primary care doctor but has reviewed the medical records, for a review of a chronic health problem, by agreement with training residents
n=171 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Patient comfort*</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with training at HP n=121</td>
<td>36 (30)</td>
<td>61 (50)</td>
<td>24 (20)</td>
</tr>
<tr>
<td>Neither agree nor disagree n=36</td>
<td>15 (42)</td>
<td>18 (50)</td>
<td>3 (8)</td>
</tr>
<tr>
<td>Disagree with training at HP n=14</td>
<td>10 (71)</td>
<td>3 (21)</td>
<td>1 (7)</td>
</tr>
</tbody>
</table>

*Fisher's exact test (2 Tail) p<0.05

Table 118. Comfort with seeing a resident who is the patient's regular primary care doctor, for a new health problem, by agreement with training residents
n=170 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Patient comfort*</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with training at HP n=120</td>
<td>7 (6)</td>
<td>47 (39)</td>
<td>66 (55)</td>
</tr>
<tr>
<td>Neither agree nor disagree n=36</td>
<td>10 (28)</td>
<td>13 (36)</td>
<td>13 (36)</td>
</tr>
<tr>
<td>Disagree with training at HP n=14</td>
<td>6 (43)</td>
<td>4 (29)</td>
<td>4 (29)</td>
</tr>
</tbody>
</table>

*Fisher's exact test (2 Tail) p<0.001
Table 119. Comfort with seeing a resident, who is not the patient's regular primary care doctor but has reviewed the medical records, for a new health problem, by agreement with training residents

n=172 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Patient comfort*</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with training at HP n=122</td>
<td>36 (30)</td>
<td>63 (52)</td>
<td>23 (19)</td>
</tr>
<tr>
<td>Neither agree nor disagree n=36</td>
<td>17 (47)</td>
<td>16 (44)</td>
<td>3 (8)</td>
</tr>
<tr>
<td>Disagree with training at HP n=14</td>
<td>11 (79)</td>
<td>3 (21)</td>
<td>0 (0)</td>
</tr>
</tbody>
</table>

*Fisher's exact test (2 Tail) p<0.01

Table 120. Comfort with seeing a resident who has limited personal experience with the condition but can get a second opinion at any time, for a new health problem, by agreement with training residents

n=172 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Patient comfort*</th>
<th>Uncomfortable</th>
<th>Neither uncomfortable nor comfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agree with training at HP n=122</td>
<td>47 (39)</td>
<td>59 (48)</td>
<td>16 (13)</td>
</tr>
<tr>
<td>Neither agree nor disagree n=36</td>
<td>23 (64)</td>
<td>13 (36)</td>
<td>0 (0)</td>
</tr>
<tr>
<td>Disagree with training at HP n=14</td>
<td>9 (64)</td>
<td>4 (29)</td>
<td>1 (7)</td>
</tr>
</tbody>
</table>

*Fisher's exact test (2 Tail) p<0.05
Comparison of those exposed at Harvard Pilgrim who had greatest impressions from Harvard Pilgrim versus those with greatest impressions from elsewhere

There were no statistically significant differences between sub groups.

Demographic differences in responses

Analysis of the effects of age on responses showed a mixed picture, with no clear pattern emerging. There were no significant differences for the other demographic variables.
6. Analysis of responders versus non-responders
Comparison of responders and non-responders by age, gender, health center and case/control was conducted for each arm. All statistical tests used the \( \chi^2 \) test and were conducted using the SAS statistical software system. In addition, the responses to the follow up short telephone surveys were compared with responses to the mailed questionnaire. The data were collapsed in the same way as the main survey data. Tests of statistical significance were not conducted as the circumstances of administration of the questionnaires were very different and the sample sizes of telephone surveys were small. As the numbers of telephone responses are small, these results should be interpreted with caution.

1. Adult Research Survey non-responders
There were significantly more cases than controls in the responder group, and fewer cases than controls in the non-respondent group (\( \chi^2 = 4.78 \) 1 DF; \( p<0.05 \), Table 121).
There were also significantly fewer members aged 40 to 64, and more older members (65 and over), in the responder group (\( \chi^2 = 11.58 \) 2 DF; \( p<0.01 \), Table 122). The blank questionnaires that were returned were included in the respondent group.

Table 121. Cases and controls among respondents and non-respondents to adult research survey
n= 376 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Case/control</th>
<th>Cases n=188</th>
<th>Controls n=188</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondents n=213</td>
<td>117 (55)</td>
<td>96 (45)</td>
</tr>
<tr>
<td>Non respondents n=163</td>
<td>71 (44)</td>
<td>92 (56)</td>
</tr>
</tbody>
</table>

*\( \chi^2 = 4.78 \) 1 DF; \( p<0.05 \)

Table 122. Age of respondents and non-respondents to adult research survey
n= 376 (figures in brackets are percentages)

<table>
<thead>
<tr>
<th>Age*</th>
<th>Under 40 years n=80</th>
<th>40 to 64 years n=231</th>
<th>65 and over n=65</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondents n=213</td>
<td>48 (23)</td>
<td>117 (55)</td>
<td>48 (23)</td>
</tr>
<tr>
<td>Non respondents n=163</td>
<td>32 (20)</td>
<td>114 (70)</td>
<td>17 (10)</td>
</tr>
</tbody>
</table>

*\( \chi^2 = 11.58 \) 2 DF; \( p<0.01 \)
Responses to telephone survey n= 16

There were six cases and 10 controls in the telephone survey respondent group. Six (38%) respondents remembered participating in research at Harvard Pilgrim.

A lower percentage of respondents agreed that Harvard Pilgrim should actively participate in research than in the mailed survey (67% versus 94%). The remainder did not agree or disagree with research. However, a similar percentage agreed that Harvard Pilgrim should conduct research on members' medical records (75% versus 77%).

A higher percentage of the telephone group thought that taking part in research would be a good experience (75% versus 67%). Fewer telephone respondents thought that research would have a major impact on care (major impact 25% versus 49%).

In summary, it appears that the telephone respondents did not agree as strongly with Harvard Pilgrim conducting research. However, their views on medical record research were similar to the mail survey respondents.

2. Pediatric Research Survey non-responders

There were no significant differences between the responder and non responder groups with respect to number of cases and controls, gender or age of the child, and health center.

Responses to telephone survey n= 12

There were six cases and six controls in the telephone survey respondent group. Two respondents (17%) remembered participating in research at Harvard Pilgrim. In one case this was a child who had participated, in the other case it was both parent and child.

A lower percentage of respondents agreed that Harvard Pilgrim should actively participate in research than in the mailed survey (75% versus 98%). One respondent did not agree or disagree with research, and two disagreed (17%). However, a similar percentage agreed that Harvard Pilgrim should conduct research on members' medical records (75% versus 70%).
A lower percentage of the telephone group thought that taking part in research would be a good experience (25% versus 50%). Fewer telephone respondents thought that research would have a major impact on care (major impact 17% versus 73%).

In summary it appears that the telephone respondents did not agree as strongly with Harvard Pilgrim conducting research. Fewer thought that taking part in research would be a good experience and that participating in research would have a major impact on their medical care. However, their views on medical record research were similar.

3. Adult Medical Student Survey non-responders
There were significantly more older patients (over 65), and significantly fewer younger patients (under 40) in the responder group ($\chi^2=22.18$ 2DF; $p<0.01$) Table 123. There were no other significant differences.

<table>
<thead>
<tr>
<th>Age*</th>
<th>Under 40 years n=152</th>
<th>40 to 64 years n=251</th>
<th>65 and over n=85</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondents n=254</td>
<td>65 (26)</td>
<td>126 (50)</td>
<td>63 (25)</td>
</tr>
<tr>
<td>Non-respondents n=234</td>
<td>87 (37)</td>
<td>125 (53)</td>
<td>22 (9)</td>
</tr>
</tbody>
</table>

*$\chi^2=22.18$ 2DF; $p<0.01$

Responses to telephone survey n= 24
There were nine cases and 15 controls in the telephone survey respondent group. Eleven (46%) respondents remembered a visit to Harvard Pilgrim at which a medical student was present.

A slightly lower percentage of respondents agreed that Harvard Pilgrim should actively participate in medical student teaching when compared with the mail survey (67% versus 74%). The remainder did not agree or disagree with teaching.
A higher percentage of the telephone group thought that having a medical student present would be a good experience (42% versus 32%), but that a medical student would have a major impact on care (major impact 50% versus 33%).

In summary it appears that the telephone respondents had similar views about Harvard Pilgrim teaching medical students. Their views on medical students and their effect on care suggest that some think it might be a good experience, but have a major impact on care.

4. Pediatric Medical Student Survey non-responders

There were significantly more controls than cases in the responder group ($\chi^2=5.44, 1$ DF; $p<0.05$, Table 124). There were no other significant differences.

Table 124. Cases and controls among respondents and non-respondents to pediatric medical student survey

<table>
<thead>
<tr>
<th></th>
<th>Cases n=149</th>
<th>Controls n=149</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondents</td>
<td></td>
<td></td>
</tr>
<tr>
<td>n=132</td>
<td>56 (42)</td>
<td>76 (58)</td>
</tr>
<tr>
<td>Non-respondents</td>
<td>93 (56)</td>
<td>73 (44)</td>
</tr>
<tr>
<td>n=166</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*$\chi^2 = 6.14, 2$DF; $p<0.05$

Responses to telephone survey n= 15

There were eight cases and seven controls in the telephone survey respondent group. Eight (53%) respondents remembered a visit to Harvard Pilgrim at which a medical student was present. In seven cases the visit was for a child, in one case both parent and child had seen medical students.

A lower percentage of respondents agreed that Harvard Pilgrim should actively participate in medical student teaching when compared with the mail survey (73% versus 86%). The remainder did not agree or disagree with teaching (2), or disagreed (1).
A higher percentage of the telephone group thought that having a medical student present would be a good experience (40% versus 30%). The telephone respondents had a wider range of responses to the impact of a medical student on care. Twenty seven percent thought there would be no impact, whereas only 12% of mail survey responders thought there would be no impact. Twenty seven percent also thought that a medical student would have a major impact on care (major impact 27% versus 19%).

In summary it appears that the telephone respondents had a less positive view about Harvard Pilgrim conducting medical student teaching. Their views on medical students and their effect on care suggest that some of them think it might be a good experience, but responses to the impact on care were more varied.

5. Resident Survey

The respondent and non respondent groups were significantly different in terms of age. There were more individuals in the middle age range (40 to 64 years), and fewer younger and older people, in the non-respondent group, ($\chi^2 = 6.14 \ 2 \ DF; \ p<0.05$, Table 125). There were no other significant differences.

<table>
<thead>
<tr>
<th>Table 125. Age of respondents and non-respondents to resident survey</th>
</tr>
</thead>
<tbody>
<tr>
<td>n= 500 (figures in brackets are percentages)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age(^*)</th>
<th>Under 40 years</th>
<th>40 to 64 years</th>
<th>65 and over</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondents n=213</td>
<td>122 (57)</td>
<td>64 (30)</td>
<td>27 (13)</td>
</tr>
<tr>
<td>Non respondents n=287</td>
<td>42 (45)</td>
<td>43 (46)</td>
<td>8 (9)</td>
</tr>
</tbody>
</table>

*\(\chi^2 = 6.14 \ 2\ DF; \ p<0.05\)

Responses to telephone survey n= 23

There were seventeen cases and six controls in the telephone survey respondent group. Twelve (53%) respondents remembered a visit to Harvard Pilgrim at which a resident was present.
A lower percentage of respondents agreed that Harvard Pilgrim should actively participate in resident training when compared with the mail survey (61% versus 71%). Three respondents did not agree with teaching (13% versus 8%).

A higher percentage of the telephone group thought that seeing a resident would be a good experience (44% versus 26%). The telephone respondents thought that seeing a resident would have a similar impact on care as the mail survey respondents did.

In summary, it appears that the telephone respondents had less positive views about Harvard Pilgrim training residents. However, some individuals thought that seeing a resident might be a good experience.
VII. DISCUSSION AND CONCLUSION

Limitations of the study design and methodology
The aim of this study was to assess patient perceptions of, and reactions to, teaching and research within a managed care plan. Harvard Pilgrim provided an unusual setting for this study, because of its long standing association with Harvard Medical School.

There are only two published studies addressing patient perceptions of teaching in managed care, Kirtz and Larsen included four questions about medical student and resident teaching in a general patient satisfaction survey, two questions asked about exposure to these activities, and two about satisfaction or dissatisfaction with the experience (Kirtz and Larsen, 1986). Sheets assessed patient satisfaction with gynecology residents in an academic HMO (Sheets et al. 1990). A number of studies addressing patient perceptions of residents and medical students in other clinical settings in the United States are available. There has also been work about patient views of medical students in other countries, including the United Kingdom. There is no published work addressing patient views of research in managed care. There are some studies of patient views about research, particularly about clinical trials investigating treatment options for serious illness.

As there was little previous work about managed care on which to base research questions, the existing literature was used to highlight the issues that may be pertinent. However, the relevance of previous research findings to the managed care population could not be assumed. Once the research questions had been formulated, using the literature, and by discussion with researchers and educationalists from Harvard Medical School, from other academic medical centers in the United States, and the United Kingdom, interviews were conducted with individuals working closely with research and teaching programs. This information was used to design focus group discussion guides. The legitimacy of the questions was tested in the focus groups, where participants were invited to raise other issues that they felt to be important. Information from the focus groups was then used to design the member surveys.
Potential bias introduced by the study setting and methodology

One bias that could have been introduced into the study was that the interests of Harvard Pilgrim Health Care influenced the study methodology and findings. Like the majority of health care providers in the United States, including university teaching hospitals and medical centers, Harvard Pilgrim is a commercial organization. However, it is a not-for-profit organization, i.e. it has a similar status to a UK charity and is not run for financial gain.

The concept of conducting research within a commercial organization may be considered unusual within health services research in the United Kingdom. However, because of the nature of health care provision, such a research environment is the norm within the United States. This raises the issue of the impact of research findings on the commercial well-being of the organization, and whether this affected the research methodology or findings. Harvard Pilgrim has a commitment to providing good quality health care. Through an independent Foundation it supports health care, and non-health care related, research, teaching and service development activities in Boston and surrounding areas. However, it also has to maintain membership levels and patient satisfaction in order to continue as a viable organization.

This study was not commissioned by Harvard Pilgrim Health Care. The findings were presented to the boards of the HMO and the Foundation only after completion of the study. Certain aspects of the study findings could be considered to be counter to the interests of a commercial HMO. The additional costs of research and teaching are considerable and can result in a managed care plan becoming uncompetitive in the marketplace (Skirboll, 1997). In addition, as the study showed, the satisfaction of individual patients can be compromised by interaction with medical students and residents.

The following steps were taken in order to try and avoid the introduction of bias. At each stage in the process, external advice was sought on the further development of the study.

The internal study advisers were members of an academic department set up jointly by Harvard Medical School and Harvard Pilgrim Health Care. However, the author was a
visiting fellow at Harvard Medical School and was not associated with Harvard Pilgrim Health Care. The study was funded in part by the Harvard Pilgrim Health Care Foundation. The Foundation is independent of the management and administration of Harvard Pilgrim Health Care. Grants are awarded as the result of a peer review process.

The research questions were generated in response to the findings available in the literature at the time. Researchers outside Harvard Pilgrim were consulted prior to setting of the research questions and the design of the focus group discussion guides. The external (University of London) adviser to the study was consulted prior to commencement of the study, prior to the focus group discussions regarding the research questions and discussion guides, and prior to the finalization of the questionnaires.

An external researcher, who was experienced in qualitative research methods, advised on the final focus group discussion guides, moderated the focus group discussions and provide an independent analysis of the findings. She explicitly stated that she was not associated with Harvard Pilgrim or Harvard Medical School prior to moderating the focus group discussions.

The focus groups were used to ascertain the views of participants, the findings were then used to design the questionnaire surveys. Any biases in the focus group discussions were therefore potentially carried through to the survey instruments. This is a potential limitation of a study that used qualitative techniques to gather information that is then used to design a questionnaire to ascertain the views of a wider sample. However, the use of qualitative information from focus groups to design and test survey questions is well established (Fowler, 1993) (Wolff et al. 1993). In addition, the use of sequential triangulation, in this case qualitative research followed by a quantitative phase, is considered to be a robust methodological approach (Morse and Field, 1995) (Miles and Huberman, 1994).

The focus group discussion were taped, and three independent assessments of the data were made by the author, the independent focus group moderator, and one of the study advisers. This was intended to reduce bias in interpretation of the data, and is an
important factor in ensuring the reliability of findings from a qualitative study (Knodel, 1993) (Miles and Huberman, 1994).

The focus group findings were subject to theoretical verification with the related literature. Although limited information was available about the managed care environment, many of the focus group findings were consistent with research conducted in other settings.

The draft questionnaires were devised using the focus group discussion rather than the focus group questions. For example, survey questions such as those addressing the funding of research by Harvard Pilgrim were not contained within the focus group discussion guide, but arose out of comments made by focus group members during the sessions. The analysis plan for the survey findings was devised prior to the mailing of the surveys.

The focus group findings, draft survey instruments and analysis plan were critiqued at an external research meeting prior to the piloting of the questionnaires. Comments received at this session were incorporated at this stage.

The focus group findings and draft survey instruments were sent to the external adviser for comment prior to finalization of the questionnaires. The external focus group moderator also commented on the draft questionnaires.

In this study attempts were therefore made to reduce bias by seeking external advice on the generation of research questions, design of the focus group discussion guides, interpretation of focus group findings, and the design of the questionnaires. Many aspects of the study findings are consistent with research conducted in other settings. There are other findings which address areas that have not been extensively investigated, and therefore cannot be compared with other work in order to assess the degree to which the study setting or methodology introduced bias.
Focus groups

Despite reasonable attendance at the other focus groups, there were only three attendees at the focus group of members that had been exposed to residents at Harvard Pilgrim. Fourteen members agreed to come to this particular group. Poor attendance in this case may have been due to the type of patients that tend to see residents. An inspection of the list of potential group members showed that many were young (under 40), and lived in the city centre, an area where students and young professionals live. It was particularly difficult to reach this group by telephone, despite calling during the evening. Many other potential participants lived in areas of the city that are considered to be deprived. This pattern is consistent with the findings of Scheid et al., who discovered that patients who saw residents were more likely to be younger, non-white, and receiving Medicaid, than those who saw faculty physicians (Scheid et al. 1995).

The focus group venue was on the outskirts of the City. Although public transport via the metro system was available, and payment for taxi fares was offered, the distance to the venue may have deterred some people from attending the groups.

The representative sampling of informants is important in establishing the reliability of qualitative data (Miles and Huberman, 1994). In particular, it is possible that those people who attended the resident focus group were more positive about resident physicians, and that is why they attended the group. This would have therefore biased the results. The information from the focus group on residents was supplemented by discussion from the general member focus group. This latter group had a less positive view of residents in general, which was reflected in the design of the questionnaire.

Resources were not available to fund the transcription of the focus group tapes. This would have allowed a more detailed content analysis of the focus group findings, possibly including the use of computer software to facilitate coding of information (Miles and Huberman, 1994).

The member focus groups provided a very rich source of data. The focus groups alone revealed much information that could have formed the core of the study. Discussion in all
The groups was very animated, with differing views presented about many issues. Holding additional groups to further explore the findings of the initial set, and repeating the resident group with a larger number of participants, would have added further validity to the results.

The use of cases and controls in the survey samples, and the impact of this on the interpretation of results

The study attempted to ascertain the views of Harvard Pilgrim members about medical research and teaching, it also aimed to address the impact of previous exposure to these activities on member's views. In order to do this, the survey was designed as if it was a retrospective case-control study. 'Cases' who had been recently exposed to the research and teaching activities were identified and were then matched with a 'control' from the general member population. This complex sampling technique was possible because of the computerized member database available at Harvard Pilgrim.

There was a varying degree of exposure to the activities amongst those who were 'controls'. In some cases this exposure was at Harvard Pilgrim, in other cases it was at other institutions, or at both Harvard Pilgrim and other institutions. There was therefore considerable contamination of the control groups. A smaller number of 'cases' considered themselves not to have been exposed to teaching and research at Harvard Pilgrim.

It is possible that some of the cases were misclassified due to sampling errors e.g. errors in entering patient identification numbers. The number of cases who were misclassified is unknown. Therefore it is difficult to estimate the size of this effect.

It is also likely that some members could not remember seeing a medical student or resident, or did not realize that a medical student was present or that a physician was a resident. In addition, several of the studies that members had taken part in may not have been perceived as research by the member, although all involved use of a signed consent form. In the case of pediatric members the parent or guardian completing the form may not have been aware of exposure to the activity.
The misclassification of respondents may have confounded the results of comparisons between cases and controls, and exposed and unexposed. However, any bias would tend to be away from a significant difference between cases and controls. Those significantly different findings that emerged are therefore likely to be valid, within the confines of the levels of statistical significance quoted. Analysis of exposed versus unexposed did not produce any contradictory findings when compared with cases and controls.

In one subset of questions the responses of members who had been previously exposed to activities may have differed from those who were unexposed, because of the design of the questions. These questions asked about respondent beliefs regarding the likely effect of teaching or research on their care (question 3 in the resident, adult and pediatric research surveys, and question 4 in the medical student surveys). These questions were answered with a different frame of reference for those who have been exposed and those unexposed. Those with experience would be likely to relate the question to their experience, those with no experience would be likely to base their response on the imagined impact. It could be argued that this was therefore a different question for the two groups and that comparison is not appropriate. However, the question was designed with the intention of trying to detect if there were different perceptions in the two groups, with the knowledge that the experience they were drawing on may be different. In those cases where a significant difference existed between cases and controls or exposed and unexposed, those with experience consistently had more positive responses.

Questionnaire design
The study required that complex information about medical research and teaching be presented in a mailed survey in a format that members were able to understand and respond to. The process which resulted in the design of the questionnaires is outlined above.

Care was taken to produce question and answer formats that were as unbiased as possible. Where response scales were used, positive and negative statements were included in the sub-questions of overall questions, and the direction of response scales was also varied. The questionnaires were reviewed by researchers external to Harvard
Pilgrim, the external focus group moderator and the external study adviser, as well as the local study advisers.

In addition to general questions about research and teaching at Harvard Pilgrim, the focus group data were used to develop a number of short scenarios that illustrated different situations that patients may encounter. These were intended to elicit information about the respondent's level of comfort with participation in different sorts of research and teaching activity. Even if respondents had no experience with research or teaching they could be asked to describe how they would feel if faced with a particular situation.

It is possible that some recipients of the survey found the questions difficult to understand, and if so, this may have affected the response rate. Pilot study testing suggested that this was not the case, except in the case of one question which was subsequently amended. However, pilot testing on larger numbers should have been conducted to ensure the instructions, questions, and answers contained in the survey instruments were satisfactory.

The response categories to one of the questions on each survey instrument were potentially confusing (question 3 in the resident, adult and pediatric research surveys, and question 4 in the medical student surveys). In the case of the medical student and resident surveys one of the responses relates to impact on personal experience, the other six are more general statements. In the case of the research surveys there are two more personal response categories, and five more general statements. This may have been confusing for respondents and should have been avoided.

The questionnaire surveys were intended to further information gathered in the focus groups by including much larger samples of members, and attempting to quantify the direction and strength of feeling about the issues raised in the groups. The survey findings were consistent in some aspects with findings from the focus groups. Although there were members whose responses differed significantly from the majority.
The internal consistency of a number of the survey questions was calculated on the main survey data, as there were insufficient pilot study responses to draw meaningful conclusions from analysis of the pilot study data. The internal consistency is reported in the survey methodology section above. It was within the recommended range for questionnaires of this type.

Test-retest reliability is not reported as there were insufficient pairs of pilot questionnaires to provide meaningful information. Inspection of the pilot study data showed that in the case of one survey, one pair of questionnaires appeared to have been completed by different respondents. Further pilot testing would have allowed test-retest reliability to be assessed. Test-retest calculations would have provided a measure of whether completion of the questionnaires by the same people on different occasions produced the same results. This is considered to be an important measure of reliability of an instrument (Streiner and Norman, 1995). However, the value of test-retest calculations as a measure of reliability is not universally accepted, because respondents do not complete a questionnaire in the same way on the second occasion (McManus, C. personal communication, 1998).

The survey instruments were not formally tested for construct validity. However, analysis of the data provided examples from each survey that suggest that the construct validity of each instrument was reasonable. For example, members who did not agree with the research or teaching activities at Harvard Pilgrim tended to be less positive about participation in these activities.

Both the medical student and resident surveys contained descriptions of a medical student or resident in the introductory information. The research survey did not contain this type of descriptive information. However, it did explain that doctors and other professionals at Harvard Pilgrim take part in research in many different areas of health care. Participants in the general member focus group, who had not been exposed to research at Harvard Pilgrim, appeared to have an understanding of research, however there was some confusion about the role of residents and medical students in several of the groups. The survey instrument describes three different types of research and asked respondents about...
these specific types of research, in an attempt to establish commonality of respondent understanding of these particular examples. However, recipients of the survey may have been unsure of what is meant by research after reading the introduction, and may thus have felt unable to continue with the questionnaire. In addition, those who continued with the questionnaire may have been responding from different perspectives given their varying understanding of the term. Provision of some examples of research in the introduction may have avoided this problem. Alternatively, respondents could have been asked to indicate, from a list of activities, those which they considered to be research.

The fact that a description of research was not included in the introduction may have also resulted in some ‘cases’ not realizing that they had been involved in research, particularly those who took part in less invasive studies. However, all the studies included in the sample required that the patient (or parent/guardian) signed a consent form. All studies included were still ongoing at the time of sampling.

The average reading level of the US population is 6th to 7th grade (Goldstein et al. 1996). The reading level of the questionnaires was not formally assessed. If this had been done, and appropriate amendments made, the response rate may have been higher.

Survey samples
The number of studies from which survey recipients was selected was limited (six adult, four pediatric). The studies were selected to cover a range of research techniques and designs. However, because of the small number of studies, the experience of members who had participated in one particular study may have a large impact on the findings. This potential problem would have been avoided if a larger number of studies had been included. Unfortunately, because of the timing of various studies, and the confidentiality clauses built into others, this was not possible.

The total number of residents attached to general internal medicine preceptors at the time of the survey was 12. The sample of patients was necessarily limited to this group. The number could have been increased by between a further two and six residents if the
sampling period was lengthened by at least a further three months. This was felt to be too long to expect members to recall seeing a resident.

Similarly, the number of medical students could have been nearly doubled by extending the sampling period retrospectively by three months. This would have resulted in a sampling period starting nearly ten months prior to the date on which the surveys were mailed. This was considered to be too long for patient recall.

The sample size calculations for the main survey were based upon estimates of the likely differences in response to questions between different groups of respondents. Data on likely differences in response, on which to base the sample size estimates, were not available from the literature. The figures used were therefore somewhat arbitrary, and were not specifically based on the response format used in many of the survey questions. The number of questionnaires sent was finally determined by practical considerations such as the resources available, the numbers of identifiable ‘cases’, and estimates of likely response rates.

Response rates
The response rates to the pilot study were very low. As a result, adequate data on questionnaire clarity and reliability was not obtained. The pilot study should have been repeated, with the modified letters of invitation and questionnaires, and with larger sample sizes. This is an important failing in the study methodology. The lessons learned may have resulted in improvements in both the questionnaires and the response rate of the main study.

Considerable attention was given to improving response rates in the main study after the pilot study was completed. In particular, the wording of the surveys was made as clear as possible, as described in the Methods section above. The layout and printing of the surveys were also revised, and the invitation letters rewritten to be more inviting, as described in the Methods section. The decision was made to send a follow up letter with a further copy of the survey to all non-responders after two to three weeks. This was chosen in preference to a post card, in case the original copy of the survey was no longer available.
Response rates to the main study were disappointingly low, particularly in the Pediatric Research Survey (35%) and the Resident Survey (38%). This was despite the follow up letter and survey sent out two to three weeks after the initial survey.

A response rate of over 70% would have given some reassurance that the responses received represent those of the research sample (Fowler, 1993). None of the response rates reached this level.

The low response rates introduce a bias in that those who responded may have been individuals with a particular interest in research or teaching activities. There is evidence that responders to mailed surveys with low response rates may be more interested in the subject matter addressed by the survey (Fowler, 1993). There is therefore a distinct possibility that the results are more positive than if response rates had been higher, as those who return a mailed survey may be individuals who are more satisfied with the organization, or are more likely to value research and possibly teaching.

In the case of the research surveys there is a particular need to recognize a bias when interpreting the results. Those who do not agree with research, or with questionnaires in particular, may not have responded. In addition, the use of a mailed survey in the research arm introduces a further bias. Responses to the question about the preferred format for data collection should be interpreted with particular caution. The majority of respondents unsurprisingly preferred a written survey sent to them by mail.

Response rates may have been low for several reasons: Harvard Pilgrim uses member surveys to assess satisfaction with care, and other services, on a regular basis. It is possible that members have ‘survey fatigue’. The Clinical Quality Management department attempt to get a fifty to sixty percent response rate for member satisfaction surveys sent by mail, these surveys are considerably shorter than the ones used in the study, and are usually followed by a reminder postcard.
All adult surveys were sent to the individual, with an individually addressed letter. All letters in the first batch of surveys were signed by the author. The second batch used a computer printed scanned signature.

The pediatric surveys presented a particular problem as the questionnaires were addressed to 'the parent or guardian' of the child in question. This impersonal form of address may have resulted in a lower response rate. Attempts were made to try and link the children sampled with the adult responsible for them. Unfortunately the available computerized data did not include the details of the next of kin. It was not possible to link the child with an adult through an insurance identification number, nor by searching for adults listed at the same home address. In an unknown number of cases the parent or guardian of the child would not be a member of the health plan, as some children were covered by Medicaid, and in other cases parents may have different health cover through an employer's insurance plan.

The questionnaires were sent in November, before the Thanksgiving Holiday. Reminders were sent at the beginning of December, and therefore arrived just before the Christmas Holiday season. This timing was unavoidable because of external constraints on the study timetable.

It is possible that the surveys were considered too long or complex by members, despite efforts to keep them as short as possible. Few members returned blank surveys, suggesting they actively did not wish to complete them or be reminded again about the survey.

The response to the first letter and survey produced 66% of overall respondents in the adult research survey, 50% in the pediatric research survey, 57% in the resident survey and 64% and 60% of responses to the medical student adult and pediatric surveys. There was therefore a considerable response to the second letter and survey. In view of this a further reminder should have been sent to try and improve the response rate. This could have taken the form of a reminder telephone call, a method used with some success by other researchers working with Harvard Pilgrim patients, or a postcard reminder. Both of
these would rely on the respondent still being in possession of the survey instrument after the Christmas holiday period. Alternatively, a further letter and survey could have been sent.

Unfortunately, because of the resources and time available, it was not possible to call non-responders to remind them about the survey, or to carry out another mailing. In retrospect, this was a significant problem with the study, and provision for this should have been built in to the original study design.

The initial selection of smaller sample sizes, with more comprehensive follow up of non-responders may have produced a higher response rate, and resulted in a more satisfactory outcome.

The surveying of non-responders is a recognized method of correcting for non-response (Fowler, 1993). It does not substitute for a satisfactory response rate. However, it can be used to provide information about the direction and amount of bias in the initial sample. Therefore, because of the low response rate, a small number of telephone follow up calls were made to non-responders. Approximately 10% of non-responders were contacted and a short telephone questionnaire was administered. The responses suggest that these people were less positive about research and teaching at Harvard Pilgrim than respondents to the mailed survey. The results of this should be interpreted with caution because of the small numbers, and the fact that these were in-person interviews. This may have resulted in a tendency for respondents to be more positive about the research and teaching activities than they would if they had responded to the mailed survey. It is also important to note the focus group finding that responses to telephone surveys may be inaccurate as the respondent wishes to dispense with the call as quickly as possible.

Sixteen percent of the telephone follow up survey sample had either moved, had a telephone number that was not obtainable or had left the plan. The number of non-respondents to the main survey who had moved or left Harvard Pilgrim is unknown. However, this may have had a significant impact on response rates.
Analysis of survey results

The analysis plan for the survey results was decided prior to the mailing of the main study questionnaires. Advice was sought from two statistical advisers during the design and analysis phases of the study.

The analysis plan could be criticized for being too ambitious, particularly in terms of the number of subgroup analyses undertaken. This has several implications. In view of the low response rate there were very small numbers in some subgroups. Therefore, some subgroup analyses were not performed. In some situations, where analysis was conducted, subgroup numbers may have been too small to demonstrate a difference between the groups.

There is a risk associated with multiple testing of the same data sets. If a p value of < 0.05 is accepted as the level at which the null hypothesis is rejected, then even if the null hypothesis is true, one in 20 tests will be a false positive (type 1, or α error). The higher the number of tests performed, the higher the probability of at least one test being significant. It is possible to adjust the significance level, using the Bonferroni adjustment, to take multiple testing into account. However, this method is not universally recommended as the interpretation of a finding therefore depends on the number of other tests performed (Perneger, 1998). An alternative, as in this study, is to describe what tests of significance have been performed, and discuss the possible interpretations of each result. It is also important that the analysis conducted was not exploratory. In this study the analysis plan was devised in advance of the data being available, and was adhered to during the analysis phase.

It would have been possible to conduct the analysis using the uncollapsed data. However, the decision to collapse some of the data, as outlined in the Methods section, was made because it was felt that it was difficult to make fine distinctions between the response categories in the five surveys. This resulted in loss of discrimination between some of the response categories. The use of five as opposed to seven point scales in the questionnaires may have obviated the need for collapsing some of the data items.
The use of the Chi-square and Fisher's exact test are discussed in the Methods section. Both of these tests are acceptable for the analysis of contingency tables. However, when using either for a contingency table with greater than two rows and two columns, the test will detect the presence of heterogeneity, and does not necessarily indicate the existence of a trend.

Other limitations of the study
The respondents appeared to be extremely well educated, the majority in each case having a four year college degree. There is no data available on the educational level of the Harvard Pilgrim population in general, therefore no comparative analysis of responders and non-responders was possible. It is, on the whole, an employed population and therefore may have a relatively high educational level. However, it is possible that the response rate was higher in those who have further education. This may be due to a greater interest in education and research in this group, or a desire to provide feedback to Harvard Pilgrim. It is also possible that this group found the questionnaires easier to complete than those with lower educational levels. The studies discussed in the literature review provide conflicting evidence on educational level and participation in research activities (Autret et al. 1993) (Harth and Thong, 1990) (Larson and McGuire, 1990).

The majority of respondents described their ethnicity as white. There is incomplete data on the ethnicity of Harvard Pilgrim members, therefore it is difficult to comment on this finding. It is possible that responses by people in other ethnic groups were lower because the questionnaire was only available in English.

Another possible confounding variable is the health center from which members usually receive their care. The number of health centers involved was fourteen in total. Because of the small numbers of responses the results for each survey were not analyzed by health center.

The respondents to this study cannot be said to be representative of the experience levels of Harvard Pilgrim members in general as approximately half the respondents had been exposed to research and teaching activities. The exposure of Health Centers Division members at Harvard Pilgrim to research and teaching is unknown. The level of research
and teaching activity is likely to be higher in this division than in the other two parts of the health plan, the independent practice association, and the former Pilgrim Health Care.
Interpretation of results
The limitations of the study have a significant impact on the conclusions that may be
drawn from this work. The low response rates, in particular, have implications for the
interpretation of the study results. However, a number of conclusions may be made from
the research findings.

Research
Previous studies have described different patient motivations for participating in research
(Daugherty et al. 1995), and concerns about taking part in research studies (Nealon et al.
1985)(Larson and McGuire, 1990). However, there is no published work addressing
patient perceptions of research in the managed care setting, this probably reflects the
relatively new relationship between managed care and research.

Unfortunately, response rates to the research surveys were low, particularly in the case of
the pediatric survey (35%). Response to the adult survey was higher (57%). The positive
bias that is likely to have resulted from such low response rates, to a questionnaire that
asked about patient perceptions of research, is considerable. It is likely that, particularly
in the case of the pediatric survey, this is an unrepresentative group, and that those who
did not respond to the questionnaire were those who are less interested in, or supportive
of, research. Responses to the telephone follow up survey suggest that this is most
probably the case. Therefore, the findings cannot be extrapolated to the population of the
managed care organization in general. With these limitations in mind, a number of general
conclusions can be made from the data available.

The majority of respondents to the adult and pediatric surveys agreed that Harvard
Pilgrim should participate in research. This finding may reflect the opinion expressed in
the focus groups that health care delivery organizations should be involved in research in
order to stay on the cutting edge of medical practice. Organizations not involved in
research may be viewed as providing less optimal care. This also echoes work by the
Association of American Medical Colleges, which showed that the American population
in general supports medical research as a function of health care delivery systems
In addition, Cassileth and colleagues showed that a majority of a mixed sample of patients and the general public believed that patients should serve as research subjects (Cassileth et al. 1982).

Only a small number of individuals disagreed with Harvard Pilgrim conducting research. The numbers were too small to merit subgroup analysis that may have allowed further conclusions about their views to be made. It is interesting that there was no statistically significant difference in responses to this question between those who had been exposed to research and those who had not. Based on the findings of previous work, it was possible that those who had taken part in research could be more positive as a result of their experience (van Gelderen et al. 1993). This may be confounded by biases introduced by the response rate.

A greater proportion of respondents supported funding of research by organizations other than Harvard Pilgrim, rather than by the health plan itself. The questions about funding of research arose from a focus group discussion in which some participants felt strongly that Harvard Pilgrim should fund the research it conducts, as this would allow the health plan to ensure that the research was in the interest of furthering the well-being of patients, and would not allow members to be experimental subjects for outside investigators. The survey findings suggest that the majority of respondents do not wish membership subscriptions to be used to underwrite research.

The majority of respondents to both adult and pediatric surveys agreed that information from member’s medical records could be used for research. This finding is remarkable in view of the fact that confidentiality of patient information was a sensitive and controversial subject at the time of the study (Wolfson, 1995). This question is relevant to future policy regarding the use of medical record information in population epidemiological research in managed care organizations. The accessibility to data provided by computerization of patient information, in combination with enrollment in managed care organizations that coordinate all health care for a population, provides an opportunity for population based research that is not available in fee-for-service medicine (Skirboll, 1997). However, this finding should obviously be interpreted with caution, as it
is based on the views of the relatively small sample of people who responded to the research questionnaires.

The topic of research on alternative therapies was raised in the focus group recruited from a random sample of Harvard Pilgrim members. Certain group members felt very strongly that this was an important issue. A majority of adult and pediatric survey respondents also agreed that Harvard Pilgrim should perform research on alternative treatments. Therapies such as acupuncture and herbal medicine are not provided through the health plan. However, it may be a sign of growing interest in these treatments that patients wish to see empirical data about their efficacy. This study did not provide sufficient information to develop this further. More detailed investigation of this area is necessary.

A majority of respondents to both the adult and pediatric surveys thought that research activities undertaken by the health plan should be more visible to members. The focus group findings suggested that from the individual member’s perspective it is important to have knowledge of research studies that may be of personal interest to them, either as potential participants, or because of the findings. Previous work suggests that research is perceived as a marker of a good quality health care organization, therefore it may be important for Harvard Pilgrim patients to know that health plan clinicians and staff conduct research (McInturff, 1996).

Focus group members described an increased knowledge and empowerment resulting from their interaction with research studies. This is reflected in the survey responses that indicate that taking part in research could be a good experience and bring personal gains such as increasing patient or parent understanding of health problems, and improving health. When respondents were asked how they perceived participating in research would affect their care, a minority of adult and pediatric respondents thought that taking part in research would be a bad experience. In some cases those individuals with previous experience of research were more positive about the impact of research on their care than those with no previous experience.

Respondents to the adult and pediatric surveys would be more likely to participate in research in general if written information is provided with the invitation and the invitation
comes from their clinician. Similarly, the provision of feedback was associated with a
higher likelihood of participation. These findings are in accordance with previous work.
Bevan found that 60% of research participants would have liked to have received written
information that they could retain for reference (Bevan et al. 1993). Both Kass and
Henzlova found that patients taking part in cancer treatment studies were often motivated
by trust in their clinician or hospital (Kass et al. 1996)(Henzlova et al. 1994). Van
Gelderen and colleagues found that good information and personal contact was important
in recruiting healthy study participants (van Gelderen et al. 1993). However, the
provision of detailed information about randomized controlled trials may paradoxically be
associated with lower consent rates (Edwards et al. 1998)(Ubel et al. 1997). The
information that potential participants in this particular type of study find helpful has been
the subject of recent discussion, and is still unknown (Edwards et al. 1998)(Featherstone
and Donovan, 1998). This study did not explore the type, or detail, of information that
would be appropriate for different study methodologies, further work in this area is
necessary.

Financial incentives appeared to have less impact on respondents’ interest in participating
than written information, clinician request or the provision of feedback. Previous work
has shown that financial incentives are important to young healthy adults who volunteer
for pharmaceutical research (van Gelderen et al. 1993). Subgroup analysis of the adult
survey responses did not show any significant differences for this variable among different
age groups.

If the research would not directly benefit the patients health, fewer adults were willing to
take part in a study of drug treatment than one that involved having a blood test. In
previous work, conducted with in-patients at an academic medical center, 26% of
respondents would only join a study if it had benefit for their personal health (Larson and
McGuire, 1990). Other studies have shown that personal benefit is important in the
decision to participate in a clinical trial (Daugherty et al. 1995)(Cassileth et al. 1982).
More recently, a review of patient motivations for participating in randomized controlled
trials has shown that self interest was more commonly given as a reason for participating
in trials than altruism (Edwards et al. 1998).
Both documented cases, and those who considered themselves to be previously exposed to research at Harvard Pilgrim, were significantly more positive about certain aspects of participating in research, and the impact of participation in research on their health care. Those adult respondents who had their greatest impressions of research from taking part in studies at Harvard Pilgrim were significantly more likely to perceive that participating in research would put them at ease and be anxiety relieving.

It is interesting that individuals who had previous exposure to research at Harvard Pilgrim were more positive about some aspects of research than those who had not had this experience. This may be due to a familiarity with research studies, which removes some concerns about participating in a new and unknown activity. However, it is possible that participation in research was a beneficial experience. Previous work has shown that a higher level of perceived benefit from participating in a study is positively associated with interest in taking part in future studies (Suchanek Hudmon et al. 1996).

The concept of random allocation of treatment in a controlled study is difficult to understand (Snowdon et al. 1997). Previous research has shown that patients with cancer had little or no understanding of clinical trials, despite considering taking part in one (Nealon et al. 1985). A recently published study of men randomly allocated to treatments for benign prostatic disease also showed that patients found the concept of randomization confusing and difficult to accept (Featherstone and Donovan, 1998). This work did not clearly establish respondents views about this type of study. Despite several careful explanations in the focus group settings, not all participants understood the implications of enrolling in a randomized controlled trial. This presented difficulties when designing a suitable question about randomization for the surveys. The question asked about willingness to participate if the member could not determine which treatment they or their child received. The responses to this question indicate that members were less likely to participate, or responded in the middle, or ‘neutral’, range. This suggests that respondents were either very wary of such a study, or were unsure whether they would participate. It is possible that a more detailed explanation of this type of study may allow better assessment of patient concerns. Research which has looked at the understanding of patients who have actually participated in randomized controlled trials, has suggested that it may be helpful for participants to discuss the trial design in depth, before giving true
informed consent (Featherstone and Donovan, 1998). There is need for further work to explore this area (Silverman and Altman, 1996).
Medical Student Teaching
There is more information available from previous research about patient’s views of undergraduate teaching, than about patient perceptions of research. However, very little of this work addresses the managed care setting as a teaching environment. The perceptions of those who visit a specialist at an academic medical center, or a general practitioner in the United Kingdom, may differ significantly from members of an HMO.

The focus groups provided information indicating the importance of both personal and situation factors in patient comfort with teaching. A theoretical agreement that teaching is a good thing may be changed on the day of a visit by factors such as time, anxiety about health, the nature of the invitation, and the impression created by the trainee.

As with the research surveys, there are limitations imposed by the study methodology on the interpretation of results. In particular, the low response rates to the two medical student surveys introduce the probability of bias into the findings. Response rates were 46% and 43% respectively for the adult and pediatric surveys. These factors should be considered when interpreting the data available. Responses to the telephone follow up surveys suggest that non-responders may have been less positive about some aspects of medical student teaching than those who responded to the mail surveys. The following findings emerged from the adult and pediatric medical student teaching arms of the study. The majority of the findings are consistent with previous research conducted in other settings.

A majority of both adult and pediatric survey respondents agreed that teaching medical students at Harvard Pilgrim is a good idea. The level of agreement with student teaching was surprising given that approximately half the respondents were unsure or did not know what medical students are allowed to do at Harvard Pilgrim. The most important reasons to teach students were perceived to be: to create better doctors, to contribute to the future of medicine and for students to learn about managed care.

Those adult respondents who disagreed with medical student teaching were significantly less likely to understand the role of medical students, had more negative views of the
impact of a student on a patient visit, and were more uncomfortable with all student
activities than those who agreed with teaching.

Positive patient perceptions of medical student teaching in the primary care situation has
been shown by other researchers in the United States (Glasser and Bazuin, 1985)(Swee
and Warburton, 1980). However, other studies have also identified that a proportion of
patients prefer not to see a medical student. The size of this proportion at Harvard
Pilgrim is still unknown, but previous work at an academic medical center has shown that
as many as one in three patients prefer not to see a student (Simons et al. 1995). Work
from the United Kingdom has tended to show more positive views about students than
work from the United States (Cooke et al. 1996)(Jones et al. 1996). However, research
published since the conclusion of this study has highlighted the need to give patients a real
choice about whether they see a student, and to give consideration to the issue of patient
confidentiality (O'Flynn et al. 1997).

The majority of survey respondents agreed that medical student teaching increases the
skill of physicians who teach. These findings are consistent with those of Kirtz and
Larsen, who found that medical student teaching at an HMO was perceived to be
associated with increased quality of care (Kirtz and Larsen, 1986). Findings of the
AAMC study of public perceptions of medical schools and teaching hospitals showed that
teaching is not rated as highly as research as a function of academic medical centers, and
that teaching should be financially supported by tuition fees (McInturff, 1996). This study
appears to suggest that those who responded do consider teaching to be a marker of high
quality care, and that teaching does not increase costs for Harvard Pilgrim members.

A minority of respondents were concerned about the impact of teaching on patient
confidentiality. A recent study from the United Kingdom highlighted confidentiality as an
issue with medical student teaching. Many patients were concerned about student access
to the medical notes, and about the student discussing them outside the surgery (O'Flynn
et al. 1997). In this study, those who disagreed with teaching at Harvard Pilgrim were
significantly more likely to agree that teaching students affects the confidentiality of
patient information. The level of concern about this issue in the general Harvard Pilgrim population may therefore be considerably higher than that reflected in this sample.

Approximately one third of respondents felt that teaching was time consuming for patients. Some respondents felt that teaching was anxiety provoking. However, it was also seen by some as enhancing communication and resulting in increased patient understanding of their health. Overall, more respondents to both the adult and pediatric surveys thought that participation in teaching would be a good rather than a bad experience.

These findings are consistent with those of Berkelhamer and Herold (Berkelhamer and Herold, 1982). They found that the proportion of parents who expressed overall satisfaction with a visit to their child’s physician was greater for visits involving a medical student, despite the longer length of these visits. However, visits involving students are not necessarily longer, as demonstrated by Frank and colleagues, who found no significant difference in encounter length between teaching and non-teaching visits (Frank et al. 1997).

The majority of respondents preferred that the invitation to have a medical student present came from the clinician. No definite preference emerged for when the request should be made. No previous research was available about a preference for clinician invitation to participate in teaching. One study in the United Kingdom has shown that the majority of patients preferred that they be informed by the receptionist if a student will be present when they make an appointment, a majority would also like to know in advance if a student might be present (O'Flynn et al. 1997).

The majority of respondents to the pediatric survey preferred that both they and their child be asked, if the child is at least eight years old. No other research evidence was available to compare with this data.

The majority of adult respondents were uncomfortable with the student conducting a history and physical examination while the clinician is out of the room, even though the clinician would return and repeat both. They were also more comfortable if they knew the
clinician would supervise all aspects of the visit, they knew and trusted the clinician, and they had information about the student’s activities. Respondents to the pediatric survey were more comfortable than adult respondents with the student taking a history and performing an examination while the clinician was out of the room.

These findings are important for several reasons. Firstly, the respondents to the surveys may have been those who were most interested in undergraduate teaching. The majority were supportive of medical student teaching at Harvard Pilgrim. However, they expressed strong views about the importance of close supervision of student activities. Secondly, at Harvard Medical School, and in other teaching settings, including general practice in the United Kingdom, it is common practice to ask patients if they would talk to, and be examined by, a medical student without direct supervision by the mentoring clinician. Thirdly, in the focus groups, concerns were raised that the medical student’s findings would not be checked, despite reassurances that this situation would not occur, as students do not make clinical decisions alone.

The survey findings suggest that adults, in particular, may be uncomfortable with the practice of a student taking a history and examining them unsupervised. This is a common practice in medical student teaching. Previous work has not highlighted this as a problem and further work to address this issue, and how it may be resolved, is necessary. In the meantime, the importance of gaining the patients consent to seeing a student alone should be emphasized. It would also seem to be important to reassure patients that they will see the clinician as well as the student. The clinician and the student should be explicit about the arrangements and sensitive to the patient’s preferences.

The presenting problem may affect the patient’s decision whether to agree to have a medical student present. Adult survey respondents were much less comfortable with a medical student if their problem was of an emotional nature, or the visit required an internal examination. Focus group members pointed out that agreement to the student’s presence should always be open to change, should the patient feel that they no longer wish to have a student present.
These findings are in accordance with previous work in the United Kingdom that showed that patients are less comfortable with medical students if they are presenting with emotional or sexual problems (Wright, 1974). A more recent study had similar findings (O'Flynn et al. 1997). Simons et al. also found that approximately 24% of primary care patients at an academic medical center in Pennsylvania were reluctant to disclose 'personal' information to a medical student (Simons et al. 1995). This is a lower percentage than that found in this work, and may reflect differences in the settings of the two studies.

Previous work also suggests that many patients would feel uncomfortable with a medical student performing an internal examination (Wright, 1974). O'Flynn and colleagues found that 50% of general practice patients in two centres in the United Kingdom would agree to a student's presence if an internal examination was necessary (O'Flynn et al. 1997). In this study a smaller proportion of respondents (26%) were comfortable with a student observing an internal examination. Fewer still were comfortable with the student actually performing an internal examination. The reason for the difference in proportions in the British study and this work is uncertain. There may be multiple factors, including the difference in health care cultures in the two countries, the length of relationship with the primary care provider, previous exposure to students, and the socio-economic mix of the samples. These findings highlight the importance of re-establishing consent for the student to be present prior to an internal examination, and for the clinician to be explicit about the patient's right to ask the student to leave at this stage during a visit.

Previous exposure to medical students at Harvard Pilgrim was not associated with significantly different perceptions of students, apart from on one or two variables. Jones and Oswald found no significant difference, in willingness to have a student involved in future general practitioner consultations, between patients who had previous experience of students and those who had no experience (Jones and Oswald, 1994). Cases were significantly less uncomfortable than controls with regard to a student being present at a visit requiring an internal examination. No other work that specifically addressed this issue was identified. However, another study from the United Kingdom may be of some relevance to the views of female respondents. This showed that women who had
previous exposure to medical students during childbirth would be more accepting of the presence a student during future labours (Nicum and Karoo, 1998).

Women respondents were less comfortable than men with several aspects of medical student participation in care. This is consistent with findings by Simons et al. that male patients were more receptive to medical students (Simons et al. 1995). Interestingly, unlike findings in a recent study from the United Kingdom, there was no significant difference between women and men for consultations involving emotional problems or for an internal examination (O'Flynn et al. 1997).

A majority of respondents were uncomfortable if the student and clinician left the room to discuss their case, but were comfortable if the case was discussed in front of them. Older members, male members, and those who had their greatest impression of teaching from organizations other than Harvard Pilgrim were less uncomfortable if the student and clinician discussed their case outside the room. No research about this was identified from the United States. However, O'Flynn and colleagues in the United Kingdom found that only a quarter of patients did not want the doctor to talk about them when they had left the room (O'Flynn et al. 1997). This variance may be indicative of cultural differences between the United Kingdom and the United States. It is also interesting that men are less uncomfortable than women with their case being discussed after they have left the room, this may reflect preliminary research findings that suggest that women are more assertive consumers of health care (Kaplan, S. 1996, personal communication).

A higher percentage of parents or guardians of pediatric patients agreed that Harvard Pilgrim should participate in medical student teaching than adults. However, because of the low response rate it is very difficult to interpret this result in a meaningful way. They also tended to be more comfortable with the student talking to and examining their child. Discussions with clinicians who teach medical students at Harvard Pilgrim revealed that there may be a higher level of supervision of students by pediatric clinicians. Therefore, parents may be more comfortable with a student being present. The study did not collect data on the different levels of supervision for medical students in the adult and pediatric settings.
Primary care resident training

The primary care residency program based at Harvard Pilgrim Health Care is unique in the amount of time that general medicine residents spend in an HMO primary care setting. Although a number of other studies have addressed patient perceptions of resident physicians, none have directly assessed patient views in this setting. The resident survey had one of the lowest response rates (38%). As with the other surveys, this and the other limitations described above, have a considerable impact on interpretation of the study results. The following represent the findings from the available data.

A majority of those who did respond, agreed that residents should train to be primary care physicians at Harvard Pilgrim. It is not possible to interpret this finding with regard to the population of Harvard Pilgrim because of the low response rate. Responses to the telephone follow up survey suggest that non-responders may not have been as supportive of resident training at Harvard Pilgrim as responders.

Training at Harvard Pilgrim was perceived by a majority to teach good bedside manners, increase the expertise of clinicians who teach, and promote up to date, state of the art care. A minority (about a quarter) of respondents thought that training residents potentially lowers the quality of care and can disrupt the continuity of care.

Members who disagreed in principle with the concept of resident training at Harvard Pilgrim were significantly more negative about the impact of the residency program, and less comfortable with many aspects of receiving care from a resident physician. This finding is consistent with that of Gerace and Sangster, who found that patients who had a positive attitude about the teaching program had higher levels of satisfaction with care provided by family medicine residents (Gerace and Sangster, 1987).

A majority of survey respondents thought that resident training was an activity that is not widely known to health plan members. The primary care residency programs at Harvard Pilgrim are small at present, totaling about 24 residents at any one time, and many of the 150,000 patients may not be aware of their existence.
The majority of responses to the questions about the effect of seeing a resident physician on medical care, were around the centre of the scale. Although there were responses at both extremes, no clear pattern emerged. The uncollapsed data shows a similar distribution. This may be a result of the question design, or be a true reflection of the views of the sample.

About half of the respondents who had a documented visit to a resident in the three months prior to the mailing of the survey were unaware that they had seen a resident physician. Urgent care visits, which are not booked appointments, were not included in the sample. There was no significant difference in the number of cases and controls in the responder and non-responder groups. Therefore, a considerable number of non-responders may also have seen residents but been unaware of this fact.

This finding has several implications. Residents should be introduced as such by themselves, or by the member of staff making the appointment for the patient. This information may not be communicated to patients. Alternatively, patients may be informed, but do not understand the term ‘resident’, or do not remember the information. The focus group discussions highlighted confusion about the term ‘resident’. The survey instrument explicitly stated that residents were fully qualified doctors who are undergoing further training, in an attempt to inform survey recipients about primary care residents.

The fact that patients do not remember seeing a resident also raises the possibility that residents at Harvard Pilgrim may perform in a similar way to other physicians. Rodney found that care provided by residents was reported to be as satisfying in terms of quality of care and physician conduct as that provided by faculty physicians (Rodney et al. 1986). Comparison of patient satisfaction ratings of resident physicians with ratings of other Harvard Pilgrim primary care doctors could be used to explore this question further.

Survey respondents were more comfortable seeing a resident for a new or chronic problem if the resident was their regular primary care clinician. The impact on patient comfort of the resident having reviewed the patient records, or being able to get a second opinion was much lower. Focus group members felt strongly that having a resident as a primary care physician was very different from seeing a resident at a single visit. Issues of
continuity of care, and the opportunity to build a trusting relationship with an individual physician, were highlighted as key factors in building patient comfort.

Respondents exposed to residents at Harvard Pilgrim (i.e. those who documented themselves as exposed) were significantly more positive about receiving care from a resident physician. In particular, receiving care from a resident was perceived as resulting in greater patient understanding, and as likely to be a good experience overall. From the focus group discussions it emerged that comfort with seeing a resident physician may stem from the feeling of trust in an individual that the member has grown to know. Patients not exposed to residents may be under the impression that a resident is not a qualified doctor. This finding is consistent with that of Reichgott and Schwartz who found that prior exposure to a satisfactory resident experience was associated with greater patient acceptance of resident care (Reichgott and Sanford Schwartz, 1983).
Implications of the research findings

Implications of the findings for Harvard Pilgrim Health Care

This work has a number of implications for Harvard Pilgrim Health Care. The low response rates obtained in the surveys impact on the validity of the findings as a basis for future policy decisions. The level of support for research and teaching among the general population of members is therefore still unknown. However, there is information about how respondents feel about research and teaching activities that could be used to inform developments in the research and teaching programs. A number of these findings, particularly those about medical student teaching, are in accordance with the results of previous research, and clinicians should already be aware of the importance of these issues.

The study findings suggest that more information about research and teaching programs should be available to patients. In particular, Harvard Pilgrim needs to increase patient awareness about the primary care residency program and provide clarification of the role of residents within the organization.

The results indicate that patients should be invited to participate in research and teaching activities in a manner that allows them to make a decision with adequate information, and without pressure to take part. Appropriate, written information about research studies should be available. Patients should be informed that medical students are present to learn and observe and do not make clinical decisions. Ideally, the invitation to participate in research or medical student teaching should be made in person by a clinician who is known to the patient.

A small number of respondents disagreed with Harvard Pilgrim conducting research. It is important for future policy making to acknowledge that these individuals exist, and that the proportion of the general population with these views is likely to be considerably larger. There is therefore a need to be sensitive to patients’ views when making policy decisions regarding research activities at Harvard Pilgrim, and when inviting patients to take part in research studies.
There is a dilemma relating to the use of information from patient’s medical records in research studies. Although the majority of survey respondents agreed that medical record information could be used in this way, other work at Harvard Pilgrim has shown that patients prefer that access to their records is restricted to the health professionals involved in their care (Wolfson, 1995). This problem is relatively new to the United States as managed care organizations develop member databases and electronic record systems. It is also a dilemma for general practitioners in the United Kingdom, who have patient registers or databases that increase accessibility for researchers planning epidemiological studies (Jones et al. 1995). Possible options, that merit further investigation, include asking patients for permission to access their records for research purposes when annual membership of the health plan is renewed.

The study results indicate that participants wish to receive feedback about results or outcomes after participating in a research study. In addition to ensuring that this happens, participants should be given the opportunity to comment on their experiences. There should also be adequate opportunities for patients to comment confidentially on the performance of a medical student or resident, and to give feedback on their experience.

Many respondents were uncomfortable having students present during internal examinations or discussions of difficult medical or emotional problems. Clinicians who precept students need to be sensitive to these concerns and should check with the patient whether they would prefer that the student leave the room if such an issue arises.

A significant portion of survey respondents were uncomfortable with the idea of seeing a medical student alone. It is important that preceptors ask patients if they are comfortable about being alone with the medical student, and that the arrangements for the consultation process, including checking of the student’s findings by the preceptor, are clear.

The study found that there was some confusion and concern about the presence and role of residents at Harvard Pilgrim. Whenever possible, it should be explicit when the patient makes an appointment if the physician will be a resident. Once a relationship is formed with a resident the patient may wish to continue seeing that resident, but may not wish to
see another resident if their usual doctor is not available. The patient should have the opportunity to discuss their case with the resident and the supervising attending physician if the member so wishes.

Respondents were divided on the issue of whether research should be paid for by Harvard Pilgrim or extramural funding agencies. The survey findings suggest that the majority of respondents do not wish membership subscriptions to be used to underwrite research. This has implications for the organization, which currently funds research both within and outside Harvard Pilgrim through the Harvard Pilgrim Health Care Foundation. Further consideration should be given to this issue.

The study findings are in accordance with other work that suggests that randomized controlled clinical trials are difficult for patients to understand. In order to make an informed decision about participation, members need to know about the design of the study and whether all of the treatments are considered equally effective. They also need to have a clear understanding that neither they, nor their physician, will determine which treatment they receive.

**Implications of the findings for Harvard Medical School**

Harvard Medical School has links with many health care providers, both HMOs, groups of physicians (independent practice associations and group practices), teaching hospitals, and other hospitals. Medical students from Harvard spend time in these organizations, in a similar way to students in the United Kingdom.

There are no explicit guidelines to advise patients, students and preceptors of their rights and responsibilities when medical students are present on the ward or in the doctor’s office. The implicit assumption is that those clinicians who teach will be aware of, and respect, the patient’s rights to make an informed decision, not be pressured into accepting the presence of a student, have confidentiality respected, and to be able to ask a student to leave the consultation if they wish. However, information from the focus groups conducted as part of this study indicated that this was not always the case.
The joint primary care residency program at Harvard Medical School and Harvard Pilgrim is unusual in the amount of time residents spend in the primary care setting rather than in a teaching hospital and attached out-patient facilities. If Harvard Medical School is to consider expansion of this type of training to other primary care settings, then the importance of informing patients about the residency program should be emphasized. Research from other specialties confirms that the provision of pertinent information about the role of trainees is important to patients (Kim et al. 1998). Consideration should also be given to allowing residents to provide continuity of care to patients, whenever this is possible.

Researchers at Harvard Medical School have a long tradition of recruiting research participants from the major teaching hospitals associated with the University, as well as from community settings not traditionally associated with medical research. As the number of HMOs rises, opportunities to collaborate with managed care organizations will increase. The findings of this study, particularly those that relate to the value patients place on written information and feedback about studies, and invitation from a known clinician, and the concerns that are raised by access to medical records and randomized controlled trials, are relevant to researchers in all settings.

**Implications of the findings for other academic centers and health maintenance organizations**

The findings of the research should be interpreted with caution, given the stated limitations of the study. However, there are implications from this work for other academic centers and HMOs.

In New England, as in other areas of the United States, teaching and research activities have been focused around academic medical centers. As the number of managed care plans increases, and as links between academic centers and HMOs grow, organizational differences such as those described by Donahue and colleagues become more apparent (Donahue et al. 1996). These differences included the HMO’s concerns about maintaining patient satisfaction with care whilst conducting a research program. As this study suggests, teaching may also impact on patient satisfaction, indeed a majority of
patients may be uncomfortable with certain medical student and resident activities. The introduction of resident training to a non-HMO family practice clinic has previously been shown to adversely affect patient satisfaction (Blanchard et al. 1977).

These findings are important, as reports of patient satisfaction with care are a major influence on consumer choice of health care provider (National Committee for Quality Assurance, 1995). In the United States, health care insurance cover is renewed on an annual basis. The implementation of activities which may negatively impact on patient satisfaction is therefore potentially high risk for HMOs and other health care providers.

Boston has three large medical schools, and there is a fourth medical school within the State of Massachusetts. New England, in general, has a concentration of academic medical centers with medical student, resident and research programs which are mainly in secondary care settings. The population of this area is therefore more likely to be exposed to teaching and research activities than those people who live in areas with fewer medical schools. The high general level of exposure to academic medicine in Boston may serve to inform people about research and teaching and encourage their participation. Alternatively, it may result in an over exposure to these activities, and more negative views. The strong opinions expressed in the focus groups, in particular about exposure to medical students in teaching hospitals, reflect prior experience that may influence willingness to participate in future teaching activities.

Similarly, New England has a relatively high penetration of managed care organizations. Although the other HMOs are newer than Harvard Pilgrim, and links with academic centers are less well established, relationships are developing. The populations served by these HMOs are drawn from a similar geographical area as the members of Harvard Pilgrim. However, the membership may have differences reflecting association with certain large employers, the number of Medicaid and Medicare enrollees, the types of health insurance offered, links with different hospitals, and the location of primary care services. Some HMOs are ‘for-profit’ organizations, the impact of this on teaching and research activities is uncertain. Many respondents to the mailed surveys in this study had been Harvard Pilgrim members for over 15 years, and they were also a highly educated
The membership profile of these other organizations is unknown, but is unlikely to be as long standing in view of the length of existence of the other HMOs. In addition, Harvard Pilgrim members may have chosen to enroll with an organization that has links with Harvard Medical School. Despite being drawn from the same geographical population the Harvard Pilgrim membership may therefore vary considerably from the membership of other HMOs in New England.

Despite the somewhat unusual situation at Harvard Pilgrim, this work does have implications for other academic centers and HMOs in the Boston area. Both the medical schools and HMOs need to ensure that patient choice, dignity and comfort are the paramount considerations when establishing research and teaching programs. The implications of the research findings may be appropriate for consideration by other HMOs. These organizations may wish to ascertain the views of their patients prior to establishing or expanding research and teaching programs. In the case of teaching programs in particular, organizations not previously involved in these activities should ensure that clinicians, students and residents are aware of the issues that cause patient confusion and discomfort and take steps to avoid these. Administrative staff should be aware of the existence of teaching and training programs, and inform patients about medical students and residents as appropriate.

The research findings may be useful to clinicians and policy makers in academic medical centers and HMOs in other parts of the United States, although there may be few similarities with populations served by HMOs in other areas. Although generalizable information about the level of support for teaching and research activities is not available from this study, the other information obtained serves to reinforce the relevance of previous research, particularly about medical student teaching. It also adds new information about patient preferences, including patient discomfort with being left alone with a medical student.

In order to meet the need to train more generalist physicians, HMOs who were previously not associated with training may become involved in resident training in the future. The new information about patient confusion about the role of residents, and patient
preference for not seeing residents in certain situations, is relevant to those introducing residents in an HMO primary care setting, where patients may not anticipate seeing a resident physician.

Similarly, the move to base more research in ambulatory care situations will increase the number of HMO enrollees who are exposed to research. There is little existing literature on which to base recommendations about the conduct of research programs, although the informed consent process is well established. The issue of access to information contained in the patient’s medical records, and the importance of providing appropriate information and feedback to research participants were highlighted by this work. These findings are relevant for all researchers, but for those organizations who have the opportunity to shape developing research programs, consideration should be given to the implementation of policies that promote these recommendations.

The application of these findings to other countries, including the United Kingdom, must be done with the cultural differences of both the populations and health care delivery systems in mind. For example, this work and recent work by O’Flynn and colleagues found marked differences in patient level of comfort with the clinician and medical student discussing their case after they had left the room (O’Flynn et al. 1997). The culture of the National Health Service and the private American health care system are very different. HMOs like Harvard Pilgrim have some similarities with the NHS in that all patients have a primary care clinician who acts as a ‘gatekeeper’, care is not on a fee-for-service basis, but is capitated, and the organization is a not-for-profit entity. However, consumers in the United States may be more assertive in their interactions with the health care system. No comparative work was available to substantiate this hypothesis.

This work suggests that, in the case of medical students in particular, primary care patients at Harvard Pilgrim were less comfortable with certain student activities than respondents to research conducted in general practice in the United Kingdom. There are several possible interpretations of these findings. Firstly, the difference may not be a true one, but a result of the different study methodologies. Secondly, patients in the United Kingdom may genuinely be more comfortable with medical student teaching because of
the established tradition of medical student teaching in general practice, the nature of the relationship between the patient and the general practitioner, and the culture of the health care system. Thirdly, patients in the United Kingdom may be less willing to express negative views about medical students, particularly if their general practitioner is involved with teaching. Fourthly, much of the research conducted on this issue in the United Kingdom has been conducted in teaching practices, and, unlike this study, has not included patients who had not been exposed to students and were registered with clinicians who did not teach.

The findings about resident teaching are not directly applicable to the United Kingdom, as the structure of post-graduate training for primary care is very different. However, the importance of informing patients when an appointment is made with a doctor in training, was highlighted by the study, as is the importance of continuity of care with a particular clinician.

There is relatively little work available about patient views of taking part in research, and no relevant studies from primary care in the United Kingdom were identified. The issues of the provision of adequate and appropriate information before taking part in a study, and feedback after a study were highlighted by this work, and are applicable to countries other than the United States.
Implications of the findings for further research

The limitations of the study, in particular the low response rates, prevent a generalizable assessment of the views of Harvard Pilgrim members about research and teaching activities in the health plan. If Harvard Pilgrim is committed to incorporating the preferences of members in future policy decisions, further work on these issues is indicated.

In addition to general questions about support for research activities, the issues of the confidentiality of patient information and studies of alternative medicine should be addressed by Harvard Pilgrim.

Harvard Pilgrim collects regular data on patient satisfaction with care provided by primary care clinicians. This information was not available for residents at the time of this study. However, when such information is available, data for residents and non-residents could be compared.

Other HMOs with research and teaching programs have expressed interest in the findings of this work. Collaborative research to develop reliable and valid methods for assessing patient perceptions of research and teaching in the managed care environment would provide the opportunity to gauge the opinions of HMO members in other regions of the United States.

This work produced some interesting findings which have not previously been described in the research literature. The preferences of respondents regarding invitations to participate in medical student teaching, and research, suggested the importance of the invitation being issued by a clinician known to the patient. This could be explored in more depth, as the impact it has on the patient's decision to participate seems to be considerable.

Much of the previous work about patient comfort with medical student activities has focused on the nature of the presenting problem, and the need for an intimate examination. This work suggested that some patients may be uncomfortable if left alone with a medical student who is to take a history and examine them. In addition, many
patients were uncomfortable with the student and teacher leaving the room to discuss their case. These are common practices in many situations where medical students are taught, and therefore the impact on the patient should be explored in more depth.

The findings of this study suggest that the respondents were more uncomfortable with some aspects of medical student teaching than respondents to a study conducted more recently in the United Kingdom (O'Flynn et al. 1997). The investigation of these different perceptions may provide valuable insights for teachers in both countries.

The introduction of primary care residents to an HMO is a relatively new concept. There is research available about patient views of residents in other settings. However, further work could be developed about patient knowledge about residents, and how this impacts on patient satisfaction, particularly in the HMO setting.

There is existing research about patient views of being invited to participate, and participating in research. Those studies that are available focus in the main on children, people with serious illness and on volunteer participants in pharmaceutical trials (Harth and Thong, 1990) (Autret et al. 1993) (Larson and McGuire, 1990) (van Gelderen et al. 1993). Respondents to this study were more likely to participate in research if the invitation came from a clinician known to them. They were also more likely to participate if written information was available, and feedback would be provided after the study. Financial reward was not associated with an increased likelihood of participation. As may be predicted, the more invasive the investigation, the less likely were respondents to participate. Further research should address these findings in more depth, with particular reference to the primary care setting, and to non-pharmacological interventions. It is important to note that the views of the non-responders are very important.

The question of respondent comfort with the concept of research in which treatments are allocated on a random basis was not adequately addressed in this study. This question merits further investigation. Research findings published since the conclusion of this study have also highlighted the need for further work in this area (Featherstone and Donovan, 1998).
Conclusion
Managed care, with an emphasis on primary care and prevention, is rapidly becoming the dominant form of medical care in the United States. This shift has created a need for research and clinician training relevant to integrated delivery systems. Harvard Pilgrim Health Care, in collaboration with the Department of Ambulatory Care and Prevention at Harvard Medical School, was among the first HMOs to conduct primary care training and research. It was therefore an appropriate environment in which to examine the perceptions and preferences of HMO patients with regard to research and teaching activities.

The study findings must be interpreted with caution because of the disappointingly low response rate achieved in the member surveys. A majority of those who did respond supported medical student teaching, resident training, and research activities at Harvard Pilgrim. A telephone survey of a small sample of non-respondents suggested that levels of support for these activities are not universally as high as the survey results suggest.

While the majority of those that responded supported the teaching and research programs, respondents indicated that they had preferences regarding their participation in teaching and research activities. Respondents valued information that would assist them in making choices about teaching or research, expressed strong concerns about participation in certain medical student teaching activities, and were uncomfortable about seeing a resident who was not their regular primary care clinician. They valued an invitation to take part in research from a clinician who is known to them and wished to receive feedback about research activities in which they participated. Some respondents thought that participation in teaching and research could be a positive experience, could benefit their health, and could expand their knowledge about their health.

In some cases the findings were consistent with previous research. In other situations, the results suggest previously undocumented patient concerns. Further work is required to establish the views of the general membership of Harvard Pilgrim about teaching and research activities. However, useful information about patient preferences was elicited
which could be used to guide clinicians and their colleagues working in research and teaching programs, and as the basis of further research in HMOs and other organizations.
Appendix 1. Focus group discussion guides
Questions for member focus group on research within HPHC

Introduction
Welcome and self introduction by the moderator.

Harvard Pilgrim Health Care has asked its Department of Ambulatory Care and Prevention to talk with members who have recently participated in a survey or research study. The Department has asked me, as someone who is not connected with Harvard Pilgrim, to moderate the focus group. The purpose of the group is to hear your thoughts and opinions. The information we learn will be used to design a survey of Harvard Pilgrim members.

Our discussion will be confidential. Your comments will be anonymous, and no-one, other than the research team involved in this study will have access to the tapes. Does anyone have any questions?

1. Introductory question:
Tell us your first name and how long you have been a Harvard Pilgrim Health Care member?

2. Let's talk about health care research:
   a. Should health care organizations in general be involved in research?
   b. Should Harvard Pilgrim Health Care, in particular, be involved in research?
   c. What impressions do you have in general about doctors, nurses and other health professionals who do research, compared to health professionals who do not participate in research?

3. Let's talk about the ways people are invited to take part in research:
   a. How were you approached when you were invited to take part in research?
   b. What were your feelings about the invitation?
   c. What are the best ways for Harvard Pilgrim to invite members to participate in research?

4. Let's talk about some of the different types of research. For example, research may involve:

   [On a card for each participant to see]
   Filling out a questionnaire
   Being interviewed on the telephone
   Being interviewed in person at the doctor's office
   Going to the doctor's office or hospital for an extra visit
   Being examined by a doctor doing research
   Giving a blood sample
Taking new tablets or medicine
Having an extra test, for example an x-ray or ultrasound scan
Having a new type of surgery
Being assigned one of two or more treatments at random. [This means that the type of treatment a patient receives is decided by the research study design, rather than by the patient's own doctor. As far as is known the treatments are thought to be as effective as each other, and the study is to find out if one is better.]

In your view, how willing are people in general to participate in these activities?

5. Let's talk about your experience with research at Harvard Pilgrim:
   a. What did you most like about participating in the research?
   b. What did you least like about participating in the research?
   c. Are there specific aspects of your experience that you think the Harvard Pilgrim organization should know about?

Cues to help discussion if necessary:
In what way did it affect your care?
In what way did it affect the cost of your care?
In what way did it affect the time you spent getting care?
Did it make it more, or less, convenient to get your care?

d. Looking back on your experience:

   Did you have the chance to say "yes" or "no"?
   Did you understand what the research was for?
   Did you have a sufficient opportunity to ask questions?
   Did you have questions about the research that remained unanswered?
   Did you understand more or less about your care because of the research?
   Did you learn more or less about your health because of the research?

6. Let's talk about research and medical records:
   a. Do you think it is OK for researchers doing approved work to have access to the information in medical records?
   b. Under what circumstances?

   Cues for example:
   members are anonymous
   information about members is kept confidential
   access to certain information about members is restricted, for example information about mental health problems
7. In general, what are circumstances when it is not OK to ask people if they would be interested in participating in research?

8. If you could look back in time, would you participate in research again?

9. Let's summarize the key points of our discussion

10. Our goal is to help Harvard Pilgrim decide on its future policy about research projects. Have we missed any relevant issues? (Opportunity to discuss any new questions that have come up in the session)

11. What advice do you have for us?
Questions for member focus group on medical student teaching within HPHC

Introduction
Welcome and self introduction by the moderator.

Harvard Pilgrim Health Care has asked its Department of Ambulatory Care and Prevention to talk with members who have recently visited a doctor’s office where medical students are being taught. A medical student is a student who is studying to become a doctor. The Department has asked me, as someone who is not connected with Harvard Pilgrim, to moderate the focus group. The purpose of the group is to hear your thoughts and opinions. The information we learn will be used to design a survey of Harvard Pilgrim members.

Our discussion will be confidential. Your comments will be anonymous, and no-one, other than the research team involved in this study will have access to the tapes. Does anyone have any questions?

1. Introductory question:
Tell us your first name, and how long you have been a Harvard Pilgrim Health Care member?

2. Let’s talk about medical student teaching:
   a. Should health care organizations in general be involved in medical student education?
   b. Should Harvard Pilgrim Health Care, in particular, be involved in medical student teaching?
   c. What impression do you have in general about doctors, nurses and other health professionals who teach medical students, compared to health professionals who do not teach medical students?

3. Let’s talk about the ways people are invited to take part in medical student teaching:
   a. How were you approached when you were invited to take part in medical student teaching?
   b. What were your feeling about the invitation?
   c. What are the best ways for Harvard Pilgrim to invite members to participate in medical student teaching?
4. Let's talk about some of the different types of teaching activity. For example teaching may involve:

[On a card for each participant to see]

- Have a medical student sitting in with the doctor or nurse
- Being interviewed by a medical student
- Having the medical student examine the patient's hand
- Having the medical student examine the patient's abdomen
- Having the medical student do an internal exam, for example a rectal or vaginal exam
- Discussing the treatment plan with a medical student

In your view, how willing are people in general to participate in these activities?

5. Let's talk about your experience with medical student teaching at Harvard Pilgrim:

a. What did you most like about participating in the teaching?

b. What did you least like about participating in the teaching?

c. Are there specific aspects of your experience that you think the Harvard Pilgrim organization should know about?

Cues to help discussion if necessary:
- In what way did the teaching affect the care you received?
- In what way did the teaching affect the cost of your care?
- In what way did the teaching affect the time you spent getting care?
- Did it make it more, or less, convenient to get your care?

d. Looking back on your experience:

- Did you have the chance to say "yes" or "no" to the medical student being there?
- Did you understand that the medical student was a student?
- Did you have the opportunity to ask questions about who the medical student was, and why they were there?
- Did you have questions about the medical student that remained unanswered?
- Did you understand more or less about your care because the student was there?
- Did you learn more or less about your health because the student was there?

6. What do you think in general about having medical students at the doctor's office?

7. What effect do you think teaching has on the doctor's ability to look after patients?

CUES for example:
- It affects the number of patients the doctor can see
- It affects the doctor's stress level
- It affects the quality of the doctor's practice
- It affects the doctors enjoyment of patient care
8. What affect do you think teaching has on the patient?

CUES for example:
- It affects the patient flow/time schedule
- It affects the doctor’s relationship with the patient
- It affects the patient’s relationship with the doctor
- It affects the patient’s stress level
- It affects patient comfort during the doctor visit

9. In general, what are circumstances when it is not OK to ask people if they would be interested in participating in medical student teaching?

10. If you could look back in time, would you participate in medical student teaching again?

11. Let’s summarize the key points of our discussion

12. Our goal is to help Harvard Pilgrim decide on its future policy about medical student teaching. Have we missed any relevant issues? (Opportunity to discuss any new questions that have come up in the session)

13. What advice do you have for us?
Questions for member focus group on primary care residents within HPHC

Introduction
Welcome and self introduction by the moderator.

Harvard Pilgrim Health Care has asked its Department of Ambulatory Care and Prevention to talk with members who have had an office visit with a doctor who is a primary care resident. A primary care resident is a fully qualified doctor who is undergoing further training to take their specialty boards in internal medicine, and become a primary care physician. The Department has asked me, as someone who is not connected with Harvard Pilgrim, to moderate the focus group. The purpose of the group is to hear your thoughts and opinions. The information we learn will be used to design a survey of Harvard Pilgrim members.

Our discussion will be confidential. Your comments will be anonymous, and no-one, other than the research team involved in this study will have access to the tapes. Does anyone have any questions?

1. Introductory question:
e.g. Tell us your first name, and how long you have been a Harvard Pilgrim Health Care member?

2. Let’s talk about primary care residents teaching in general:
   a. Should health care organizations in general be involved with training resident doctors?
   b. Should Harvard Pilgrim Health Care, in particular, be involved with training resident doctors?
   c. What impression do you have in general about doctors, nurses and other health professionals who help to train residents, compared to health professionals who do not teach residents?

3. Let’s talk about the ways people are invited to take part in resident training:
   a. How did you select a resident doctor as your primary care doctor?
   b. What are the best ways for Harvard Pilgrim to invite members to choose resident doctors as their doctor?
4. Let’s talk about some of the different types of resident training activity. For example resident training may involve:

[On a card for each participant to see]
- Having a resident as the member’s primary care doctor
- Seeing a resident instead of the member’s usual primary care doctor
- Seeing a resident in urgent care

In your view, how willing are people in general to participate in these activities?

5. Let’s talk about your experience of having a resident as your primary care doctor:

a. What do you most like about having a resident as your doctor?

b. What do you least like about having a resident as your doctor?

c. Are there specific aspects of your experience that you think the Harvard Pilgrim organization should know about?

Cues to help discussion if necessary:
In what way does having a resident as your doctor affect the quality of the care you receive?
In what way does having a resident as your doctor affect the cost of your care?
In what way does having a resident as your doctor affect the time you spend getting care?
Does it make it more, or less, convenient to get your care?

d. Looking back on your experience:

Did you have the chance to say “yes” or “no” to seeing a resident doctor?
Did you have the opportunity to ask questions about seeing a resident doctor, and what that means?
Did you have questions about the resident doctor that were not answered?
Did you understand more or less about your care because your doctor was a resident?
Did you learn more or less about your health because your doctor was a resident?

6. What do you think in general about having residents working at Harvard Pilgrim doctor’s offices?
7. What affect do you think seeing a resident primary care doctor has on the patient?

Cues for example:
- It affects the patient flow/time schedule
- The resident doctor’s relationship with the patient is different to a non resident doctor
- It affects the patient’s relationship with the doctor
- It affects the patient’s stress level
- It affects patient comfort during the doctor visit

8. In general, what are circumstances when it is not OK to ask people if they would be interested in seeing a resident doctor?

9. If you could look back in time, would you see a resident doctor again?

10. Let’s summarize the key points of our discussion

11. Our goal is to help Harvard Pilgrim decide on its future policy about residency training. Have we missed any relevant issues? (Opportunity to discuss any new questions that have come up in the session)

12. What advice do you have for us?
Questions for focus group of random sample of unexposed members on research and teaching within HPHC

Introduction
Welcome and self introduction by the moderator.

Harvard Pilgrim Health Care has asked its Department of Ambulatory Care and Prevention to talk with a sample of members about medical research and teaching. The Department has asked me, as someone who is not connected with Harvard Pilgrim, to moderate the focus group. The purpose of the group is to hear your thoughts and opinions. The information we learn will be used to design a survey of Harvard Pilgrim members.

Our discussion will be confidential. Your comments will be anonymous, and no-one, other than the research team involved in this study will have access to the tapes. Does anyone have any questions?

1. Introductory question:
   e.g. Tell us your first name, and how long you have been a Harvard Pilgrim Health Care member?

2. Let’s talk about health care research in general:
   a. Should health care organizations in general be involved with research?
   b. Should Harvard Pilgrim Health Care, in particular, be involved with research?
   c. What impression do you have in general about doctors, nurses and other health professionals who do research, compared to health professionals who do not do research?
3. Let’s talk about some of the different types of research. For example, research may involve:

[On a card for each participant to see]
Filling out a questionnaire
Being interviewed on the telephone
Being interviewed in person at the doctor’s office
Going to the doctor’s office or hospital for an extra visit
Being examined by a doctor doing research
Giving a blood sample
Taking new tablets or medicine
Having an extra test, for example an x-ray or ultrasound scan
Having a new type of surgery
Being assigned one of two or more treatments at random [This means that the type of treatment a patient receives is decided by the research study design, rather than by the patient’s own doctor. As far as is known the treatments are thought to be as effective as each other, and the study is to find out if one is better.]

In your view, how willing are people in general to participate in these activities?

4. Let’s talk about research and medical records:

a. Do you think it is OK for researchers doing approved work to have access to the information in medical records?

b. Under what circumstances?

   Cues for example:
   members are anonymous
   information about members is kept confidential
   access to certain information about members is restricted, for example information about mental health problems

5. Let’s talk about medical student teaching. A medical student is a student who is studying to be a doctor.

   a. Should health care organizations in general be involved in medical student education?

   b. Should Harvard Pilgrim Health Care, in particular, be involved in medical student teaching?

   c. What impression do you have in general about doctors, nurses and other health professionals who teach medical students, compared to health professionals who do not teach medical students?

6. What do you think in general about having medical students at the doctor’s office?
7. Let's talk about some of the different types of teaching activity. For example teaching may involve:

[On a card for each participant to see]
- Have a medical student sitting in with the doctor or nurse
- Being interviewed by a medical student
- Having the medical student examine the patient’s hand
- Having the medical student examine the patient’s abdomen
- Having the medical student do an internal exam, for example rectal or vaginal exam
- Discussing the treatment plan with a medical student

In your view, how willing are people in general to participate in these activities?

8. Let's talk about primary care residents teaching in general. A primary care resident is a fully qualified doctor who is undergoing further training to be a primary care physician.

a. Should health care organizations in general be involved with training resident doctors?

b. Should Harvard Pilgrim Health Care, in particular, be involved with training resident doctors?

c. What impression do you have in general about doctors, nurses and other health professionals who help to train residents, compared to health professionals who do not teach residents?

9. What do you think in general about having residents working at Harvard Pilgrim doctor’s offices?

10. Let's talk about some of the different types of resident training activity. For example resident training may involve:

[On a card for each participant to see]
- Having a resident as the member’s primary care doctor
- Seeing a resident instead of the member’s usual primary care doctor
- Seeing a resident in urgent care

In your view, how willing are people in general to participate in these activities?

11. Let's summarize the key points of our discussions
12. Our goal is to help Harvard Pilgrim decide on its future policy about research, medical student education and resident training. Have we missed any relevant issues? (Opportunity to discuss any new questions that have come up in the session)

13. What advice do you have for us?
Appendix 2. Member survey instruments

N.B. Questionnaires sent to members were professionally typeset on paper with the Harvard Pilgrim crest and heading. Questionnaires were marked with coding numbers.
Member Research Survey (Adult)

Harvard Pilgrim Health Care (formerly Harvard Community Health Plan and Pilgrim Health Care) has a long-established tradition of participation in medical research. Doctors and other clinicians who work for Harvard Pilgrim take part in research in many different areas of health care.

Your responses to this questionnaire will help us learn about your views of research at Harvard Pilgrim. This information will help us shape future research activities to better meet the needs of Harvard Pilgrim members.

There are no right or wrong answers to many of the questions we ask. Some people who receive this survey will have experience with research, others will not. Even if you have never had a personal experience with a research study, your thoughts and responses are important to us. Thank you so much for your time.

1. Harvard Pilgrim should actively participate in research

(circle one response)

strongly agree   agree   neither agree   disagree   strongly disagree
nor disagree

PLEASE ANSWER THE QUESTIONS ON BOTH SIDES OF THE SHEET
2. Research at Harvard Pilgrim: (circle one response for each statement)

should be paid for by Harvard Pilgrim itself

strongly agree  agree  neither agree  disagree  strongly disagree
nor disagree

should be paid for by funding organizations other than Harvard Pilgrim

strongly agree  agree  neither agree  disagree  strongly disagree
nor disagree

should be more visible to members

strongly agree  agree  neither agree  disagree  strongly disagree
nor disagree

should include research on alternative medicine

strongly agree  agree  neither agree  disagree  strongly disagree
nor disagree

should include research carried out with information from member’s medical records, with safeguards for confidentiality

strongly agree  agree  neither agree  disagree  strongly disagree
nor disagree

Example

When responding to several of the next questions you will need to be familiar with a particular question and answer format. Here is an example of a question and answer:

e.g. How would you describe the winter weather in Boston last year?

(on the line below circle the number that most closely represents your feeling)

warm  1  2  3  4  5  6  7  cold

This response shows you felt that the weather was more cold than warm.
3. Whether or not you remember a situation when you participated in research, how would you describe the likely impact of research on medical care?

*(on each line below circle the number that most closely represents your feeling)*

**I believe that taking part in medical research:**

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4. We now ask you to consider several possible situations in which your participation in a research study might be sought. Please tell us how you think you would respond if you were in the situation.

- Suppose you are visiting your primary care clinician for a routine physical. Afterwards you are asked to complete a survey about your satisfaction with the visit. What would you prefer?

  *(circle one response)*

  a. to complete a written survey at the end of the visit.................................................1
  b. to complete a written survey sent to you in the mail...............................................2
  c. to complete a telephone survey..............................................................................3
  d. no special preference for a, b, or c.........................................................................4
  e. not to complete any survey...................................................................................5

- During the visit your clinician asks you to participate in a research study about diet and health that involves giving a blood sample. Giving the blood sample will not affect your treatment in any way. Please show how the following circumstances would affect your willingness to participate in the study:

  *(on each line below circle the number that most closely represents your feeling)*

  written information about the study was provided
  the request to participate came from your clinician
  there is a financial incentive for participation
  there is no direct benefit for your health

  likely to 1 2 3 4 5 6 7 not likely to participate
  likely to 1 2 3 4 5 6 7 not likely to participate
  likely to 1 2 3 4 5 6 7 not likely to participate
  likely to 1 2 3 4 5 6 7 not likely to participate
Suppose your clinician finds that you have high blood pressure and recommends medication for this problem, telling you there are several treatments available that could be effective for your condition. Harvard Pilgrim is currently studying the different treatments to determine if one is better than the others. You have an opportunity to take one of these treatments as part of a research study.

Please show how the following circumstances would affect your willingness to participate in the study:

(On each line below circle the number that most closely represents your feeling)

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<tr>
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<th>likely to participate</th>
<th>not likely to participate</th>
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<tr>
<td>there is no direct benefit for your health</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
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<tr>
<td>you cannot determine which treatment you receive</td>
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<tr>
<td>feedback about the results would be provided to you</td>
<td>1 2 3 4 5 6 7</td>
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Background questions

5. Can you remember participating in research at Harvard Pilgrim?

(circle one response)

Yes.................................................................1
No......................................................................2
Not sure..........................................................3

6. Can you remember having any other personal experience with research, for example at a teaching hospital?

(circle one response)

Yes.....................................................................1
No.....................................................................2
Not sure..........................................................3

7. If you have been involved with research, did the research involve yourself or your child?

(circle the response or responses that apply to you)

Self.................................................................1
Child...............................................................2
Not applicable (no experience with research).........3

8. Which experience made the greatest impression on your views of research?

(circle one response)

Experience with research at Harvard Pilgrim.................................1
Experience with research elsewhere..............................................2
Experience of research at Harvard Pilgrim and elsewhere had a similar impact.........................................................3
Not applicable (no experience with research).................................4
Now some simple questions about you:

9. How long have you been a member of Harvard Pilgrim Health Care (formerly Harvard Community Health Plan and Pilgrim Health Care)?

.................... years (write in the number)

10. What is your gender?

Male..............................................................................................1
Female..........................................................................................2

11. How old were you on your last birthday?

.................... years (write in the number)

12. What is the highest grade or level of high school or college that you have completed?

(circle one response)

Less than 8th grade.................................................................................1
Some high school......................................................................................2
High school graduate/GED........................................................................3
Some college or other education and training after high school..............4
Two year college graduate........................................................................5
Four year college graduate......................................................................6
Post graduate education or degree..........................................................7

13. Which of the following best describes your race?

(circle one response)

Asian or Pacific Islander (having origins in the Far East, Southeast Asia, the Indian subcontinent or the Pacific Islands)..........................................................1
Black/African American (not of Hispanic origin).......................................2
Hispanic/Latino (Mexican, Mexican American, Chicano, Puerto Rican or Cuban)..................................................................................3
Native American.......................................................................................4
Indian/Alaskan Native.............................................................................5
White/Caucasian (not of Hispanic origin)...............................................6
Multi-racial...............................................................................................7
Other (please specify).............................................................................8
If you have any comments about research at Harvard Pilgrim please write them below, or call Dr. Sarah Purdy at (617) 421 6027. You need not give your name if you call.

THANK YOU VERY MUCH FOR COMPLETING THIS SURVEY.

Please return this form in the envelope provided to:

Department of Ambulatory Care and Prevention
Harvard Pilgrim Health Care
126 Brookline Avenue
Suite 200
Boston, MA 02215
Harvard Pilgrim Health Care (formerly Harvard Community Health Plan and Pilgrim Health Care) has a long-established tradition of participation in medical research. Pediatricians and other clinicians who work for Harvard Pilgrim take part in research in many different areas of children’s health care.

Your responses to this questionnaire will help us learn about your views of research at Harvard Pilgrim. This information will help us shape future research activities to better meet the needs of Harvard Pilgrim members.

There are no right or wrong answers to many of the questions we ask. Some people who receive this survey will have experience with research, others will not. Even if you and your child have never had a personal experience with a research study, your thoughts and responses are important to us. Thank you so much for your time.

1. Harvard Pilgrim should actively participate in research

(circle one response)

strongly agree agree neither agree disagree strongly disagree nor disagree

PLEASE ANSWER THE QUESTIONS ON BOTH SIDES OF THE SHEET
2. Research at Harvard Pilgrim: *(circle one response for each statement)*

**should be paid for by Harvard Pilgrim itself**

<table>
<thead>
<tr>
<th>Strongly Agree</th>
<th>Agree</th>
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**should be paid for by funding organizations other than Harvard Pilgrim**

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**should be more visible to members**

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**should include research on alternative medicine**

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**should include research carried out with information from member’s medical records, with safeguards for confidentiality**

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**Example**

*When responding to several of the next questions you will need to be familiar with a particular question and answer format. Here is an example of a question and answer:*

*e.g. How would you describe the winter weather in Boston last year?*

*(on the line below circle the number that most closely represents your feeling)*

<table>
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<tr>
<th>warm</th>
<th>1</th>
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<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>cold</th>
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*This response shows you felt that the weather was more cold than warm.*
3. Whether or not you remember a situation when your child participated in research, how would you describe the likely impact of research on medical care?

*(on each line below circle the number that most closely represents your feeling)*

**I believe that taking part in medical research:**

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<th>Impact Description</th>
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</table>
4. We now ask you to consider several possible situations in which you and your child may be invited to participate in a research study. Please tell us how you think you would respond if you were in the situation.

- Suppose you are visiting your pediatrician for a routine physical for your child who is seven years of age and has mild asthma. You and your child are asked to answer some questions about the health care your child has received at Harvard Pilgrim. Would you prefer:

(*circle one response*)

a. to be interviewed at the end of the visit. ..............................................................1
b. to complete a written survey at the end of the visit .................................................2
c. to complete a written survey sent to you in the mail .............................................3
d. no special preference for a, b, or c .......................................................................4
e. not to complete any survey ..................................................................................5

- During the visit your clinician asks you to participate in a research study about childhood asthma that involves an extra visit for you and your child to learn about a new 'game' to help children learn about asthma and how to take care of this condition. Please show how the following circumstances would affect your willingness to participate in the study:

(*on each line below circle the number that most closely represents your feeling*)

- written information about the study was provided
  
  likely to participate 1 2 3 4 5 6 7 not likely to participate

- the request to participate came from your child's clinician
  
  likely to participate 1 2 3 4 5 6 7 not likely to participate

- there is a financial incentive for participation
  
  likely to participate 1 2 3 4 5 6 7 not likely to participate

- there is no direct benefit for your child's health
  
  likely to participate 1 2 3 4 5 6 7 not likely to participate

- your child is interested in taking part
  
  likely to participate 1 2 3 4 5 6 7 not likely to participate
Suppose your clinician recommends that your child needs medication for the mild asthma, telling you that there are a number of treatments available. Harvard Pilgrim is currently studying the treatments to determine if one is better than the others. Your child has an opportunity to take one of these treatments as part of a research study.

Please show how the following circumstances would affect your willingness to participate in the study:

*(on each line below circle the number that most closely represents your feeling)*

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<th>Circumstance</th>
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<td>there is a financial incentive for participation</td>
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<td>there is no direct benefit for your child's health</td>
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<td>8</td>
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Background questions

5. Can you remember participating in research at Harvard Pilgrim?

(circle one response)

*Yes.................................................................1
*No .................................................................2
*Not sure.........................................................3

6. Can you remember having any other personal experience with research, for example at a teaching hospital?

(circle one response)

*Yes.................................................................1
*No .................................................................2
*Not sure.........................................................3

7. If you have been involved with research, did the research involve yourself or your child?

(circle the response or responses that apply to you)

*Self...............................................................1
*Child............................................................2
*Not applicable (no experience with research)..........3

8. Which experience made the greatest impression on your views of research?

(circle one response)

*Experience with research at Harvard Pilgrim.................................1
*Experience with research elsewhere...............................2
*Experience of research at Harvard Pilgrim and elsewhere had a similar impact...................................3
*Not applicable (no experience with research)..........................4
Now some simple questions about you:

9. How long have you been a member of Harvard Pilgrim Health Care (formerly Harvard Community Health Plan and Pilgrim Health Care)?

........................ years (write in the number)

10. What is your gender?

Male..............................................................................................1
Female..........................................................................................2

11. How old were you on your last birthday?

........................ years (write in the number)

12. How old are your children?

........., ........ years (write in the number[s])

13. What is the highest grade or level of high school or college that you have completed?

(circle one response)

Less than 8th grade..............................................................................1
Some high school....................................................................................2
High school graduate/GED......................................................................3
Some college or other education and training after high school..............4
Two year college graduate...................................................................5
Four year college graduate..................................................................6
Post graduate education or degree..........................................................7
14. Which of the following best describes your race?

(circle one response)

Asian or Pacific Islander (having origins in the Far East, Southeast Asia, the Indian subcontinent or the Pacific Islands)..................................................................................1
Black/African American (not of Hispanic origin)..................................................................2
Hispanic/Latino (Mexican, Mexican American, Chicano, Puerto Rican or Cuban)..............3
Native American..................................................................................................................4
Indian/Alaskan Native..........................................................................................................5
White/Caucasian (not of Hispanic origin)...............................................................................6
Multi-racial..............................................................................................................................7
Other (please specify)..............................................................................................................8

If you have any comments about research at Harvard Pilgrim please write them below, or call Dr. Sarah Purdy at (617) 421 6027. You need not give your name if you call.

THANK YOU VERY MUCH FOR COMPLETING THIS SURVEY.

Please return this form in the envelope provided to:

Department of Ambulatory Care and Prevention
Harvard Pilgrim Health Care
126 Brookline Avenue
Suite 200
Boston, MA 02215
Medical Student Teaching Survey (Adult)

Harvard Pilgrim Health Care (Harvard Pilgrim, formerly Harvard Community Health Plan and Pilgrim Health Care) has a long-established link with Harvard Medical School. Doctors and health professionals who work for Harvard Pilgrim take part in teaching medical students in primary care clinicians’ offices at many practice sites. Medical students are college graduates who are training to become physicians.

Your responses to this questionnaire will help us learn about your views of medical student teaching at Harvard Pilgrim. This information will help us shape future teaching activities to better meet the needs Harvard Pilgrim members.

There are no right or wrong answers. Some people who receive this survey will have had experience with medical students, others will not. Even if you have never had a personal experience with medical students, your thoughts and responses are important to us.

Thank you so much for your time.

1. Do you feel you understand what medical students are allowed to do while participating in patient care?

(circle one response)

Yes ........................................................................................................1
No ........................................................................................................2
Not sure ...............................................................................................3

PLEASE ANSWER THE QUESTIONS ON BOTH SIDES OF THE SHEET
2. I believe that teaching medical students at Harvard Pilgrim is a good idea:

(circle one response)

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>agree</th>
<th>neither agree</th>
<th>disagree</th>
<th>strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

If you circle “agree” or “strongly agree”, please answer:

Harvard Pilgrim should train medical students so it can:

(circle all the responses that you agree with)

a. create better doctors ......................................................... 1
b. teach future doctors about HMOs and managed care .................. 2
c. hire some students as future doctors .................................... 3
d. contribute to the future of medicine ................................... 4
e. none of the above ............................................................... 5

3. I believe that teaching medical students at Harvard Pilgrim: (circle one response for each possible effect)

increases cost to members

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>agree</th>
<th>neither agree</th>
<th>disagree</th>
<th>strongly disagree</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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affects confidentiality of patient information

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>agree</th>
<th>neither agree</th>
<th>disagree</th>
<th>strongly disagree</th>
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<tbody>
<tr>
<td></td>
<td></td>
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<td></td>
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</tbody>
</table>

increases the clinical skill of teaching clinicians

<table>
<thead>
<tr>
<th>strongly agree</th>
<th>agree</th>
<th>neither agree</th>
<th>disagree</th>
<th>strongly disagree</th>
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</tbody>
</table>
Example

When responding to several of the next questions you will need to be familiar with a particular question and answer format. Here is an example of a question and answer:

e.g. How would you describe the winter weather in Boston last year?

(on the line below circle the number that most closely represents your feeling)

warm  1  2  3  4  5  6  7  cold

This response shows you felt that the weather was more cold than warm.
4. Whether or not you remember a situation when a medical student was present while you were getting health care, what do you think the likely effect of medical student participation on medical care would be?

*(on each line below circle the number that most closely represents your feeling)*

**I believe that medical student involvement in medical care:**

<table>
<thead>
<tr>
<th>Description</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>reduces patients' understanding of health problems</td>
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<tr>
<td>would make me feel uncomfortable</td>
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<tr>
<td>is anxiety relieving</td>
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<td>is time saving</td>
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<td>impairs communication with the clinician</td>
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<tr>
<td>is a good experience</td>
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<tr>
<td>has no overall impact on medical care</td>
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<tr>
<td>increases patients' understanding of health problems</td>
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<td></td>
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<tr>
<td>would make me feel at ease</td>
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<td></td>
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<tr>
<td>is anxiety producing</td>
<td></td>
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<td></td>
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<td></td>
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<tr>
<td>is time consuming</td>
<td></td>
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<tr>
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<td></td>
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<tr>
<td>is a bad experience</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
5. Now we ask you to consider several possible situations in which a medical student might be participating in a medical visit. Please tell us how you think you would respond if you were in the situation.

- Suppose you are visiting your primary care clinician for a routine physical. *Who* would you like to ask you if a medical student can participate in your visit?

  *(circle the response that is best for you)*

<table>
<thead>
<tr>
<th>Option</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>the receptionist</td>
<td>1</td>
</tr>
<tr>
<td>the person who shows you to the exam room</td>
<td>2</td>
</tr>
<tr>
<td>the clinician</td>
<td>3</td>
</tr>
<tr>
<td>no special preference</td>
<td>4</td>
</tr>
</tbody>
</table>

- *When* would you prefer to be asked if a medical student can participate in your visit?

  *(circle the response that is best for you)*

<table>
<thead>
<tr>
<th>Option</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>when you make the appointment</td>
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</tr>
<tr>
<td>when you first see the clinician</td>
<td>4</td>
</tr>
<tr>
<td>no special preference</td>
<td>5</td>
</tr>
</tbody>
</table>
Some aspects of a visit that might make you feel more or less comfortable with medical student participation are listed below. Would you be comfortable or uncomfortable with a medical student being present if:

*(on each line below circle the number that most closely represents your feeling)*

<table>
<thead>
<tr>
<th>Situation</th>
<th>Uncomfortable</th>
<th>Comfortable</th>
</tr>
</thead>
<tbody>
<tr>
<td>you want to discuss a new problem with your clinician</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>you want to discuss an emotional problem with your clinician</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>you and the student are of different genders</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>you need an internal exam (vaginal exam for women, rectal exam for men)</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>you are given specific information about the activities of medical students</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>you know and trust your primary care clinician</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
<tr>
<td>you know your primary care clinianan will supervise all aspects of the visit</td>
<td>1 2 3 4 5 6 7</td>
<td></td>
</tr>
</tbody>
</table>
• Certain things that clinicians and their students do may make you feel more or less comfortable with medical student participation in the visit. Would you be comfortable or uncomfortable with a medical student being present if:

(On each line below circle the number that most closely represents your feeling)

- the student observes while your clinician asks questions and examines you

  uncomfortable 1 2 3 4 5 6 7 comfortable

- the student asks you questions while your clinician listens

  uncomfortable 1 2 3 4 5 6 7 comfortable

- the student does a physical while your clinician observes

  uncomfortable 1 2 3 4 5 6 7 comfortable

- the student asks questions and does a physical exam while the clinician is out of the room, the clinician then comes in and repeats both

  uncomfortable 1 2 3 4 5 6 7 comfortable

- the clinician and the student discuss your health in front of you, involving you in the discussion

  uncomfortable 1 2 3 4 5 6 7 comfortable

- the clinician and the student leave the room to discuss your case

  uncomfortable 1 2 3 4 5 6 7 comfortable

• Suppose you need to have an internal examination (vaginal exam for women, rectal exam for men). Would you be comfortable or uncomfortable with a medical student being present if:

(On each line below circle the number that most closely represents your feeling)

- the student observes your clinician doing the exam

  uncomfortable 1 2 3 4 5 6 7 comfortable

- the student does the exam with close supervision by the clinician

  uncomfortable 1 2 3 4 5 6 7 comfortable

- the student and the clinician both do the exam

  uncomfortable 1 2 3 4 5 6 7 comfortable

- the student leaves the room before the exam is performed

  uncomfortable 1 2 3 4 5 6 7 comfortable
Background questions

6. Can you remember a visit to Harvard Pilgrim at which a medical student was present?

(circle one response)

No........................................................... 2) → If no or not sure, go to question 7
Not sure................................................... 3)
Yes.......................................................... 1
↓
If yes:

a. Was the visit for yourself, or for your child?
(If you recall more than one visit, please answer the following questions about the most recent visit)

Self ..........................................................1
Child ..........................................................2

b. Which of the following best describes the main reason for that visit?

(circle one response)

A physical exam or routine check up (this could include a vaccination/immunization)..............................1
A first visit for an illness or injury...............................................................2
A return visit for an illness, injury or ongoing health problem......................3

7. Can you remember having any other personal experience with medical students, for example at a teaching hospital?

(circle one response)

Yes .............................................................1
No ......................................................................2
Not sure..........................................................3
8. Which experience made the greatest impression on your views of medical students?

(circle one response)

Experience with medical students at Harvard Pilgrim....................................................1
Experience with medical students elsewhere ..................................................................2
Experiences with medical students at Harvard Pilgrim and elsewhere had a similar impact.................................................................3
No experience with medical students.............................................................................4

Now some simple questions about you:

9. How long have you been a member of Harvard Pilgrim Health Care (Harvard Pilgrim, formerly Harvard Community Health Plan and Pilgrim Health Care)?

....................... years (write in the number)

10. What is your gender?

Male..............................................................................................1
Female..........................................................................................2

11. How old were you on your last birthday?

..................... years (write in the number)

12. What is the highest grade or level of high school or college that you have completed?

(circle one response)

Less than 8th grade.........................................................................................................1
Some high school.............................................................................................................2
High school graduate/GED.............................................................................................3
Some college or other education and training after high school.................................4
Two year college graduate.............................................................................................5
Four year college graduate.............................................................................................6
Post graduate education or degree..................................................................................7
13. Which of the following best describes your race?

(circle one response)

Asian or Pacific Islander (having origins in the Far East, Southeast Asia, the Indian subcontinent or the Pacific Islands).............................................................1

Black/African American (not of Hispanic origin).....................................................2

Hispanic/Latino (Mexican, Mexican American, Chicano, Puerto Rican or Cuban).................................................................................................3

Native American........................................................................................................4

Indian/Alaskan Native..................................................................................................5

White/Caucasian (not of Hispanic origin).................................................................6

Multi-racial....................................................................................................................7

Other (please specify)...................................................................................................8

If you have any comments about medical student teaching at Harvard Pilgrim please write them below, or call Dr. Sarah Purdy at (617) 421 6027. You need not give your name if you call.

THANK YOU VERY MUCH FOR COMPLETING THIS SURVEY.

Please return the form in the envelope provided to:

Department of Ambulatory Care and Prevention
Harvard Pilgrim Health Care
126 Brookline Avenue
Suite 200
Boston, MA 02215
Harvard Pilgrim Health Care (Harvard Pilgrim, formerly Harvard Community Health Plan and Pilgrim Health Care) has a long-established link with Harvard Medical School. Doctors and health professionals who work for Harvard Pilgrim take part in teaching medical students in primary care physicians’ and pediatricians’ offices at many practice sites. Medical students are college graduates who are training to become physicians.

Your responses to this questionnaire will help us learn about your views of medical student teaching in pediatricians’ offices at Harvard Pilgrim. This information will help us future teaching activities to better meet the needs of Harvard Pilgrim members.

There are no right or wrong answers. Some people who receive this survey will have experience with medical students, others will not. Even if you have never had a personal experience with medical students, your thoughts and responses are important to us. Thank you so much for your time.

1. Do you feel you understand what medical students are allowed to do while participating in patient care?

(circle one response)

Yes ........................................................................................................1
No..........................................................................................................2
Not sure..................................................................................................3

PLEASE ANSWER THE QUESTIONS ON BOTH SIDES OF THE SHEET
2. I believe that teaching medical students at Harvard Pilgrim is a good idea:

(circle one response)

strongly agree agree neither agree disagree strongly disagree
nor disagree

If you circled “agree” or “strongly agree”, please answer:

Harvard Pilgrim should train medical students so it can:

(circle all the responses that you agree with)

a. create better doctors.............................................................1
b. teach future doctors about HMOs and managed care...............2
c. hire some students as future doctors.....................................3
d. contribute to the future of medicine....................................4
e. none of the above...............................................................5

3. I believe that teaching medical students at Harvard Pilgrim: (circle one response for each possible effect)

increases cost to members

strongly agree agree neither agree disagree strongly disagree
nor disagree

affects confidentiality of patient information

strongly agree agree neither agree disagree strongly disagree
nor disagree

increases the clinical skill of teaching clinicians

strongly agree agree neither agree disagree strongly disagree
nor disagree
Example

*When responding to several of the next questions you will need to be familiar with a particular question and answer format. Here is an example of a question and answer:*

e.g. *How would you describe the winter weather in Boston last year?*

*(on the line below circle the number that most closely represents your feeling)*

| warm | 1 | 2 | 3 | 4 | 5 | 6 | 7 | cold |

*This response shows you felt that the weather was more cold than warm.*
4. Whether or not you remember a situation when a medical student was present while your child was getting health care, what do you think the likely effect of medical student participation on medical care would be?

(On each line below circle the number that most closely represents your feeling)

I believe that medical student involvement in medical care:

<table>
<thead>
<tr>
<th>reduction or parents' understanding of health problems</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td>increases patient or parents' understanding of health problems</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>would make me or my child feel uncomfortable</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>is anxiety relieving</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>is time saving</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>impairs communication with the clinician</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>is a good experience</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>has no overall impact on medical care</td>
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<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

243
5. We now ask you to consider several possible situations in which a medical student might participate in a visit to the pediatrician’s office. Please tell us how you think you would respond if you were in the situation.

- Suppose you are visiting your child’s primary care clinician for a routine physical.

*How would you prefer to be asked if a medical student can participate in your visit?*

I would prefer that:

(circle the response that is best for you)

My child be asked while I am present, assuming my child is old enough to understand ................................................................. 1
Both my child and I were asked, assuming my child is old enough to understand................................................................. 2
I was asked, and my child was not asked ................................................ 3
No special preference ..................................................................... 4

At what age do you think your child should be asked if a medical student can be present during your visit?

................. years (write in the number)

*Who would you like to ask you if a medical student can participate in your visit?*

(circle the response that is best for you)

the receptionist.......................................................... 1
the person who shows you to the exam room............. 2
the clinician............................................................... 3
no special preference................................................. 4

*When would you prefer to be asked if a medical student can participate in your visit?*

(circle the response that is best for you)

when you make the appointment...................................................... 1
when you receive a reminder telephone call the day before............ 2
when you arrive at the office.......................................................... 3
when you first see the clinician..................................................... 4
no special preference.................................................................. 5
• Certain things that clinicians and their students do may make you and your child feel more or less comfortable with medical student participation in the visit. Would you be comfortable or uncomfortable with a medical student present if:

(On each line below circle the number that most closely represents your feeling)

the student observes while your clinician asks questions and examines your child 1 2 3 4 5 6 7 comfortable

the student asks you questions while your clinician listens 1 2 3 4 5 6 7 comfortable

the student asks your child questions while your clinician listens 1 2 3 4 5 6 7 comfortable

the student examines your child’s heart and lungs under the supervision of the clinician 1 2 3 4 5 6 7 comfortable

the student asks questions and examines your child’s heart and lungs while the clinician is out of the room, the clinician then comes in and repeats both 1 2 3 4 5 6 7 comfortable

the student examines your child’s ears 1 2 3 4 5 6 7 comfortable

the student and the clinician both examine your child’s ears 1 2 3 4 5 6 7 comfortable
Background questions

6. Can you remember a visit to Harvard Pilgrim at which a medical student was present?

(circle one response)

No.............................................................. 2) → If no or not sure, go to question 7
Not sure....................................................3)
Yes............................................................1
↓
If yes:

a. Was the visit for yourself, or for your child?
(If you recall more than one visit, please answer the following questions about the most recent visit)

Self ...........................................................................1
Child ........................................................................2

b. Which of the following best describes the main reason for that visit?

(circle one response)

A physical exam or routine check up (this could include a vaccination/immunization).................................1
A first visit for an illness or injury.................................................................2
A return visit for an illness, injury or ongoing health problem..........................3

7. Can you remember having any other personal experience with medical students, for example at a teaching hospital?

(circle one response)

Yes .................................................................1
No ........................................................................2
Not sure..........................................................3
8. Which experience made the greatest impression on your views of medical students?

(circle one response)

- Experience with medical students at Harvard Pilgrim
- Experience with medical students elsewhere
- Experiences with medical students at Harvard Pilgrim and elsewhere had a similar impact
- No experience with medical students

Now we are going to ask some simple questions about you and your child:

9. How long have you been a member of Harvard Pilgrim Health Care (formerly Harvard Community Health Plan and Pilgrim Health Care)?

....................... years (write in the number)

10. What is your gender?

- Male
- Female

11. How old were you on your last birthday?

....................... years (write in the number)

12. How old are your children?

        ......, ......, ......, ......, ......, ......, ......, ...... years (write in the number[s])

13. What is the highest grade or level of high school or college that you have completed?

(circle one response)

- Less than 8th grade
- Some high school
- High school graduate/GED
- Some college or other education and training after high school
- Two year college graduate
- Four year college graduate
- Post graduate education or degree
14. Which of the following best describes your race?

(circle one response)

Asian or Pacific Islander (having origins in the Far East, Southeast Asia, the Indian subcontinent or the Pacific Islands).................................................................1

Black/African American (not of Hispanic origin).................................................................2

Hispanic/Latino (Mexican, Mexican American, Chicano, Puerto Rican or Cuban).........................3

Native American..................................................................................................................4

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White/Caucasian (not of Hispanic origin)...........................................................................6

Multi-racial..........................................................................................................................7

Other (please specify)........................................................................................................8

If you have any comments about medical student teaching at Harvard Pilgrim please write them below, or call Dr. Sarah Purdy at (617) 421 6027. You need not give your name if you call.

THANK YOU VERY MUCH FOR COMPLETING THIS SURVEY.

Please return the form in the envelope provided to:

Department of Ambulatory Care and Prevention
Harvard Pilgrim Health Care
126 Brookline Avenue
Suite 200
Boston, MA 02215
Resident Teaching Survey

Harvard Pilgrim Health Care (Harvard Pilgrim, formerly Harvard Community Health Plan and Pilgrim Health Care) has a long-established tradition of training resident physicians (residents) to be primary care providers. A resident is a fully qualified doctor who is undergoing more training to take specialty boards in internal medicine. Doctors and health professionals who work for Harvard Pilgrim take part in the training of residents in primary care clinicians' offices at many practice sites.

Your responses to this questionnaire will help us learn about your views of primary care resident training at Harvard Pilgrim. This information will help us shape future training activities to better meet the needs of Harvard Pilgrim members.

There are no right or wrong answers. Some people who receive this survey will have experience with primary care residents, others will not. Even if you have never had a personal experience with a resident, your thoughts and responses are important to us. Thank you so much for your time.

1. Residents should train to be primary care physicians at Harvard Pilgrim

(circle one)

strongly agree    agree    neither agree    disagree    strongly disagree
nor disagree

PLEASE ANSWER THE QUESTIONS ON BOTH SIDES OF THE SHEET
2. Training of residents at Harvard Pilgrim: *(circle one response for each possible effect)*

- **teaches residents good ‘bedside manners’**
  - strongly agree
  - agree
  - neither agree
  - disagree
  - strongly disagree

- **potentially lowers the quality of care**
  - strongly agree
  - agree
  - neither agree
  - disagree
  - strongly disagree

- **increases the clinical expertise of the clinicians who train residents**
  - strongly agree
  - agree
  - neither agree
  - disagree
  - strongly disagree

- **is an activity not widely known among Harvard Pilgrim members**
  - strongly agree
  - agree
  - neither agree
  - disagree
  - strongly disagree

- **can disrupt patients’ continuity of care**
  - strongly agree
  - agree
  - neither agree
  - disagree
  - strongly disagree

- **promotes up-to-date, ‘state-of-the-art’ care**
  - strongly agree
  - agree
  - neither agree
  - disagree
  - strongly disagree

**Example**

*When responding to several of the next questions you will need to be familiar with a particular question and answer format. Here is an example of a question and answer:*

*e.g. How would you describe the winter weather in Boston last year?*

*(on the line below circle the number that most closely represents your feeling)*

<table>
<thead>
<tr>
<th>warm</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>cold</th>
</tr>
</thead>
</table>

*This response shows you felt that the weather was more cold than warm.*
3. Whether or not you remember a situation when you have received care from a resident physician, how would you rate the likely effect of a resident on medical care?

*(on each line below circle the number that most closely represents your feeling)*

**I believe that receiving care from a resident:**

<table>
<thead>
<tr>
<th><strong>reduces patients’ understanding of health problems</strong></th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>would make me feel uncomfortable</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td><strong>is anxiety-relieving</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td><strong>increases time for the patient</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td><strong>impairs communication between doctor and patient</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td><strong>is a good experience</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td><strong>has no overall impact on medical care</strong></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>
4. Now we ask you to consider several possible situations in which a resident physician might be providing your health care. Please tell us how you think you would respond if you were in the situation.

- Suppose you need to visit a primary care clinician for a routine physical. How would you feel about seeing a primary care resident for this appointment?

  *(on the line below circle the number that most closely represents your feeling)*

<table>
<thead>
<tr>
<th>comfortable</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>uncomfortable</th>
</tr>
</thead>
</table>

- Suppose you have an long-standing chronic health problem, such as asthma or high blood pressure. You need an appointment for a review of your treatment. How would you feel about seeing a primary care resident for this appointment?

  *(on each line below circle the number that most closely represents your feeling)*

  If the resident is your regular primary care clinician
  If the resident is not your regular primary care physician, but has reviewed your medical records

- Suppose you have a new health problem that you are quite concerned about. How would you feel about seeing a primary care resident for this appointment?

  *(on each line below circle the number that most closely represents your feeling)*

  If the resident is your regular primary care clinician
  If the resident is not your regular primary care physician, but has reviewed your medical records
  If the resident has limited personal experience with the condition, but can get a second opinion at any time
Background questions

5. Can you remember a visit to Harvard Pilgrim when you received care from a primary care resident?

(circle one response)

No.................................................. 2 ) → If no, or not sure, go to question 6
Not sure.........................................3 )
Yes..................................................1
↓
If yes:

a. Which of the following best describes the main reason for that visit?
(If you recall more than one visit, please answer the following questions about the most recent visit)

(circle one response)

A physical exam or routine check up (this could include a vaccination/immunization)..............................................................1
A first visit for an illness or injury...............................................................2
A return visit for an illness, injury or ongoing health problem......................3

b. Why did you see the resident physician at that visit?

(circle one response)

the resident was my primary care doctor...........................................1
the resident saw me instead of my regular primary care doctor.........2
the resident saw me in urgent care.....................................................3

6. Can you remember having any other personal experience with resident physicians, for example at a teaching hospital?

(circle one response)

Yes .............................................................................................................1
No ...............................................................................................................2
Not sure.......................................................................................................3
7. Which experience made the greatest impression on your views of resident physicians?

(circle one response)

Experience with resident physicians at Harvard Pilgrim.................................................. 1
Experience with resident physicians elsewhere................................................................ 2
Experiences with resident physicians at Harvard Pilgrim and elsewhere had a similar impact............................................................................................................................ 3
Not applicable (no experience with resident physicians).................................................. 4

Now some simple questions about you:

8. How long have you been a member of Harvard Pilgrim Health Care (Harvard Pilgrim, formerly Harvard Community Health Plan and Pilgrim Health Care)?

............... years (write in the number)

9. What is your gender?

Male........................................................................................................ 1
Female..................................................................................................... 2

10. How old were you on your last birthday?

............... years (write in the number)

11. What is the highest grade or level of high school or college that you have completed?

(circle one response)

Less than 8th grade......................................................................................... 1
Some high school........................................................................................... 2
High school graduate/GED............................................................................. 3
Some college or other education and training after high school....................... 4
Two year college graduate.............................................................................. 5
Four year college graduate............................................................................. 6
Post graduate education or degree.................................................................. 7
12. Which of the following best describes your race?

(circle one response)

Asian or Pacific Islander (having origins in the Far East, Southeast Asia, the Indian subcontinent or the Pacific Islands) ................................................................. 1
Black/African American (not of Hispanic origin) ........................................... 2
Hispanic/Latino (Mexican, Mexican American, Chicano, Puerto Rican or Cuban) ........................................................................................................... 3
Native American.................................................................................................. 4
Indian/Alaskan Native......................................................................................... 5
White/Caucasian (not of Hispanic origin).......................................................... 6
Multi-racial.......................................................................................................... 7
Other (please specify)......................................................................................... 8

If you have any comments about resident physician training at Harvard Pilgrim please write them below, or call Dr. Sarah Purdy at (617) 421 6027. You need not give your name if you call.

Thank you very much for completing this survey.

Please return this form in the envelope provided to:

Department of Ambulatory Care and Prevention
Harvard Pilgrim Health Care
126 Brookline Avenue
Suite 200
Boston, MA 02215
Appendix 3. Telephone survey instruments for follow up of non-responders
Study # __ __ __ __

Member Research Survey (Adult) - Telephone Follow Up

Hello. My name is ..................... and I'm calling from Harvard Pilgrim Health Care. Is now a good time to talk? We recently sent you several questionnaires to find out your views about medical research at Harvard Pilgrim. We haven't heard back from you and since we value your views, we're asking whether you would take just a minute and answer five short questions on this topic now?

If yes:
Thank you.

1. I am going to read a statement, and ask if you agree or disagree:

I believe that Harvard Pilgrim should actively participate in research:

Do you agree or disagree, or are you somewhere in the middle?

If agree: Do you agree or strongly agree?
If disagree: Do you disagree or strongly disagree?
If somewhere in the middle: do you neither agree or disagree?

(interviewer circle one response)
strongly agree agree neither agree disagree strongly disagree
nor disagree

2. I am going to read another statement, and ask if you agree or disagree:

Research at Harvard Pilgrim should include research carried out with information from member's medical records, with safeguards for confidentiality

Do you agree or disagree, or are you somewhere in the middle?

If agree: Do you agree or strongly agree?
If disagree: Do you disagree or strongly disagree?
If somewhere in the middle: do you neither agree or disagree?

(circle one response)
strongly agree agree neither agree disagree strongly disagree
nor disagree

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3. Can you remember participating in research at Harvard Pilgrim?

(circle one response)

Yes........................................................................1
No ........................................................................2
Not sure...................................................................3

4. Please answer the following question whether or not you remember a situation when you participated in research. If you have no experience with research, please use your best judgment about what the experience would be like.

(interviewer on each line below circle the number that most closely represents the member's feeling)

On a scale of one to seven, if the number one is a good experience, and number seven is a bad experience, do you believe that taking part in medical research would be a good experience, a bad experience, or somewhere in the middle?

would be a good 1  2  3  4  5  6  7 would be a bad experience

On a scale of one to seven, if the number one is no overall impact on medical care, and number seven is a major impact on medical care, do you believe that taking part in medical research would have no overall impact, or a major impact, or be somewhere in the middle?

would have no overall impact on medical care 1  2  3  4  5  6  7 would have a major impact on medical care

This has been a great help. There is no need to return the survey we sent you.

Thank you very much for your time and have a good evening.
Member Research Survey (Pediatrics) - Telephone Follow Up

Hello. My name is .................... and I’m calling from Harvard Pilgrim Health Care. Is now a good time to talk? We recently sent you several questionnaires to find out your views about medical research at Harvard Pilgrim. We haven’t heard back from you and since we value your views, we’re asking whether you would take just a minute and answer five short questions on this topic now?

If yes:
Thank you.

1. I am going to read a statement, and ask if you agree or disagree:

   I believe that Harvard Pilgrim should actively participate in research:

   Do you agree or disagree, or are you somewhere in the middle?

   If agree: Do you agree or strongly agree?
   If disagree: Do you disagree or strongly disagree?
   If somewhere in the middle: do you neither agree or disagree?

   (interviewer circle one response)

   strongly agree  agree  neither agree  disagree  strongly disagree
   nor disagree

2. I am going to read another statement, and ask if you agree or disagree:

   Research at Harvard Pilgrim should include research carried out with information from member’s medical records, with safeguards for confidentiality

   Do you agree or disagree, or are you somewhere in the middle?

   If agree: Do you agree or strongly agree?
   If disagree: Do you disagree or strongly disagree?
   If somewhere in the middle: do you neither agree or disagree?

   (circle one response)

   strongly agree  agree  neither agree  disagree  strongly disagree
   nor disagree
3. Can you remember participating in research at Harvard Pilgrim?

(circle one response)

Yes..............................................................................................................................1
No .................................................................................................................................2
Not sure........................................................................................................................3

4. If you have been involved with research, did the research involve yourself or your child?

(circle the response or responses that apply to you)

Self....................................................................................................................................1
Child.................................................................................................................................2

5. Please answer the following question whether or not you remember a situation when your child participated in research. If you have no experience with research, please use your best judgment about what the experience would be like.

(interviewer on each line below circle the number that most closely represents the member's feeling)

On a scale of one to seven, if the number one is a good experience, and number seven is a bad experience, do you believe that taking part in medical research would be a good experience, a bad experience, or somewhere in the middle?

would be a good 1  2  3  4  5  6  7 would be a experience
bad experience

On a scale of one to seven, if the number one is no overall impact on medical care, and number seven is a major impact on medical care, do you believe that taking part in medical research would have no overall impact, or a major impact, or be somewhere in the middle?

would have no overall impact on medical care 1  2  3  4  5  6  7 would have a major impact on medical care

This has been a great help. There is no need to return the survey we sent you.

Thank you very much for your time and have a good evening.
Medical Student Teaching Survey (Adult) - Telephone Follow up

Hello. My name is ....................... and I'm calling from Harvard Pilgrim Health Care. Is now a good time to talk? We recently sent you several questionnaires to find out your views about medical student teaching at Harvard Pilgrim. We haven't heard back from you and since we value your views, we're asking whether you would take just a minute and answer four short questions on this topic now?

If yes:
Thank you.

1. I am going to read a statement, and ask if you agree or disagree:

I believe that teaching medical students at Harvard Pilgrim is a good idea:

Do you agree or disagree, or are you somewhere in the middle?

If agree: Do you agree or strongly agree?
If disagree: Do you disagree or strongly disagree?
If somewhere in the middle: do you neither agree or disagree?

(interviewer circle one response)

strongly agree    agree    neither agree    disagree    strongly disagree nor disagree

2. Can you remember a visit to Harvard Pilgrim at which a medical student was present?

(circle one response)

No......................................................... 2
Not sure..................................................3
Yes........................................................1
3. Please answer the following question whether or not you remember having a medical student present during your health care. If you have no experience with medical students, please use your best judgment about what the experience would be like.

(interviewer on each line below circle the number that most closely represents the member’s feeling)

On a scale of one to seven, if the number one is a good experience, and number seven is a bad experience, do you believe that medical student involvement in medical care would be a good experience, a bad experience, or somewhere in the middle?

would be a good 1  2  3  4  5  6  7 would be a experience bad experience

On a scale of one to seven, if the number one is no overall impact on medical care, and number seven is a major impact on medical care, do you believe that medical student involvement in medical care would have no overall impact, or a major impact, or be somewhere in the middle?

would have no overall impact on medical care 1  2  3  4  5  6  7 would have a major impact on medical care

This has been a great help. There is no need to return the survey we sent you.

Thank you very much for your time and have a good evening.
Medical Student Teaching Survey (Pediatric) - Telephone Follow up

Hello. My name is ...................... and I'm calling from Harvard Pilgrim Health Care. Is now a good time to talk? We recently sent you several questionnaires to find out your views about medical student teaching at Harvard Pilgrim. We haven't heard back from you and since we value your views, we're asking whether you would take just a minute and answer five short questions on this topic now?

If yes:
Thank you.

1. I am going to read a statement, and ask if you agree or disagree:

I believe that teaching medical students at Harvard Pilgrim is a good idea:

Do you agree or disagree, or are you somewhere in the middle?

If agree: Do you agree or strongly agree?
If disagree: Do you disagree or strongly disagree?
If somewhere in the middle: do you neither agree or disagree?

(interviewer circle one response)

strongly agree agree neither agree disagree strongly disagree
nor disagree

2. Can you remember a visit to Harvard Pilgrim at which a medical student was present?

(circle one response)

No......................................................... 2
Not sure..................................................3
Yes.......................................................1
3. If you remember taking part in a visit when a medical student was present, was the visit for yourself or your child? (If you recall more than one visit, please answer the question about the most recent visit)

Self........................................................................................................1
Child......................................................................................................2

4. Please answer the following question whether or not you remember having a medical student present while your child was getting health care. If you have no experience with medical students, please use your best judgment about what the experience would be like.

(interviewer on each line below circle the number that most closely represents the member's feeling)

On a scale of one to seven, if the number one is a good experience, and number seven is a bad experience, do you believe that medical student involvement in medical care would be a good experience, a bad experience, or somewhere in the middle?

would be a good 1  2  3  4  5  6  7 would be a bad experience

On a scale of one to seven, if the number one is no overall impact on medical care, and number seven is a major impact on medical care, do you believe that medical student involvement in medical care would have no overall impact, or a major impact, or be somewhere in the middle?

would have no overall impact on medical care 1  2  3  4  5  6  7 would have a major impact on medical care

This has been a great help. There is no need to return the survey we sent you. Thank you very much for your time and have a good evening.
Resident Training Survey (Adult) - Telephone Follow up

Hello. My name is ..................... and I’m calling from Harvard Pilgrim Health Care. Is now a good time to talk? We recently sent you several questionnaires to find out your views about resident physician training at Harvard Pilgrim. We haven’t heard back from you and since we value your views, we’re asking whether you would take just a minute and answer four short questions on this topic now?

If yes:
Thank you.

1. I am going to read a statement, and ask if you agree or disagree:

I believe that residents should train to be primary care physicians at Harvard Pilgrim:

Do you agree or disagree, or are you somewhere in the middle?

If agree: Do you agree or strongly agree?
If disagree: Do you disagree or strongly disagree?
If somewhere in the middle: do you neither agree or disagree?

(interviewer circle one response)

strongly agree  agree  neither agree  disagree  strongly disagree
nor disagree

2. Can you remember a visit to Harvard Pilgrim when you received care from a primary care resident?

(circle one response)

No.................................................. 2
Not sure.............................................3
Yes..................................................1
3. Please answer the following question whether or not you remember receiving care from a resident physician. If you have no experience with residents, please use your best judgment about what the experience would be like.

(interviewer on each line below circle the number that most closely represents the member's feeling)

On a scale of one to seven, if the number one is a good experience, and number seven is a bad experience, do you believe that receiving care from a resident would be a good experience, a bad experience, or somewhere in the middle?

would be a good 1 2 3 4 5 6 7 would be a experience bad experience

On a scale of one to seven, if the number one is no overall impact on medical care, and number seven is a major impact on medical care, do you believe that receiving care from a resident would have no overall impact, or a major impact, or be somewhere in the middle?

would have no overall 1 2 3 4 5 6 7 would have a impact on medical major impact care

This has been a great help. There is no need to return the survey we sent you.

Thank you very much for your time and have a good evening.
Acknowledgments

I would like to thank the following:
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The views and opinions expressed in this document are those of the author, and should not be interpreted as those of Harvard Medical School or Harvard Pilgrim Health Care.
VII. REFERENCE LIST


