# Medical students in general practice: students' learning experiences and perspectives from supervisors and patients

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# Abstract

During the last decades considerably more of medical students' clinical training has shifted into general practice. The aim of this thesis was to study medical students' learning experiences in general practice, work-based assessment, and the perspectives of GP supervisors and patients.

## Results

Senior students' learning in a portfolio pilot was mainly on patient-centred communication, clinical reasoning and professional development. Junior students appreciated contact with good role models.

Long-term use of a work-based assessment tool for senior students significantly increased the proportion of specific goals and feedback to students, supervisors' stringency of the assessment, and their satisfaction with the tool. The work-based assessment and the portfolio assessment had acceptable reliability, validity and educational impact.

GPs were highly motivated teachers and took pride in their discipline. In their teaching of junior students, their main reward was improved quality of own work. Their predominant problem was lack of time for teaching, but relationship to patients and provision of feedback were other concerns. Teacher training was required.

The vast majority of patients were satisfied with both senior and junior student encounters, even though caution was recommended when patients attend for sensitive matters. Patients perceived their teaching role mainly as facilitators of students' development of professional skills.

Key words: medical education, undergraduate, general practice, communication skills, clinical reasoning, portfolio, work-based assessment, self-assessment, feedback, patients, professionalism, reflection

# Prologue

The teaching of medical students is shifting out of the hospitals into the community.

'*This is an alarming prospect, for if all that is solid in the ward round, the outpatient clinic and the pathological test melts into the thin air of problem solving and open-ended questioning, how will future students and their teachers organise clinical knowledge into usable forms? To answer that, we need to review the causes of this shift, and take stock of our resources.*' (Steve Iliffe, 1992)

The citation is derived from a distinguished paper that strongly boosted my own naïve ideas of medical education in 1997, when I was planning a research project on clinical teaching in general practice. As an experienced GP responsible for the supervision of students at my health centre, I had long been convinced that the clinical context of general practice had a potential to develop into a most rewarding learning experience for undergraduates.

The research project resulted in a published paper and I was in 2000 enrolled by Anders Håkansson, professor of general practice, as responsible for the design of a new general practice course at Lund University. I continued to work as a GP, and never perceived myself as an academic, but always as an alienated observer in the academic world. However, I highly appreciated the academic work and regarded the design and organisation of the course, the teaching of students, and the co-operation with excellent teachers and supervisors as exquisite privileges. During ten years the development of the course was in the centre of my mind. I was not on a job, I was on a crusade.

This book is based on my experiences. It has in all its parts evolved from those questions I sought the answers to, and encouraged by Anders Håkansson developed into research questions. He constantly reminded me of the importance of trying to publish some of all the innovations and changes I managed to force through during those years. However, I saw the studies more as quality assurance projects in my persistent process of aiming at perfection of the course; a 'mission impossible'.

Without Anders this thesis would never have existed, and I am so sad that he did not live to see it accomplished.

# Contents

# List of publications

This thesis is based on the following publications, which will be referred to by their Roman numerals.

I. Haffling A-C, Håkansson A, Hagander B. 2001. Early patient contact in primary care: a new challenge. *Medical Education* 35:901–908.

II. Haffling A-C, Beckman A, Edgren G. Structured feedback to undergraduate medical students: three years' experience of an assessment tool. Submitted.

III. Haffling A-C, Beckman A, Pahlmblad A, Edgren G. 2010. Students' reflections in a portfolio pilot: highlighting professional issues. *Medical Teacher* 32:e532–e540.

IV. Haffling A-C, Håkansson A. 2008. Patients consulting with students in general practice: survey of patients' satisfaction and their role in teaching. *Medical Teacher* 30:622–629.

# Introduction

## General practice in the medical curriculum

### *Europe*

General practice is a 'young' academic subject in Europe, involved quite recently in research and undergraduate medical education. The development of academic departments of general practice started slowly in the 1970s and did not accelerate until the 1980s (Švab et al. 2001). The number of departments then rapidly increased, particularly in Western Europe, and several initiatives were taken in the UK (Usherwood et al. 1991; Robinson et al. 1994) and in Maastricht, the Netherlands (Martens & op't Root 1992) to organise general practice courses in the undergraduate curricula of medical schools.

By the end of the 1980s there was a drive in the UK to shift more of undergraduate medical education from university hospitals into the community by extending the general practice courses and by introducing clinical skills teaching into general practice (Oswald 1989; Oswald 1991; Fraser 1991; Iliffe 1992). Traditional medical education was criticised, particularly on two issues: outmoded educational and assessment methods, and insufficient clinical experiences for students in university hospitals.

Educational problems emphasised were overloaded curricula, passive acquisition of knowledge, superficial learning and lack of training in communication skills and basic clinical skills (Fraser 1991; McManus 1991; Iliffe 1992). Assessment of graduate students' competence in communication and clinical skills raised concern because of the insufficient methods used (Maguire 1989). Reduced in-patient numbers, shorter patient stays and increased super-specialisation resulted in deficient student training with patients in university hospitals (Fraser 1991; Iliffe 1992).

Harden et al. introduced the SPICES model as a strategy for development or revision of medical curricula (Harden et al. 1984). In this model six educational issues were identified, where the more innovative approaches (SPICES) were compared to the more traditional strategies. Each issue was represented as a continuum between two extremes: '**S**tudent-centred' towards 'Teacher-centred',

'**P**roblem-based' towards 'Information-gathering', '**I**ntegrated' towards 'Discipline-based', '**C**ommunity-based' towards 'Hospital-based', '**E**lective' towards 'Uniform' and '**S**ystematic' towards 'Apprenticeship-based'. Even if the six issues to a certain degree were interrelated, an evaluation of each issue separately was recommended for curriculum revision or development.

The SPICES model could possibly be regarded as supportive in shifting more learning experience into community settings, and this move was further emphasised in 1993 by the General Medical Council's publication of 'Tomorrow's doctors' (GMC 1993). In these guidelines a framework was proposed for medical school curricula, including the integration of basic and clinical sciences with a core curriculum of knowledge, skills and attitudes, supplemented by elective study modules. Problem-based learner-centred instructional approaches and self-directed learning were central to the recommendations, as was early patient contact and increased emphasis on clinical experience in the community.

The extensive guidelines of 'Tomorrow's doctors' had an immense impact on the curriculum content and delivery, not only in the UK, but also in other countries. They also had a considerable effect on the proportion of teaching, managed by general practice and primary care departments in the UK during the following years (Robinson et al. 1994; Grant et al. 1997; Jones et al. 2001; Sen Gupta & Spencer 2001).

Some early initiatives of longer placements in general practice merit further mention. The Cambridge Community-Based Clinical Course (CCBCC) 1993-1998 was the first example in the UK of a prolonged attachment in general practice for clinical students (Oswald et al. 1995). The innovative clinical track provided a general practice attachment of 15 months for a small group of students as an alternative to their hospital clerkships. Another example was the 'Medicine in the Community' programme at the University College London Medical School that was launched in 1994. Basic clinical skills were taught to third-year students for five weeks in the community as a complement to the internal medicine clerkship (Murray et al. 1997 a). Evaluations from these two programmes showed that students taught in general practice could acquire their clinical skills as well as, if not better, than those taught in hospital (Oswald et al. 2001; Murray et al. 1997 b).

Outside Europe, innovative rural programmes in general practice were developed in the US in New Mexico (Kaufman et al. 1989) and Minnesota (Verby 1988). In Australia, with a third of its population in rural and remote areas, a few initiatives for rural attachments had already been taken before 1997, when the Parallel Rural Community Curriculum was piloted at Flinders University, Adelaide (Worley et al. 2000). This programme included a one-year attachment to a rural general practice as an alternative to the traditional hospital clerkships. Evaluations showed

that rural students' examination performance improved considerably more than their peers' in hospital clerkships (Worley et al. 2004).

During the last decade, outcome-based education has contributed to the reform of a number of medical curricula (Harden et al. 1999); a development further accelerated by the Bologna process. Since 1993 the General Medical Council's guidelines 'Tomorrow's doctors' have been revised twice (2003 and 2009), and in the last version three outcome roles for undergraduate students are defined: as a scholar and scientist, as a practitioner and as a professional (GMC 2009).

The importance of general practice as an essential element of undergraduate medical education is now well recognised in Europe (Heyrman 2005). In most medical schools general practitioners (GPs) are involved in the teaching of undergraduates in two parts of the curriculum (Švab et al. 2001). During the first years of the curriculum most schools organise early clinical experience in general practice, and during the final years general practice courses are established.

## *Sweden*

In Sweden the medical school curriculum comprises five and a half years (11 semesters), and is followed by an internship of 18 months before qualification. In 1997 the National Agency for Higher Education evaluated the medical curricula at the six universities (Högskoleverket 1997). Linköping University, where a new medical school had started in 1986, was a forerunner with a modern curriculum including problem-based learning, vertical integration, early patient contact and emphasis on primary care and common health problems (Foldevi 1995). The medical curriculum at Lund University, as the first of the 'old' universities, had been revised for the first five semesters in 1992, when problem-based learning was introduced, together with a course in early patient contact and basic examination skills (Högskoleverket 1997; Lindgren & Danielsen 2007).

Courses in early clinical experience were also successively introduced in the 1990s in the remaining universities, often organised by academic departments of general practice (Wahlqvist et al. 2001; Karlberg & Lindgren 2004). These courses were gradually expanded to 'professional development' courses, including ethical and legal issues, team work, and organisation of health care (Hellquist et al. 2005; Lindström et al. 2008; Birgegård et al. 2008).

### Lund University

Since the study in Paper I was conducted in the spring of 1998, the content and process of the medical school curriculum at Lund University has changed considerably. In 2005–2007 a revision of the curriculum of the clinical semesters (6–11) was accomplished (Lindgren & Danielsen 2007). The reformed curriculum

is based on a core of 102 clinical problems; it is partly integrated, outcome-based, and provides opportunities for special study modules.

The health centres in the region of Lund/Malmö have for several years been used for shorter attachments during the programmes of internal medicine and surgery, but they have chiefly maintained their importance for medical students' clinical training in two distinct parts of the curriculum; at the beginning and at the end. Students are engaged in the 'Professional Development' course during the first five semesters, and in their final year they are attached to the health centres in the general practice course. The general practice course was 1999 considerably extended and integrated with the subjects of geriatrics, forensics and occupational- and environmental medicine to constitute the programme of Community Medicine. The programme was further developed in 2007, and now constitutes the final course 'Individual and Community' before students' graduation from medical school.

## Apprenticeship

The traditional model of medical education is a combination of two separate models of teaching: basic and clinical science knowledge from lectures and seminars, and clinical education. Clinical medical education has its roots in the apprenticeship system of learning (Woolliscroft 2002), which includes modelling, support and coaching (Collins et al. 1991). In modelling, the expert shows how to perform a task; then supports the apprentice in carrying out the task, gradually removing the support as the apprentice gains increasing competence. Collins et al. (1991) call this support process 'scaffolding', and the vanishing support 'fading'. Coaching runs through the whole experience and embraces structure, evaluation, challenges, encouragement and feedback (Collins et al. 1991).

In an apprenticeship system, the social context is of great importance, and the context shapes the interactions between the members of this specific environment (Collins et al. 1991). Woolliscroft (2002) has defined a model of interactions in clinical medical education with three individuals contributing to the content of the student's learning: the student, the instructor and the patient. They are all embedded in the learning context that shapes the interactions between themselves and the content of the student's learning. However, from a review of the literature on ambulatory teaching, Irby (1995) concluded that the general context or environment had surprisingly little effect on students' ratings of teaching effectiveness; however, the behaviour of teachers and their role modelling were most important.

Traditional apprenticeship learning, particularly in ambulatory care, is highly variable, unpredictable, unstructured and opportunistic (Irby 1995) and even more

so in general practice, where students' learning experiences might be completely determined by which patients walk through the door.

To structure students' learning by making cognitive processes visible in practice, Collins et al. (1991) have suggested the model of 'cognitive apprenticeship'. Besides previously mentioned elements of modelling, scaffolding and coaching, cognitive apprenticeship also includes articulation, reflection and exploration. Articulation refers to teachers' questioning students for their reasoning and problem solving; reflection involves students' assessment of their strengths and weaknesses; and exploration is a way to encourage students to set and pursue their own learning goals. In our work and in this thesis we have not consciously used the model of cognitive apprenticeship as a starting point, but most of these elements will nevertheless surface in the following chapters, which strengthens the practical usefulness of the model.

The perspective of this thesis is medical students' learning experiences in the context of general practice; in early clinical experience and in attachments of the final-year general practice course. The following chapters aim to introduce insights from the literature about the people involved – students, supervisors and patients, and also raise the importance of assessment in this authentic environment.

# Students' learning experiences

## *Learning in general practice*

The quality of students' learning experiences in general practice is to a large extent dependent on the interaction between the student and the GP supervisor (Mattsson et al. 1991; Howe 2001; Riesenberg et al. 2001; Silverstone et al. 2001; van der Zwet et al. 2010). Howe (2001) perceives the one-to-one relationship between student and supervisor in general practice as a parallel to the doctor-patient relationship in patient-centred care, making the required skills for this type of relationship easily transferred for GPs. The characteristics of the supervisor is far more important than characteristics of the teaching site (Riesenberg et al. 2001), even if senior students appreciate that the attachment can offer a range of patients with different medical problems (van der Zwet et al. 2010).

Students' conceptions of a good community attachment – or 'a good GP' – are characterised by the GP being a good teacher, a good role model and able to provide a good learning environment (Silverstone et al. 2001). The concept of a good teacher includes the encouragement of active learning, and learning through involvement (Cooper 1992; Price et al. 1994; Fernald et al. 2001; Silverstone et al. 2001), with opportunities for students to undertake independent activities and

assuming increasing levels of responsibility (Riesenberg et al. 2001, van der Zwet et al. 2010). This equals the processes of 'scaffolding' and 'fading' in Collins et al.'s (1991) cognitive apprenticeship model. A good teacher is also aware of, and takes into consideration, students' objectives of the attachment and students' individual learning needs, and is able to organise the teaching time adequately (Silverstone et al. 2001; Riesenberg et al. 2001; Fernald et al. 2001).

The qualities of a good role model are perceived by students as someone who demonstrates knowledge, skills and attitudes in a way that students feel is 'appropriate for a medical profession' (Silverstone et al. 2001). Good communication skills with patients are essential, but 'attitudes' are still more valuable. Important factors are the GP's sensitivity to patients' needs and genuine interest in and respect towards patients, findings also supported by other researchers (Mattsson et al. 1991; Price et al. 1994).

Providing a good learning environment with interest, enthusiasm, trust and positive attitudes by the staff considerably enhances students' learning experiences (Silverstone et al. 2001; Howe 2001). It is also acknowledged that students find general practice attachment significantly more enjoyable than hospital attachment (Murray et al. 1999).

## *Early clinical experience*

The concept of early clinical experience is identified as 'a pre-clerkship experience with authentic (real) patient contact in a clinical context that enhances the process of learning of health, illness and disease, and the role of the health professional' (Dornan et al. 2006). In traditional medical curricula there is still a preclinical/clinical divide, and the early clinical experience takes place during students' basic medical science course during the first two years.

The variability of the objectives, of the amount, and of the arrangements in early clinical experience courses is considerable (Dornan et al. 2006; Hopayian et al. 2007). However, students seem to a substantial degree to find these courses interesting and beneficial, and evaluations tend to be extremely positive (Hampshire 1998; Parle et al. 1999; Howe 2001; Ottenheijm et al. 2008; von Below et al. 2008; Pierson Bruner et al. 2010).

What can students learn during early clinical experience courses? The recent BEME guide (Dornan et al. 2006) concludes that the most important learning is in the process of *professional socialisation*; a process that should start early to avoid an abrupt transition into a clinical environment after the pre-clinical years. Supervisors can welcome students into a community of practice (Manyon et al. 2003). Students become aware of their own values and attitudes and develop appropriate attitudes towards other people (Dornan et al. 2006). Early detection of

students with difficulties is probably one of the benefits of early clinical experience (Dornan & Bundy 2004).

*Cognitive processes* are supported in transforming experience into knowledge (Ottenheijm et al. 2008). The clinical experience contextualises knowledge and puts it into perspective for students by seeing patients, relevant to their theoretical studies, which enhances the understanding of the basic medical science course (Dornan & Bundy 2004; Dornan et al. 2006). This learning is further increased with symptoms and treatments of particular diseases in vertical, system-based curricula, when students see selected patients, associated with the core knowledge of a certain module (Howe et al. 2007). Students also learn about professional roles and the role of the patient-doctor relationship (Hampshire 1998; Dornan et al. 2006).

*Clinical skills training* (communication skills and physical examination skills) is a valuable element of early patient contact courses, where students can gain experience in talking to patients and learn how to conduct a systematic physical examination (Hampshire 1998; Parle et al. 1999; Dornan & Bundy 2004; Howe et al. 2007; von Below et al. 2008; Pierson Bruner et al. 2010). Supervisors who create a role for students in patient care, help them to find learning opportunities in patient problems, and encourage hands-on practice are highly ranked by students (Manyon et al. 2003).

*Affective outcomes* are emphasised in students' evaluations of early clinical experience courses, and are often the main reasons for students' satisfaction. The courses help students to develop empathic attitudes towards ill people (Littlewood et al. 2005; Dornan et al. 2006; Howe et al. 2007), help them to sustain their motivation in their studies, and build their confidence in approaching patients (Hampshire 1998; Dornan & Bundy 2004; Howe et al. 2007; von Below et al. 2008).

*Social learning* can be described as orienting the curriculum towards the social context of practice (Dornan & Bundy 2004), widening the students' perspective to understand the social context of patients' illnesses, and adopting a holistic approach (Howe et al. 2007).

Does general practice have an indispensable role in early clinical experience courses? It is well known that general practice makes a significant contribution to these courses (Dornan et al. 2006; Hopayian et al. 2007), but experience in hospital can have comparable effects to community experience in clinical skills training (Littlewood et al. 2005; Pierson Bruner et al. 2010). However, the role of general practice is essential in understanding the social determinants of health and the impact of disease on individuals and families (Hopayian et al. 2007). GPs are also involved in most training of patient-centred communication skills with an

emphasis on patients' experience and perspectives of illness (Parle et al. 1999; Hopayian et al. 2007).

## *Communication skills*

### Motives, content and models

There is conclusive evidence of the importance of good communication skills for the successful outcome of a consultation (Gask & Usherwood 2002; Maguire & Pitceathly 2002). Doctors who communicate effectively identify patients' problems more accurately, and their patients are more satisfied with their care. Patients are provided with better information about their problems, planned investigations and treatment options, and compliance is enhanced (Silverman et al. 2004). Acquiring good communication skills will also improve students' problem solving processes (Aspegren 1999).

An international consensus statement (Makoul & Schofield 1999) recommends that teaching of communication skills should emphasise *patient-centred tasks*; integrating knowledge of the disease with patients' illness experiences. Most research on development of students' patient-centred communication skills are conducted in general practice; however, Yedidia et al. (2003) reports on a successful introduction of communication training with patient-centred tasks during all third-year clerkships in three medical schools in the US. Assessment of students' communication competence after the teaching intervention shows that students learn these skills and significantly outperform their non-participating peers.

Different models for teaching and assessing a patient-centred consultation exist; for example the Calgary-Cambridge Observation Guide (Silverman et al. 2004), Pendleton's seven tasks (Pendleton et al. 1984) and the 'three function model' (Gask & Usherwood 2002). In Scandinavia a Danish didactic model in nine steps, based on prior consultation research, has gained great acceptance (Larsen et al. 1997).

### Structure, process and timing

The organisation of communication skills training in medical schools varies widely. A common arrangement is to offer communication skills courses during the pre-clinical years and to follow up the training in the later years of medical school, often during the general practice course. However, the early-acquired skills will easily be forgotten, if they are not repeated regularly during the clinical hospital clerkships (Aspegren 1999). Training in communication skills should be consistent during medical school and complement clinical skills training (Makoul & Schofield 1999).

There is a vast body of research supporting experiential learning (role-play, videos with simulated or real patients) in contrast to instructional approaches, which do not give the desired results (Aspegren 1999). Feedback on students' performance is vital to this process. Students also seem to prefer experiential methods (Rees et al. 2004), even though some can be intimidated at the prospect of showing videos of consultations to their teachers and peers (Nilsen & Baerheim 2005). Doctors can be effective teachers in communication skills training. However, a short period of teacher training is required, preferably using the same experiential design as in students' training (Aspegren 1999; Wingren et al. 2007).

In the pre-clinical years communication skills teaching is often conducted by GPs, and assessed by students to be relevant and effective (Kendrick & Freeling 1993), and valuable in analysing and evaluating consultations (del Mar & Isaacs 1992). Communication skills, acquired in the third year during a few training sessions in general practice, were still considered beneficial after a year, particularly in the elicitation of patients' perspectives (Thistlethwaite 2000).

Communication training during general practice courses later in medical school is also positively evaluated by students, who can improve their interview skills (Usherwood 1993; Löfdahl et al. 2005), learn how to structure the interview more efficiently, and how to strengthen patient relationships (Egnew et al. 2004). The concept of patient-centred care is widely promoted in general practice, compared to hospital clerkships (Thistlethwaite & Jordan 1999; Egnew & Wilson 2010).

Comparing students' consultation skills between their early phase of medical school and their final year, Wahlqvist et al. (2005) were able to show a substantial decline in students' rapport with patients and in their structure of the medical interview. The patient-centred approach seemed to have turned 'doctor-centred' during the intermediate hospital clerkship years. The authors' optimistic conclusions that students will pick up their originally learnt strategies during the postgraduate years are contested by a Danish study (Aspegren & Lønberg 2005). Several skills, particularly among 'process' and 'perceptual' skills of the consultation, are *not* learned automatically as part of clinical work after graduation. Deficiencies in the structure of the medical interview and rapport with patients persist, and are common (Aspegren & Lønberg 2005).

Although several authors strongly recommend integration of communication skills and clinical skills training during *all* clinical clerkships, this seems difficult to accomplish (Aspegren 1999; Makoul & Schofield 2001; Kurtz et al. 2003; Kidd et al. 2005; Malhotra et al. 2009; Egnew & Wilson 2010). The results of keeping the two issues of communication and clinical skills separate in skills training are that students confront two conflicting models of a medical interview: a 'communication model' for the process of the interview, and a 'traditional medical history model' for the content (Kurtz et al. 2003; Kidd et al. 2005). An excellent

method of bridging the gap between communication and clinical skills training is to simply observe and provide students with feedback on their communication skills *as well as* their clinical skills, when they examine patients on the hospital wards (Malhotra et al. 2009; Egnew & Wilson 2010).

At Lund University communication skills training is traditionally organised. There is an early introduction during the 'Professional development' course, where students should learn the first phase of the consultation, and a follow-up training during the final-year general practice course. Experience-based learning is used, including videos and role-plays with simulated or real patients. Teachers are mostly GPs, trained with the use of an experiential method (Wingren et al. 2007), and the model currently utilized is the patient-centred nine-step model, described by Larsen et al. (1997).

## *Clinical clerkships in general practice*

### Definition of general practice

The network within WONCA (World Organisation of National Colleges and Academies) Europe, EURACT (European Academy of Teachers in General Practice) has published a consensus on the definition of the discipline of general practice (WONCA Europe 2005). The eleven characteristics and the additional features are summarized in Box 1.

General practice attachments can constitute the first clinical clerkship with clinical skills training, complementing the teaching of internal medicine, and can provide appropriate clinical exposure compared to hospital (Murray et al. 1997 b; Parle et al. 1997). There are several advantages of community teaching in these clerkships: awareness of psychosocial aspects of disease, respect for patients' autonomy and learning about common conditions. Hospital-based teaching is better in first-hand-experience and management of acute presentations of serious illness, and in the observation of practical procedures and investigations (O'Sullivan et al. 2000).

In general practice courses situated more towards the end of the curriculum the objectives for students are to integrate clinical knowledge from hospital specialities, to enhance their professional development and to put the finishing touches to their communication skills. Students' views of the added value of these courses with attachment to GPs' surgeries have been investigated by student interviews (Mattsson et al. 1991; Worley et al. 2000), questionnaires (Cooper 1992) and nominal groups and questionnaires (Howe 2001). Three central discernible concepts emerge from these investigations: patient-centred communication with more personal relationship with patients; impact of social environment on individual health; and management of a wide range of clinical problems, unselected and at an early stage of presentation. The first two concepts

relate to 'Patient-centred care', and the third to students' 'Clinical reasoning'. These concepts will be discussed further below, together with the concept of 'Professional development'.

Box 1. Characteristic attributes of general practice (WONCA Europe 2005)

1. Accessibility (first contact for all health problems)
2. Co-ordinating care (with other professionals in primary care and with other specialities)
3. Patient-centred approach (the patient's experience of illness)
4. Patient-doctor relationship (over time, personal, through effective communication)
5. Longitudinal continuity (of care)
6. Specific decision-making process (based on incidence and prevalence of illness)
7. Non-specific undifferentiated symptoms (early stage, risk management, uncertainty)
8. Simultaneously manage both acute and chronic health problems (in individual patients)
9. Promote health and well-being (prevention)
10. Community orientation (responsibility for the health of the community)
11. Holistic modelling (physical, psychological, social, cultural and existential dimensions simultaneously)

Additional features are *'Essential application features'* (attitudinal, scientific and contextual aspects), important for *all* doctors to apply in real life in the workplace settings. In general practice these might have a greater impact, depending on the close relationship between doctors and patients.

## Patient-centred care

The concept of 'patient-centred' is widely endorsed as an important component of high-quality healthcare, particularly in general practice, but also in several hospital specialities (Mead & Bower 2000). Patients of GPs who work with a patient-centred approach appear to feel healthier, have more realistic expectations about what their GP can accomplish with common health problems, tend to visit their doctor less frequently, and have fewer symptoms (Huygen et al. 1992). A patient-centred approach is also said to have other benefits, such as increased satisfaction in both patient and physician, and fewer malpractice complaints (Stewart et al. 2000).

'Patient-centred' is used in diverse ways by different researchers. Stewart et al. (2000) describe a *'patient-centred clinical method'* and define this concept as incorporating six interactive components: exploration of both patient's disease and patient's illness experience; understanding of the whole person; finding a common

ground regarding management; incorporating prevention and health promotion into the visit; enhancement of the continuing patient-doctor relationship; and being realistic (availability of time and resources).

Mead & Bower (2000) identify five dimensions of their concept of *'patient-centeredness'*: biopsychosocial perspective; the patient-as-a-person; sharing power and responsibility; the therapeutic alliance; and the doctor-as-a-person.

Finally, Epstein et al. (2005) suggest a definition of *'patient-centred communication'* that includes: the patient's perspective; the psychosocial context; shared understanding; and sharing power and responsibility.

Nevertheless, from these definitions we can conclude that there is a common ground for 'patient-centred care' in three distinct components.

- the importance of eliciting the patient's perspective and illness experience (ideas, concerns, expectations and the impact of the problem on the patient's daily activities)
- holistic modelling; understanding the whole person
- finding common ground; sharing power and responsibility.

Using patient questionnaires, Stewart et al. (2000) were able to demonstrate that patients' perceptions of patient-centred care were associated with improved patient health and increased efficiency of care. Little et al. (2001) also used patient questionnaires and identified patient-centred care to be associated with improved patients' enablement, patients' satisfaction, and decreased burden of symptoms. The results of a fairly recent study by Rohrer et al. (2008) support the theory of patients' empowerment by patient-centred care.

However, when patient-centred care is measured by 'objective' ratings of audio- or video-taped consultations, no correlation between different patient outcomes and degree of patient-centred care can be confirmed (Stewart et al. 2000; Mead et al. 2002). Stewart et al. (2000) discuss these findings and suggest that patient-centred interviewing cannot truly be understood by 'objectively' rating tapes of consultations. Patients' own perceptions capture a deeper understanding of the concept.

## Clinical reasoning

Clinical reasoning or 'diagnostic reasoning' is a critical skill in a physician's clinical competence (Norman 2005; Croskerry 2009). For clinical teachers it is a challenge to convey their reasoning strategies to students, taking each student's own expertise into account (Eva 2004). The ability to teach clinical reasoning requires some understanding of the strategies expert clinicians use in diagnostic reasoning.

Most research in this area has its origin in cognitive psychology (Norman 2005) with descriptions of 'illness scripts' (Charlin et al. 2000) and 'schemes' (Coderre et al. 2003) as mental frameworks for organisation of knowledge and experience, used to construct interpretations of situations. However, for some time the 'dual-process theory' has been known as the predominant approach to the concept of clinical reasoning (Elstein & Schwartz 2002; Eva 2004; Croskerry 2009; Norman & Eva 2010). This theory implies that experienced physicians mainly use two strategies in diagnostic reasoning: 'non-analytic' (pattern recognition) strategies for most cases, complemented by 'analytic' (hypothetico-deductive) reasoning with difficult and ambiguous cases.

The non-analytic strategy is automatic, almost unconscious, intuitive, designated by Croskerry (2009) as 'System 1'. The analytical approach ('System 2') relies on hypothesis testing and deductive logical reasoning. However, even if this schematic model is widely accepted, there are disparate views on the reasons why diagnostic reasoning sometimes fails, resulting in diagnostic errors (Croskerry 2009; Norman & Eva 2010).

How does this model fit into clinical teaching? It has previously been argued that students can only use an analytic approach for clinical reasoning, as they only have a minimum of clinical experience to rely on for 'pattern recognition'. However, recent research has shown that students can use *both* strategies in their diagnostic reasoning, and that clinical teachers should promote *both* forms of reasoning in combination (Eva 2004; Norman & Eva 2010). The two strategies are seen as interactive and complement each other to the overall accuracy of the process.

It is also well known that there is no such thing as a general 'reasoning ability' among students, as a successful solution of a clinical problem highly depends on the case and on the context in which the problem is addressed. This is called 'context specificity' (Elstein & Schwartz 2002; Eva 2004).

Teaching around examples is very important to facilitate for students to collect a vast mental data base of cases to allow non-analytic reasoning. Because of the issue of 'context specificity' *many* examples, *different* examples and *mixed* examples are needed (Eva 2004). Mixed categories of patients are considered to be optimal for students' learning in clinical reasoning, a finding that is highly applicable to general practice. It is also important for teachers to relate back to principles from prior cases for comparison, or to basic science for the application of theory to practice. These strategies also provide the teacher with more information on the individual student's difficulties (Eva 2004).

However, clinical reasoning is not only informed by biomedical facts; the patient's psychosocial history plays an essential role in informing clinical reasoning

processes (Windish et al. 2005). Teaching communication skills linked with clinical reasoning skills therefore seems beneficial for students.

### Professional competence

A classical definition of 'Professional competence' is the one by Epstein & Hundert (2002): 'the habitual and judicious use of communication, knowledge, technical skills, clinical reasoning, emotions, values, and reflection in clinical practice for the benefit of the individual and community being served'. This definition includes a cognitive dimension, a technical dimension, and an integrative dimension with the appropriate use of clinical reasoning strategies. It also encompasses a relational dimension with communication skills, and finally an affective or moral dimension (Epstein & Hundert 2002). Professional competence is highly context-specific and can develop continuously.

The affective or moral dimension also seems to be a single construct, 'professionalism', which is regarded as a complex phenomenon and not easily defined, despite numerous attempts by major medical organisations (Passi et al. 2010). It does, however, include values, attitudes and behaviours of doctors as means by which doctors 'fulfil the medical profession's contract with society' (Cohen 2006).

### Professionalism

The development of professionalism is essential for medical practice, and components of professional development need to be integrated into all areas throughout the curriculum (Stephenson et al. 2001; Howe 2003). However, this is not always possible, and research from the US still demonstrates pessimistic results with decline of students' attitudes (Wolochuk et al. 2004) and empathy (Hojat et al. 2009), as students pass through medical school. One of the reasons for erosion of empathy is suspected to be the impact of inappropriate role models during clinical activities (Hojat et al. 2009).

Several initiatives have been taken to summarise methods to support and promote professional development in medical schools. Among teaching methods, early clinical experience is particularly emphasised, regarded as a means for students' professional socialisation into a community of practice (Howe 2003; Goldie et al. 2007). Encouraging the development of reflective practice by providing different learning experiences to reflect on is suggested by several authors (Howe 2003; Goldie et al. 2007; Passi et al. 2010), and others emphasise the development of ethical approaches to practice by reflections on examples of ethical problems (Stephenson et al. 2001; Passi et al. 2010).

A number of authors also highlight the powerful influence of good role models (Stephenson et al. 2001; Howe 2003; Goldie et al. 2007; Passi et al. 2010). The

characteristics of good role models are well known: being a competent clinician; being a good teacher, providing opportunities for reflection; and being a person with qualities of the kind we relate to professionalism: compassion, honesty and integrity (Cruess et al. 2008). Role models emphasise the importance of the doctor-patient relationship and the psychosocial aspects of medicine (Wright et al. 1998).

Clinical training in community settings is suggested to provide students with several of the attributes for the promotion of professional development: patient-centred care, long-term care and whole-person medicine, and often in a one-to-one context with a personal supervisor; hopefully a good role model (Stephenson et al. 2001).

Assessment of professionalism is essential to emphasise its value to teachers and students. A range of different instruments can be applied for both formative and summative purposes. Workplace-based observation and assessment of medical students' competence in real life situations is regarded as most suitable, as are educational portfolios for documentation of professional achievements, supplemented by personal reflections (Epstein 2007; Passi et al. 2010).

# Assessment

Assessment can have several purposes. For students themselves it is an integral part of the learning process, it shows their progress and motivates them in their studies (McAleer 2001). For teachers it is a way to control whether teaching has been effective to provide students with the required knowledge, skills and attitudes, constituting the objectives of the course. In medical education, assessment is also of vital importance to ensure a proper standard of competent physicians.

Assessment can be formative or summative (McAleer 2001). *Formative* assessment is part of the learning process and is used at various points during training to foster learning and understanding. It should always be combined with the provision of feedback. *Summative* assessment is usually carried out at the end of a course or a period of training and results in a grade or a mark for students.

## *Assessment criteria*

### Reliability and validity

In any assessment method, reliability and validity must be ascertained.

*Reliability* indicates the accuracy of the scores in a test, and relates to the degree to which a test consistently measures what it is supposed to measure. The results should be reproducible over different raters (inter-rater reliability) and over time with the same rater (intra-rater reliability) (McAleer 2001). Internal consistency reliability involves the homogeneity of a test, and measures how well the scores for individual items on the test correlate with each other (Cook & Beckman 2006).

*Validity* refers to if the test actually measures what it is supposed to measure (McAleer 2001). *Face validity* is determined by feedback from students and teachers. It is concerned with the test's appearance; if the test *seems* to measure what it is intended to. If the test appears fair and relevant, it increases students' motivation. *Content validity* is obtained by expert opinion, and relates to the content area and learning outcomes, including the individual items as well as adequate sampling. *Concurrent validity* refers to the degree to which the result of one test is correlated with the results of another test that students take during the same course. *Predictive validity* relates to the degree with which a test can predict future performance. Concurrent and predictive validity constitute *Criterion validity*. *Construct validity* relates to the extent to which a test measures a hypothetical construct (e.g. empathy). This is a variable that is considered difficult to determine (McAleer 2001).

### A classical model

The utility of an assessment method has been described in a frequently cited paper by van der Vleuten (1996) as a model of five variables: reliability, validity, educational impact, acceptability and cost. Perfect utility of all variables does not exist, and the model is preferably used to recognise necessary and carefully balanced compromises in different situations. To increase *reliability*, wide sampling across the area of interest is needed, together with standardisation and structure. *Validity* will be enhanced if relevant tasks are measured, if appropriate formats are selected, and if the test is scrutinised by reviewers. *Educational impact* is claimed to be the most important variable, as assessment should be part of the educational process. Assessment drives learning (Newble & Jaeger 1983) and also students' study strategy through its content, format, information given and its frequency and timing. *Acceptability* for both teachers and students is necessary, and van der Vleuten also reminds us that 'good assessment definitely is *cost*ly'.

Van der Vleuten & Schuwirth (2005) have later elaborated on the elements of this model, and argue that *reliability* can be achieved using less standardised and structured instruments. Providing the sampling across the content area is sufficient, even more subjective assessments can be reliable.

Concerning *validity*, there is a continuous movement towards *authenticity* into workplace-based assessment, judging the habitual performance in practice. Another development is the movement towards the *integration of competencies*, a 'whole-task-approach', assessing complex professional tasks, where cognitive, affective and procedural skills are integrated. There is also a growing emphasis on *general professional competencies*, including the ability for self-assessment, reflection, team working and professional behaviour. These competencies will rely on more qualitative information and call for judgement by professional assessors.

### A framework of 'construct validity'

According to Downing (2003) and Cook & Beckman (2006) another framework is used in the American *Standards for Educational and Psychological Testing.* In this conceptual framework all validity is regarded as construct validity, requiring multiple sources of evidence: content, response process, internal structure, relationship to other variables and consequences. '*Content*' equals 'content validity'; '*response process*' and '*internal structure*' parallels different parts of 'reliability'; '*relationship to other variables*' equals approximately 'criterion validity'; and '*consequences*' equals the variable of 'educational impact'.

### Educational impact

In evaluating effects of an assessment or a training programme, Kirkpatrick's four-level-model is often used (Kirkpatrick 1996). In this model, *Level 1* stands for '*reaction*', a measure of students' and teachers' satisfaction and motivation. *Level 2* stands for '*learning*', including improved knowledge, skills and attitudes, objectively measured. *Level 3* stands for '*behaviour*', a measure of the extent to which students change their 'real' behaviour after the training programme, measured at appropriate times after training. *Level 4* stands for '*results*', and is a measure of the final and long-term results accomplished after training. Applied to medical education it is a measure of improved patients' health.

### Assessment of performance

Clinical *performance* is what a student or a doctor actually does in real clinical practice (Newble 1992; Wass et al. 2001; Shumway & Harden 2003). Miller (1990) suggested a framework for clinical assessment as a pyramid with four levels of professional authenticity. The lowest level, '*knows*', implies only cognition; the next '*knows how*', the application of knowledge to problem-solving;

and the third '*shows how*', the demonstration of competence in standardised 'artificial' situations. The top level, '*does*', equals actual performance in independent practice. Miller (1990) and Newble (1992) doubt this level to be reached (or possible to assess) among undergraduates. However, Wass et al. (2001) linked Miller's learning pyramid to a hierarchy of assessment procedures with increasing authenticity, and argue about identifying valid and reliable methods of assessment for the apex of Miller's pyramid, an issue claimed to be 'the international challenge of the century' in undergraduate medical education.

In their discussion of assessment of learning outcomes, Shumway & Harden (2003) further developed this concept. The assessment of attitudes, ethical understanding, legal responsibilities, clinical reasoning and judgement is recognised as key aspects of professional competence (Shumway & Harden 2003). These outcomes refer to students' clinical performance and are located at the top of Miller's learning pyramid. Practice-based assessment is the most desirable environment for this kind of assessment, particularly if it provides opportunity for multiple authentic observations over a longer period of time (Newble 1992; Shumway & Harden 2003). However, reliability might suffer, and these assessments are therefore predominantly recommended for formative purposes with constructive feedback. For summative assessment a combination with portfolio assessment is suggested (Wass et al. 2001; Shumway & Harden 2003).

Can general practice be used in these assessments of students' performance? An increasing part of students' learning is taking place in general practice (Hays 2009) that often provides longer attachments, personal supervisors, and multiple opportunities for observations, including a wide range of patient problems. General practice therefore seems to be ideally suited for workplace-based assessment.

## *Workplace-based assessment*

Although clinical skills of history taking, physical examination and counselling remain of vital importance in clinical practice, students are seldom directly observed, assessed and provided with feedback on those skills in the workplace (Howley & Wilson 2004; Daelmans et al. 2004; Pulito et al. 2006; Kogan & Hauer 2006). Norcini & Burch (2007) conclude in their review that direct observation of students' performance in the workplace is 'the exception rather than the rule'. Furthermore, the feedback supplied is often of poor quality for students (Daelmans et al. 2006; Kogan & Shea 2008) and residents (Holmboe et al. 2004). However, workplace-based assessment with feedback can have a powerful impact on the change of students' behaviour (Norcini & Burch 2007).

## Supervisors' role

There are several reasons for infrequent observation with formative assessment in the workplace. The most important is supervisors' failing interest, competence and time for this task, which is not prioritised in the medical curriculum (Holmboe 2004; Fromme et al. 2009; Norcini & Burch 2007). By involving supervisors in the planning of the process, the frequency of assessment and feedback can increase (Daelmans et al. 2006), and by offering training to supervisors in rating students' performance, accuracy can improve (Shumway & Harden 2003). Training programmes for supervisors can result in changes in their rating behaviour and comfort (Holmboe et al. 2004). However, another study using the same programme could not show improved inter-rater reliability and accuracy (Cook et al. 2008). Brief workshops for supervisors resulted in more specific formative written feedback (Salerno et al. 2003).

To facilitate assessment of students and residents in the workplace, several unique structured tools have been developed (Kogan et al. 2009). The use of a structured tool for observational assessment can also increase the reliability of the assessment (Fromme et al. 2009). Most tools include items on communication, history taking, physical examination, management and counselling. The most evaluated and tested tool is the Mini-CEX, originally developed for residents of internal medicine (Norcini et al. 1995), and later implemented for medical undergraduates (Hauer 2000; Kogan 2002 et al.).

The effects of long-term sustainable use of a tool on supervisors' interest and accuracy in providing feedback to students have only been sparsely researched (Norcini & Burch 2007). Most published studies on workplace-based assessment of undergraduates only deal with short interventions.

## Feedback

Direct observation of students in the workplace with formative assessment should be accompanied by effective feedback on students' performance (Holmboe 2004; Norcini & Burch 2007; Fromme et al. 2009). Feedback in this context is considered to be a fundamental component in students' development of clinical skills.

Effective feedback can be defined as '*feedback in which information about previous performance is used to promote positive and desirable development*' (Archer 2010). There is agreement that feedback should focus on the task, not on the individual; be specific, not generalised; and linked to personal goals, to help reinforce desirable performance and to correct poor performance (Ende 1983; Hewson & Little 1998; Hattie & Timperley 2007; Cantillon & Sargeant 2008; Archer 2010).

Feedback should be based on direct observations, not hearsay; and regulated in quantity, limited to remediable behaviours (Ende 1983; Hewson & Little 1998; Cantillon & Sargeant 2008). The timing of feedback is important, but not all feedback has to be provided shortly after an event. Students engaged in more complex tasks might benefit from delayed feedback (Hattie & Timperley 2007; Archer 2010).

It is most important to elicit students' own perceptions of their performance and their own suggestions for improvement, and to facilitate the formulation of an action plan with shared views of agreed goals for improvement (Cantillon & Sargeant 2008). Ideally, this can be done by an interactive 'reflective feedback conversation' to encourage students' ability to self-appraise (Cantillon & Sargeant 2008).

There is general agreement that self-assessment on its own has clear limitations in medical students' evaluations of their performance. It is not a generic trait that can be learnt to use for reliable self-identification of strengths and weaknesses (Eva & Regehr 2005; Colthart et al. 2008). Applicable external standards for comparison are required, and self-assessment should be used at the prospect of feedback and external information. Eva & Regehr (2008) call this process 'self-directed assessment seeking', which is in line with the recommendations for elicitation of students' own perceptions before they receive feedback (Hewson & Little 1998; Cantillon & Sargeant 2008). Sargeant et al. (2010) have created a conceptual model of 'informed self-assessment'. Central to this process is critical reflection and one's own emotional responses.

However, even if there is an obvious connection between received feedback with agreed goals for improvement and the use of this feedback for learning and change, several factors can influence the use of the feedback (Sargeant et al. 2009). Reflection is perceived as the process for assimilating, accepting and using the feedback or not. Especially 'negative' feedback can stimulate reflection. Facilitation of reflection by the supervisor is extra helpful (Sargeant et al. 2009).

Interactive feedback methods in workplace-based assessment include students' self-assessment, their reactions to the feedback and an action plan for improvement with follow-up. These are all critical components of effective feedback (Hattie & Timperley 2007; Cantillon & Sargeant 2008), but seldom reported from clinical settings. Holmboe et al (2004) established that in nearly two thirds of residents, their reactions to the feedback was not elicited, and self-assessment and action plans were still more infrequent. In feedback to students only half of them were provided with an action plan for improvement (Fernando et al. 2008). However, good examples exist, as written educational strategies for improvement (Hastings et al. 2006), and as students' self-assessment with feedback comments from supervisors and patients (Braend et al. 2010).

### Educational impact

Very few studies exist that have investigated the educational impact of assessment of students' performance in the workplace (Norcini & Burch 2007). At the lowest level of Kirkpatrick's model, students and supervisors have evaluated the assessment process positively in several studies (McKinley et al. 2000; Lane & Gottlieb 2000; Paukert et al. 2002; Burch et al. 2006). However, in only a few studies in the review by Kogan et al. (2009), objectively measured modifications of students' skills or behaviour could be demonstrated.

## *Portfolio assessment*

### Why use portfolios?

Over the last 10–15 years, medical school curricula have slowly shifted their focus from the acquisition of knowledge to the development of professional competence (Tartwijk & Driessen 2009). At the same time, the trend towards outcome-based education has resulted in important changes in medical school curricula, with an emphasis on graduates' competencies at the end of training.

As previously defined (Epstein & Hundert 2002), professional competence includes several dimensions, of which the cognitive, technical and integrative are well known. However, it also incorporates a relational dimension with communication skills and teamwork, and an affective or moral dimension, which we call 'professionalism'. Professionalism includes values, attitudes, and behaviours such as compassion, altruism and empathy, ethical approach to practice, self-awareness, and ability to reflect. It goes without saying that these attributes are difficult to assess by traditional methods. This is where the portfolio comes in.

The portfolio has been highlighted as a potential tool for learning and assessment of professionalism, as it emphasises the development of reflective practice (Epstein 2007; van Tartwijk & Driessen 2009; Passi et al. 2010). It has also been claimed to be a possible additional instrument to evaluate 'performance' at the top of Miller's pyramid (van Tartwijk & Driessen 2009). A portfolio assesses performance in practice over a period of time, 'authentic assessment' (Snadden & Thomas 1998), and it is accordingly particularly suitable for workplace-based assessment (van Tartwijk & Driessen 2009).

### Content of a clinical practice portfolio

The portfolio can be used to achieve the goals of both learning and assessment (van Tartwijk & Driessen 2009). It must be designed in a way that necessitates students' engagement in the process of its development (Challis 1999). It should

include appropriate guidelines and be well structured, but still be flexible to promote individual students' experiences (Driessen et al. 2005). A portfolio from clinical practice holds students' documentary evidence from the workplace, combined with students' reflections on the evidence (Snadden & Thomas 1998; Friedman Ben David et al. 2001; Epstein 2007). The reflection is supposed to include analysis of educational achievements, identification of further learning needs, and a learning plan (Challis 1999).

### Reflection in a portfolio

Reflective ability is identified as a key skill for professional development (Friedman Ben David et al. 2001). Several definitions of the term reflection exist (Mann et al. 2009; Sandars 2009). Sandars suggests a rather wide definition: '*a metacognitive process that occurs before, during and after situations with the purpose of developing greater understanding of both the self and the situation so that future encounters with the situation are informed from previous encounters*'. Reflection is an important stage in Kolb's well-known 'experiential learning cycle', where an experience in practice is translated through reflection into abstract generalised concepts that can be applied in new situations (Kolb 1984).

Besides reflection for learning, reflection is essential for building therapeutic relationships, a crucial part of professional competence (Epstein & Hundert 2002; Sandars 2009). A therapeutic relationship is emphasised in patient-centred care, where improved outcomes for the patient, including patients' satisfaction, enablement and care of chronic disease are reported (Little et al. 2001).

Undergraduates reflecting in a portfolio on their experiences need a facilitator, such as their GP supervisor or a mentor. A facilitator can guide students' reflections by encouraging, supporting and challenging students (Sandars 2009). This is particularly important in reflections with the purpose of improving therapeutic relationships, where aspects of professionalism and the individual student's belief and values are illustrated (Mann et al. 2009; Sandars 2009). Mentoring, supportive environment and an authentic context are among the most influential elements in students' development of reflective learning (Mann et al. 2009).

Reflections in a portfolio can be assessed separately from the documentary evidence (Friedman Ben David et al. 2001). Several instruments for the judgement of reflective writing exist (Mann et al. 2009; Sandars 2009), and are usually based on different 'levels' or 'depths' of reflection. The most superficial level means only a description of an event; the deepest level involves an analysis and an application of the reflective learning to future practice.

## Assessment of the portfolio

Assessment of the portfolio is essential to foster reflective learning through feedback and to motivate and support further learning (Challis 1999). Portfolios are ideal tools for formative assessment, but summative assessment emphasises the value of the portfolio to students, and has been highlighted as one of the key factors for a successful portfolio (Driessen et al. 2007). However, using portfolios for summative assessment has been criticised on account of unacceptable reliability, particularly inter-rater reliability, and validity (Roberts et al. 2002; Norman 2008).

Inter-rater reliability can be improved by standardisation of portfolio content, definition of analytical assessment criteria, clear guidelines to students, examiner training (Friedman Ben David et al. 2001) and discussion and negotiation between examiners (Rees & Sheard 2004). Reliability can also be enhanced by a personal examiner interview (Davis et al. 2001; Gordon 2003; Burch & Seggie 2008). However, there is a crucial balance between standardising the portfolio to enhance reliability and maintaining the personalised aspect of the portfolio (Driessen et al. 2005).

A possible solution to the problem of using traditional psychometrics for qualitative portfolio material is to design assessment procedures, developed from qualitative research criteria (Snadden 1999; Webb et al. 2003; Driessen et al. 2005). In this approach 'credibility' (internal validity) is used for the assessment structure and 'dependability' (reliability) for the assessment process.

*Credibility* of the assessment structure can be ensured by clear learning outcomes, written evidence of students' experiences, extended placement in practice, daily observation by practice supervisors, and documents signed by supervisors (Webb et al. 2003). *Dependability* of the assessment process is strengthened by an external examiner, verification of documents by the examiner, explicit assessment criteria, and discussion and negotiation between examiners (Webb et al. 2003).

## Portfolios in the medical curriculum

In pre-clinical education portfolios have been introduced to stimulate students to reflect on professionalism (Driessen et al. 2003; Gordon 2003) or their communication skills (Rees & Sheard 2004). In clinical practice they have mainly been used in lengthy clinical attachments (Davis et al. 2001; Finlay et al. 1998; Burch & Seggie 2008).

However, portfolios have also been applied to defined courses of shorter duration. Lonka et al. (2001) used a portfolio as a learning tool in a gynaecology course, where students entered performed procedures and reflected on their learning in a logbook. In an undergraduate urology course, Amsellem-Quazana et al. (2006)

designed a portfolio, where students researched a topic and built their learning from real patients. A portfolio from a final-year general practice clerkship was reported by Grant et al. (2007), and showed limited benefits to students' learning from reflective writing.

In portfolios from clinical practice, reflections on learning were not always included, and in those portfolios that contained reflections, the content was seldom subjected to analysis. Only a few researched portfolios from clinical practice used reflections to promote the integration of affective and cognitive dimensions of professional competence.

### Educational impact

In a recently published BEME Guide, Buckley et al. (2009) reviewed a large body of literature to investigate the educational effects of portfolios among undergraduate students from a range of health professions. The authors could establish only limited evidence for educational effects of portfolios. However, higher quality studies identified improvements in students' knowledge and understanding, increased self-awareness by students, and improved student-tutor relationship. The majority of papers only showed an effect at the lowest level (1) of Kirkpatrick's hierarchy: views of the participants (Kirkpatrick 1996). Only 14% of papers reported objectively measured changes in students' knowledge, skills or attitudes at level 2. Few studies reported on the quality of the reflections, and those which did considered them to be of a very superficial level.

# Supervisors' perspectives

The role as a student teacher or supervisor presents new demands and requires other teaching skills for GPs, compared to the traditional supervision of interns and vocational trainees.

## *Rewards of teaching*

In the vast body of research available, GPs' views and perspectives of their role as student teachers are predominantly positive, regardless of the content of teaching and of students' different phases in the medical curriculum.

*Improvement of quality of practice* is the main reward recognised (Baldor et al. 2001). The GPs learn from their own teaching and strive to keep their knowledge base up to date, which is perceived as the major benefit (Fine & Seabrook 1996; Gray & Fine 1997; Hampshire 1998; Grant et al. 2010). The teaching of students results in increased reading and reflection on practice, sometimes based on

challenging questions from students (Grayson et al. 1998; Hartley et al. 1999; Grant et al. 2010).

*Influencing the attitudes and knowledge* of the next generation of doctors is a benefit recognised by several GPs (Fine & Seabrook 1996; Ullian et a. 2001). The role as facilitators of students' learning, watching students grow personally and professionally, and being aware of their own contribution, is very satisfying (Gray & Fine 1997; Starr et al. 2003).

*Role modelling*, particularly modelling patient-centred care and the doctor-patient relationship, are mentioned by some authors as benefits to several teachers (Mann et al. 2001; Starr et al. 2003).

*Renewed enthusiasm* by working with students is more of an emotional issue. The participation by keen, interested and motivated students in the daily work can contribute towards increased enjoyment and meaningfulness (Fine & Seabrook 1996; Mowat & Hudson 1996; Grayson et al. 1998).

*Gains in self-esteem* is a related issue, satisfying emotional needs, where teaching make GPs feel good about themselves by positive feedback from students (Hartley et al. 1999). GPs also enjoy personal aspects of the one-to-one-relationship, where the contact with students can contribute to an enhanced openness of the isolated nature of general practice (Fine & Seabrook 1996; Gray & Fine 1997).

*Belonging to a group of teachers* can be essential, bringing feelings of a community among peer teachers, boosting GPs' morale, making them feel important (Gray & Fine 1997; Hartley et al. 1999; Starr et al. 2003). The GPs also develop their own teaching skills and learn about teaching and learning, resulting in improved confidence as teachers (Gray & Fine 1997; Hartley et al. 1999; Ullian et al. 2001; Starr et al. 2003).

*Opportunity to introduce students to general practice* is a powerful motive for GPs' participation in student teaching (Howe 2000). GPs feel pride in their discipline, wish to promote the value of general practice and to show a positive image to students. When GPs are faced with alternatives for preferred location of different aspects of undergraduate teaching, general practice is selected more frequently than hospital for almost all topics, particularly health promotion, communication skills, management and problem solving (Wilson et al. 1996).

## *Problems of teaching*

*Lack of time* is the single most important issue that limits teaching. Decreased productivity or increased lengths of working day are consequences of teaching, when longer consultation times are scheduled (Grayson et al. 1998; Howe 2000; Baldor et al. 2001). Increased stress level adds to GPs' burdens of high service

demands, and constantly remains one of the greatest problems of teaching in general practice (Wilson et al. 1996; Fine & Seabrook 1996; Mowat & Hudson 1996; Gray & Fine 1997; Hartley et al. 1999; von Below et al. 2008; Grant et al. 2010).

*Lack of space* with inadequate premises for teaching is an issue mentioned by some researchers (Mowat & Hudson 1996; Gray & Fine 1997; Hartley et al. 1999).

*Effect on the doctor-patient-relationship* is established as a more distressing problem than structural problems of time and space. Some GPs feel that student participation in the consultation can interfere with their relationship with patients, and they also worry about patients feeling uncomfortable (Baldor et al. 2001). Some GPs also stress the issue of patient fatigue when patients are over-exposed to students (Fine & Seabrook 1996; Hartley et al. 1999). Teaching can be perceived as changing dynamics between doctor and patient (Hartley et al. 1999; Grant et al. 2010), and might have an adverse effect on patient care (Fine & Seabrook 1996; Gray & Fine 1997). The ability to select the 'right' patients for students to see is important for physicians when teaching, and they consider the needs of patients, students, and the efficiency of the practice (Simon et al. 2003).

Problems with *uninterested or passive students* are also noted (Gray & Fine 1997), as are problems with *unsupportive colleagues* (Hartley et al. 1999; Balder et al. 2001; von Below et al. 2008).

# Patients' perspectives

## Patients in medical education

We can hardly imagine undergraduate medical education without patients. Patients' willingness to let students be involved in their care is vital to students' education. The clear majority of student-patient interactions are, and will continue to be, in the context of ongoing clinical care of the patient (Leinster 2004; Spencer 2004). Students can have different roles in this context; as passive observers or as actively engaged in history taking, clinical examination, procedures or counselling, depending on course objectives and the stage of students' training.

Contact with patients in clinical care includes several educational benefits, and motivates students through its relevance. Students can develop and improve their communication skills and their clinical skills (Spencer et al. 2000; Spencer 2004; Leinster 2004). Their professional attitudes are formed by patient contact and by observing their clinical teachers. They can practice clinical reasoning by being exposed to a range of different presentations of a disease in a real context;

promoting their development of 'pattern recognition'. Spencer et al. (2000) also emphasise patient contact as a means for students' improved understanding of empathy by listening to patients' stories and sharing patients' experiences.

### Patients in general practice

Patients in general practice might identify the participation of students in their care as different from when they see students in hospital. The general practice surgery can be perceived as 'patients' territory' because of patients' more personal, on-going relationship with their GP and the staff, and their perceptions of the surgery setting as their 'home ground' (Benson et al. 2005). This contrasts with the hospital context, where patients are more seriously ill, more anonymous, and feel a lack of power and lack of influence on their care. However, in a number of published papers almost all patients are reported to agree to the importance of student teaching in the general practice setting (Jones et al. 1996; O'Flynn et al. 1999; Bentham et al. 1999; Salisbury et al. 2004).

## *Informed consent*

Informed consent from patients before involving them in teaching seems obvious. The best approach for obtaining consent is discussed in several publications. Howe & Anderson (2003) and Benson et al. (2005) conclude from interviews with patients that patients want to be asked for consent well in advance and not in front of students. This is also confirmed by O'Flynn et al. (1997) in their questionnaire study from the UK, where two thirds of patients would like to know in advance if a student might be present. Patients provided with information in advance of students' presence in a planned visit to a hospital physician felt 'more free' to refuse participation (Westberg et al. 2001; 2005). However, they did not decline participation to a higher degree than patients not provided with advance information.

In general practice it is not quite clear whether the GP, the student or staff (nurse, receptionist) preferably should ask for the patient's consent. Most often it becomes the GP's responsibility, which invariably results in the patient being less likely to refuse because of the ongoing relationship with the GP (Rees & Knight 2008). If the student also is present when consent is sought, the patient is still more unlikely to decline for fear of negatively influencing the student's self-image (Rees & Knight 2008). However, Waterbury (2001) is of the opinion that students should seek consent themselves; otherwise patients do not receive enough information to decide on whether to consent or not. This emphasises the importance of students' interpersonal skills, which is found to be a top-ranked item among patients' considerations when requested to participate in students' training (Mavis et al. 2006).

## *Patients' feelings about participation*

Several studies show a high degree (90–95%) of patient satisfaction with participation in medical students' training in general practice (Cooke et al. 1996; O'Malley et al. 1997; Frank et al. 1997; Bentham et al. 1999; Prislin et al. 2001; Price et al. 2008). When comparing consultations with or without students, patients in several studies feel even more positive if a student is present. In two Australian studies using questionnaires to patients before and after the consultation in general practice, patients were found to expect, and were prepared to accept, considerably more involvement by students than actually happened (Salisbury et al. 2004; Hudson et al. 2010). These findings were consistent, although students differed in their stage of training (junior/senior) and type of attachment (urban/rural).

### Benefits and problems

Patients seem to derive several benefits from the presence of a student in their care, both personal and altruistic. In many studies patients mention that they 'learn more about their problem', 'get a second opinion', 'have a more thorough examination' and 'have more time to talk' as positive experiences of participation in teaching (Cooke et al. 1996; O'Malley et al. 1997; O'Flynn et al. 1999; Bentham et al. 1999; Prislin et al. 2001; Coleman & Murray 2002; Chipp et al. 2004; Benson et al. 2005; Price et al. 2008; Hudson et al. 2010).

Besides personal benefits, several patients also comment on altruistic matters; 'to help students' education' and 'to pay something back' (O'Malley et al. 1997; Bentham et al. 1999; Coleman & Murray 2002; Chipp et al. 2004; Salisbury et al. 2004; Benson et al. 2005; Hudson et al. 2010).

There seem to be predominantly two kinds of drawbacks. Firstly, an important minority of patients is negative about student involvement, although they find it difficult to refuse to see a student when asked for consent (O'Flynn et al. 1999; Price et al. 2008). Price et al. (2008) have shown that these patients also 'prefer to see their doctor alone' (20%) and 'leave the consultation without saying what they want to say' because the student is there (7–9%). Prislin et al. (2001) also report on patients who perceive teaching to interfere with their relationship with their physician (6%). Patients given time alone with their doctor, after seeing a student, are found to be significantly more accepting of students (Hajioff & Birchall 1999).

Secondly, some patients think teaching takes too much time, a disadvantage mentioned in several studies (O'Malley et al. 1997; Bentham et al. 1999; Prislin et al. 2001; Benson et al. 2005).

## *Predictors of participation*

Patients' willingness to participate in students' training is conditional. It can depend on *students' gender*, and more women than men prefer a student of the same gender (Cooke et al. 1996; O'Flynn et al. 1997; Bentham et al. 1999; Kljakovic & Parkin 2002; Chipp et al. 2004; Choudhury et al. 2006; Passaperuma et al. 2008).

Acceptance to participate can also be based on the nature of the presenting complaint. Students' gender is particularly important in *intimate examinations*, where significantly more women than men will refuse a student of the opposite gender (O'Flynn et al. 1997; Chipp et al. 2004; Passaperuma et al. 2008). These findings are also confirmed in gynaecological care, where patients prefer female students to males in all interactions (O'Flynn & Rymer 2002; Mavis et al. 2006). However, older women and women who had children are more likely to agree to intimate examinations by students of either gender (O'Flynn & Rymer 2002). An American survey of medical students established that students are not optimally exposed to intimate examinations of the opposite gender. This is an important issue, as students' confidence in the procedures depends only on the number of examinations they have performed, not on the number observed or controlled by teachers (Powell et al. 2006).

*Invasiveness of procedures* is a determining factor for patients, deciding about participation in students' training. There is a great difference between talking to a student and allowing the student to perform invasive procedures (Chipp et al.; Passaperuma et al. 2008)

In consultations for *emotional problems* consent is also less likely to be given, particularly among women (O'Flynn et al. 1997). However, patients with psychiatric disorders, managed in primary care, have been subjected to an interesting teaching programme, described by Walters et al. (2003). The research project explored the effects and outcomes for patients of participation in student interviews. Almost all patients were found to have positive experiences, and teaching was perceived as 'therapy' for patients.

*Previous experience with students* is a known facilitating factor for patients' participation in students' training (Salisbury et al. 2004; Choudhury et al. 2006; Hudson et al. 2010). This is particularly important in gynaecological care, where patients are significantly more likely to accept involvement by students, if they have seen students during previous visits (Hartz & Beal 2000; Mavis et al. 2006).

Patients' interest in participation also increase with *students' experience* or stage of training (Chipp et al. 2004; Salisbury et al. 2004; Benson et al. 2005; Hudson et al. 2010; Passaperuma et al. 2008). Most students in published research are junior

and act as passive observers, mainly sitting in together with the GP during surgery, or sometimes undertaking supervised histories or physical examinations. Only a few publications deal with senior students, partly independently managing consultations with patients, before patients see their GP (Bentham et al. 1999; Prislin et al. 2001).

## *Patients as teachers*

The patient's traditional role in medical education has largely been passive, acting as an 'interesting case' or 'teaching material' (Spencer et al. 2000; Spencer 2004). However, real patients can be involved considerably more in the educational process. Their experience and expertise can be valued, and they can act as teachers in partnership with the physician (Williamson & Wilkie 1997; Wykurtz 1999; Spencer et al. 2000; Spencer 2004).

There is also a movement towards a more active involvement of trained 'expert patients' in medical education (Wykurtz & Kelly 2002; Jha et al. 2009). These patients are specially recruited and trained and contribute to students' learning of predominantly clinical examination skills. These programmes also promote the development of students' communication skills and attitudes. The fact that patients are given responsibility and authority to teach might also positively influence students' respect towards patients' contribution later in students' career (Wykurtz 1999).

In general practice another arrangement is common, where patients with specific 'signs' are invited to participate in teaching sessions on defined topics with a small group of students and a GP (Coleman & Murray 2002; Benson et al. 2005). These patients are pleased with their involvement in general practice based teaching and feel that their contribution to students' learning is valuable.

Research on 'ordinary' patients' perception of their role as teachers is sparse, particularly concerning unprepared patients in a clinical context. However, Stacy & Spencer (1999) interviewed patients, taking part in a long-term community-based project with regular home visits by students. Patients perceived their teaching role as important, and three themes emerged from the interviews: patients as 'experts of their condition', as 'exemplars of their condition' and as 'facilitators of students' development of professional skills and attitudes'.

# Aims

## *General aim*

The general aim of this thesis was to study medical students' learning experiences in general practice, work-based assessment of students in this environment, and the perspectives of GP supervisors and patients.

## *Specific aims*

Specific aims were to investigate:

Students' learning experiences

- themes of senior students' reflections on learning, as part of a general practice portfolio
- junior students' learning experiences in general practice

Assessment

- the effects of long-term use of a formative work-based assessment tool for senior students, specifically the content and nature of feedback provided
- senior students' self-assessments and supervisors' evaluations of students' clinical performance and achievements
- the reliability, the validity and the educational impact of the work-based tool for formative assessment and the portfolio for summative assessment

GP supervisors' perspectives

- supervisors' attitudes towards the teaching of junior students and their experienced rewards and problems

Patients' perspectives

- patients' attitudes to consultations conducted by senior students alone, before patients saw their GP
- patients' perception of their teaching role
- patients' attitudes to the presence of junior students in GP consultations

# Methods

## Setting

### *Health centres and supervisors (Papers I–IV)*

The studies were conducted in association with 50–60 health centres in the southernmost part of Sweden, including the towns of Malmö and Lund. The health centres are located in rural, suburban and urban areas, and vary considerably in size. Most health centres are publicly financed and administered through the County Council; only a small proportion is privately run. They are all obliged to take on students and are remunerated for their work by Lund University. In each health centre a lead GP supervisor is appointed by the management. The appointment is based upon the GPs' interest and engagement in teaching, and several of these GPs are additionally responsible for the supervision of interns and GP trainees. One of their tasks is to act as advisers to other GPs, engaged in students' training at the health centre. They also constitute an important link between the health centre and the academic department of general practice.

There is no formal requirement of teacher training for undergraduate GP supervisors, but voluntary participation in a course at Lund University is recommended. The regular whole-day meetings twice a year, run by the academic department of general practice, reach approximately 70% of supervisors, and are also to a large extent used for educational purposes.

### *Early patient contact (Paper I)*

When these interviews were undertaken in the spring of 1998, the GPs' experience of third-year students was comparatively short. The early patient contact course was introduced in 1992 to first-year students and ran parallel with students' basic science programme for a half-day every second week during the first five semesters (two and a half years). Students' training was focussed on communication skills and basic skills for physical examination, and was partly performed with real patients in health centres and hospital wards.

In the fifth semester students were allocated to 30 of the available health centres for a total of three days' training. The goals of this attachment were for students to

practise contact with patients and to learn basic medical interviews and physical examinations. At the end of the semester, students were individually assessed in real consultations by an independent, experienced GP teacher at another health centre. *Paper I* reports on the GP teachers' attitudes to this teaching and their experienced rewards and problems.

## *General practice course (Papers II, III, IV)*

The three studies described in papers II–IV are all conducted in association with the general practice course in students' final year in medical school. The programme of Community Medicine runs for ten weeks, and includes 16 days (four days every second week) of practice in a health centre.

The objectives of the general practice attachment are that students will learn to manage common diseases and complaints in primary care, supervised mainly by personal GP supervisors. Students are expected to independently perform medical interviews and physical examinations, present working diagnoses and management plans, and conclude consultations under supervision. Supervisors are requested to frequently observe students during medical interviews and physical examinations. Students are supposed to get daily feedback as part of the flow of work, and twice during the attachment summarised feedback, at the midpoint and at the end. We realised the need for an assessment tool to be applied in these two summarised feedback sessions, and designed a tool for this purpose. *Paper II* describes the first three years' experience with this tool.

During their practice students also utilise an eight-item checklist of practical skills, and record patient consultations on video. The recordings are discussed in group seminars, where students are provided with feedback from their peers and teacher.

The final summative examination consisted of a global, non-graded, pass/fail assessment of the student's clinical performance at the health centre and a case-based written test at the end of the semester. However, a supplementary method was required for the assessment of students' professional development. The portfolio seemed to be a tool particularly well suited for final-year students, who were in a phase of medical training characterised by a large degree of authentic learning in the workplace. *Paper III* reports on our portfolio pilot.

Students and supervisors sometimes report on patients who are dissatisfied with their student encounters or reluctant to participate in teaching. To obtain an understanding of the magnitude of this problem we conducted a questionnaire survey of patients at the health centres. The results of this survey are presented in *Paper IV*.

# Study populations and procedures

## *Early patient contact (Paper I)*

Based on a semi-structured interview schedule (Box 2), individual interviews of 30 GPs were undertaken. The sample of interviewees was selected by telephone calls to lead teachers in the 30 health centres engaged, resulting in a sample of GPs of both genders, and with wide variation in teaching experience. Interviews took approximately 45 min, and were conducted by one of the authors, who was a GP in an adjacent area, and not involved in the course. Notes were taken during the interview, and immediately afterwards completed by data and reflections dictated on tape.

The 80 students supplied short reflections on a memorable patient and their learning experiences of the three days' attachment to the health centres (*results unpublished*).

Short patient questionnaires (5/student), asking about patients' age, gender, and views on junior medical students' training at the health centre, was sent to the GP teachers in advance. It was supposed to be given to patients, who had been interviewed and/or examined by a junior student (*results unpublished*).

## *General practice course (Papers II, III, IV)*

### Assessment tool (Paper II)

The tool developed for formative assessment and feedback consisted of an assessment form (Appendix, *Paper II*) and an attached feedback sheet.

The assessment form included eight competency domains, scored on a 7-point scale: 'Medical interview', 'History taking', 'Physical examination', 'Working diagnoses', 'Problem solving', 'Investigation and treatment', 'Explanation and planning', and 'Relationship with patients/time management'. Students used identical forms for self-assessment. The feedback sheet supplied information, had space for narrative comments on feedback and agreed goals, and contained a few evaluative questions to students and to supervisors.

Before the first feedback session, supervisors and students independently completed the assessment forms by allocating suitable scores in each of the eight domains. After feedback was provided, goals and strategies for further training were mutually agreed, and recorded on the feedback sheets. At the second feedback session, students were provided with follow-up feedback, documented on the feedback sheets.

Assessment forms and feedback sheets from all students and their supervisors were collected during the first three years' use of the tool.

Box 2. Interview Schedule (Paper I)

| |
|---|
| What is your attitude towards being a GP teacher? |
| Would you like to tell me how you generally organise, from a practical view, the teaching of the junior students? |
| What is your view on teachers' meetings at the Academic Department of General Practice? |
| How are the practical conditions at your health centre, for example concerning rooms for students to talk to patients on their own? |
| How is the interest in teaching at your health centre among staff and colleagues? |
| How is the consultation rate at your health centre when students are present? |
| What is your view on the junior students' motivation for the attachment? |
| The early part of students' curriculum is PBL-based. Do you feel sufficiently familiar with this approach? |
| In what degree do junior students' manage to take own initiatives in their work with patients? |
| Do you think you have sufficient information about what to expect from the students at the start of their attachment? |
| How do you understand the objectives of the junior students' attachment? |
| It happens that patients refuse to see a student or to have a student present during consultation. How often does it happen to you? |
| The fifth semester students are inexperienced in clinical work. Do you experience any problems in explaining your work to them? |
| In the teaching of basic examination skills – do you experience a discrepancy between how students have been taught and how you do yourself? |
| To provide feedback on students' clinical skills does not only include praise, but also sometimes criticism. Can do you manage? |
| How do you think your relationship with the patient is affected when a student is present in the consultation? |
| What would you most of all wish students to remember from the attachment? |
| What are your own rewards of teaching? |

### Portfolio pilot (Paper III)

The portfolio was standardised to hold documentary evidence from the practice and the video seminar group (*Paper III*), and also included two case summaries, intended to illustrate one or more of the 11 characteristic general practice attributes (Box 1). Three reflections on learning were required; one on consultation skills, based upon documentation from the practice and video seminar group, and two reflections on the two case summaries.

All together 35 voluntary students from two consecutive classes participated in the pilot. They were provided with guidelines on the purpose, format and assessment of the portfolio. Four course teachers acted as mentors, supporting students in compiling their portfolios and they also acted as 'external' examiners for each other's students. Except for the case summaries, the documentary evidence was formatively assessed in practice or in seminars, and the summative assessment only concerned the three reflections. The assessment was completed by a personal 30-minute interview with the student. The portfolio pilot was evaluated by students using a form, supplied directly after the examiner interview.

To estimate the inter-rater reliability of the exam (*results unpublished*), all four teachers three months after the last exam separately read and rated all the copied 35 portfolios. For each of the three reflections 'learning' and 'use of documentary evidence'/'general practice attributes' was evaluated, using a 4-point scale; and structure and written language was assessed for the portfolio as a whole (Box 3).

### Patient questionnaire (Paper IV)

A questionnaire was designed on the basis of previously published papers on patient satisfaction surveys and on continuous discussions in GP supervisors' meetings. It was piloted and modified. The questionnaire consisted of tick boxes, except for the open question about the patients' perceived teaching role (*Paper IV*).

Students of three consecutive classes were invited to participate and to give out five numbered questionnaires to their first patient over 18 on five different days. For the calculation of response rate, they should note the patients' age and gender on an accompanying list of corresponding numbers. The GP supervisors were thoroughly informed about the project. Patients were assured anonymity, and encouraged to complete the questionnaire, put it into a return envelope and post it before leaving the surgery.

Box 3. Assessment criteria for the portfolio reflections

**Consultation skills -** Learning

**1.** No reflection on learning. Students discuss consultation skills, but do not reflect on their learning. **2.** Limited reflection on learning. Students describe their strengths, but critical reflection on what needs to be improved is missing. **3.** Fairly good reflection on learning. Students discuss their development, but only some of students' weaknesses and areas that need to be improved are mentioned. **4.** Excellent reflection on learning. Students discuss their development, strengths and weaknesses are commented upon, and the reflection is applied to future experience.

**Consultation skills -** Links to documentary evidence

**1.** No links to documentary evidence. **2.** Limited links to documentary evidence. There is an attempt to make a few links, but the result is unclear. **3.** Fairly good links to documentary evidence. A fair range of documentary evidence is cited, but some important parts are omitted or some links are unclear. **4.** Excellent links to documentary evidence. An extensive range of documentary evidence is cited and used in depth in the reflection.

**Case summaries (two reflections) -** Learning

**1.** No reflection on learning. Students only state their experience. **2.** Limited reflection on learning. Students describe their experience, what they thought they did well and did not do well, but there is no reflection on how to develop further. **3.** Fairly good reflection on learning. Students discuss learning from the experience and how to develop further, but the reflection is not applied to future experiences. **4.** Excellent reflection on learning. Students discuss learning from the experience, how to develop further, and the reflection is applied to future experiences

**Case summaries (two reflections) -** Links to general practice attributes

**1.** No links. The patient is described without any links to general practice. **2.** Limited links. There is an attempt to make a few links, but the result is an unclear connection to general practice. **3.** Fairly good links. One or two attributes are discussed, but the connection is not completely clear. Some obvious links are not discussed. **4.** Excellent links. Clear links to general practice attributes are discussed and used in depth.

**Structure and written language** (the whole portfolio)

**1.** The structure is unclear and incoherent; language is poor with several mistakes in grammar and spelling. **2.** The structure is unclear in places; language is poor in places with a few mistakes in grammar and spelling. **3.** The structure is mainly logical and coherent and language is fairly good with no disturbing mistakes in grammar or spelling. **4.** The structure is outstandingly clear, logical and coherent and language is excellent.

# Data analysis

## *Qualitative methods*

### Editing analysis

The method used for analysis was developed by Malterud (1996), originally based on Giorgi's phenomenological method, albeit considerably modified, and described by Malterud as close to the editing analysis style (Miller & Crabtree 1999). Malterud recommends an analysis in four steps.

1. All material is read through to get a sense of the whole, and 'intuitive themes' are created.

2. 'Meaning units' are identified and coded with respect to the initial themes, which are refined during this process. The coded text elements are collected to be read together, seen as a systematic 'decontextualising'.

3. In each code group knowledge is condensed and abstracted, and several sub-groups are created in this process. The message in each of these groups is expressed in general terms as concepts. Quotations are selected and highlighted.

4. The essence of the concepts of each code group or sub-group is summarised and expressed as a category. The name of this category can be derived from previous research, if the goal only is to develop new descriptions. Finally, the concepts and categories are validated to the whole from where they are derived; a process called 'recontextualising'.

This method was applied to the data in *Paper I*, consisting of transcripts of 30 interviews. One of the authors performed the preliminary analysis, however in continuous discussions and corroboration with the other authors.

### Framework analysis

The framework analysis, called template organising style by Crabtree & Miller (1999), uses predefined templates or code manuals for organising the data. The template, derived from pre-existing knowledge or theory, is usually considerably revised during the analysis.

1. Meaningful units of the text are identified and coded with respect to the framework.

2. Segments of text with similar codes are sorted and indexed to the appropriate part of the framework. Codes are modified and new ones added during this stage to reflect as many nuances in the data as possible.

3. To connect the data, 'chunking' (examining related text together) can be used. 'Chunk summaries' under each code are made, a process involving a considerable amount of abstraction.

4. The summaries can be used as an analytical tool to make connections between the codes. Sub-themes and themes are identified.

In *Paper III*, students' reflections were written verbatim into a word processor by one of the authors. For 'Consultation skills' the text was mapped against the Calgary Cambridge Guides (Silverman et al. 2004). For 'Case summaries' the statement of WONCA Europe (2005) was used as a template for organising the data. One of the authors undertook the mapping of text and carried out the primary analysis of the data. The four teachers involved in the pilot examined in recurrent meetings whether the interpretation of the data was plausible. During the process of corroboration, codes and sub-themes were compared based on differences and similarities and revised.

In *Paper IV*, patients' comments on their perceived roles as teachers were written verbatim into a word processor by one of the authors and then coded, using the three sub-themes of Stacy & Spencer (1999) as a framework for organising the data: patients as 'facilitators', 'experts' or 'exemplars' of their condition. Connections were made and sub-themes identified.

### Basic content analysis

The basic content analysis is an example of a template analysis style with a 'stiff' structure (Crabtree and Miller 1999, p. 200), identifying words, terms or meaning units, which are sorted into previously defined categories. The relationship between these categories can then be used for statistical analysis, if applicable.

In *Paper II*, the qualitative data from the first and second feedback sessions on students' and supervisors' feedback sheets were subjected to basic content analysis and categorised. Specific goals and specific feedback comments were mapped against the framework of the eight competency domains. This framework was then used to count the frequency of different code occurrences.

In *Paper III*, the free comments of students' evaluation questionnaire were subjected to basic content analysis.

Mentioned in Paper I (*unpublished results)*, junior students' short reflections on their learning experiences were subjected to basic content analysis, using GPs' perceptions of the objectives of the course as a template.

## *Quantitative methods*

Version 17.0 or earlier of SPSS (Statistical Package for Social Sciences) was used to run all analysis except for the multi-level analysis.

### Non-parametric tests

Non-parametric tests are considered to be more robust, but less powerful to detect genuine differences (Kirkwood & Sterne 2003). They are based on ranks, and are preferably used with ordinal scale data and with skewed distribution of variables.

In *Paper II* all outcome variables were measured by ordinal scales.

*Mann-Whitney U* test (identical to Wilcoxon rank sum test) was used to compare two independent groups with ordinal outcome variables

*Kruskal Wallis* (one-way analysis of variance) test was used to compare three or more independent groups with ordinal outcome variables.

*Spearman's rank correlation* was used for the calculation of associations between students' ranked results on their written exam and supervisors' ranked average scores of students' clinical performance.

In the portfolio pilot correlations between students' total portfolio scores (mean of four raters) and their results on the written test were determined by calculating *Spearman's rank correlation.* Mean test scores on the written test for portfolio students and for the non-participating students of the shared part of the test were also calculated (*results unpublished*).

### Chi-square test

The Chi-square test is preferably used to compare binary categorical outcome variables between independent groups.

In *Paper IV* the Chi-square test was used for comparing independent groups of patients' responses of their views on students' participation in their care. The same method was used for the patient questionnaire, mentioned in *Paper I* (*results unpublished*).

### Cronbach's alpha

Cronbach's alpha is a tool for evaluating the reliability of scales, and determines the internal consistency of the construct of a survey instrument. The alpha coefficient ranges in values from 0 to 1, and the higher the score, the higher the reliability of the instrument.

In *Paper II* we estimated the internal consistency reliability of the assessment tool using Cronbach's alpha for each semester and for the whole period of study.

In the portfolio pilot we used Cronbach's alpha as a method to establish internal consistency among the four raters, i.e. the extent to which the ratings held together to measure a common dimension (Stemler 2004) (*results unpublished*).

### Multi-level analysis

In *Paper II*, due to the fact that some of the data were repeated measures (student's scores) within the same subject (supervisors), there was dependence between measurements, which could affect the analysis and lead to type I error (Snijders & Bosker 1999). To correct for this we used a multilevel approach, where a correction for dependence is built into the model. (Maas & Snijders 2003; Quene & van den Bergh 2004). By doing so, we could enhance the possibility of correct inferences. Analysis was made with MlWin, v 2.17 (Rasbash et al. 2009) Residual (or restricted) maximum likelihood (REML) was used for all analysis. REML estimation takes into account the loss of degrees of freedom resulting from the estimation of the parameters of the fixed part.

### Factor analysis

In the portfolio pilot, by calculating a measurement estimate, using the factor analytic technique of principal components analysis, we tried to identify a common construct. The percentage of variance, explained by a common construct gives some indication of the extent to which multiple raters reach agreement (Stemler 2004) (*results unpublished*).

### Intra class correlation (ICC)

In the portfolio pilot, we used the intra-class correlation coefficient (ICC, two-way random model) that takes into account differences in ratings for individual items, along with the correlation between raters (Kirkwood & Sterne 2003). ICC can be calculated for internal consistency and for consensus (LeBreton & Senter 2008) (*results unpublished*).

# Results

## Students' learning experiences

### *Early clinical experience*

As mentioned in *Paper I*, junior students' short reflections on their learning experiences were subjected to basic content analysis, using the interviewed GPs' perceptions of the objectives of the course as a template (*unpublished results*).

The dominating theme of students' reflections was 'good role models'. Students described the GPs' excellent communication skills, attitudes, and rapport with patients. They also acquired an insight into the GPs' professional role, which made some students feel strengthened in their future role as physicians and a few rather discouraged because of the high stress level and multiple service demands.

Another prevailing theme was 'apply theoretical knowledge to practice', where several students mentioned their ability to make use of their knowledge from the basic science course in a real context; a rewarding experience that enhanced their motivation in their studies. The wide range of patients in general practice also provided students with useful training in 'communication skills' and 'physical examination skills' with different sorts of people, two themes mentioned by several students.

### *Communication skills*

The final-year students' portfolio reflections on their consultation skills (*Paper III*) clearly illustrated these students' learning during the attachment.

Students' endeavour for structure in the medical interview was a key emergent sub-theme in the analysis. They learned how to improve structure mainly by using three different skills: negotiating an agenda for the consultation, keeping the interview on task, and frequently using internal summarising. Active listening without interruption of the patient's opening statement was also acknowledged as an important issue to improve the structure, get more information, and save time. To understand the patient's illness perspective, students learned to ask direct

questions about the patient's ideas, concerns and expectations, and to pick up on the patient's verbal and non-verbal cues.

Throughout the consultation, building of a relationship was important. Some students improved in communicating their empathy back to the patient, others changed their note-taking that could interfere with their rapport with patients, and still others described how they had finally been able to deal with questions on embarrassing subjects. In concluding the consultations, some students commented on their improved skills of supplying information for patients while avoiding medical jargon, and others reflected on shared decision making, relating explanations to the patient's perspective.

## *Clinical clerkships in general practice*

The final-year students' portfolio reflections on their case summaries (*Paper III*) demonstrated these students' learning during the attachment.

### Patient-centred care

Patient-doctor relationship included discussions on reaching consensus through negotiation, and on the patient's responsibility and the doctor's respect for the patient's autonomy. Patients' personal relationship with their GP, based on mutual trust and established over time, was acknowledged as important. Holistic modelling embraced the importance of identifying social and psychological factors, of 'thinking behind the biomedical perspective', when the exclusion of biomedical disease and reassurance was not enough. The patient-centred approach involved the understanding of the individual's experience of illness and the importance of eliciting particularly the patient's feelings and fears. Longitudinal continuity was experienced as important to avoid unnecessary investigations, to create mutual trust and a holistic approach to patient's problems, and to give adequate advice about the patient's lifestyle.

### Clinical reasoning

Clinical reasoning was acknowledged as a problem by several students. They perceived the retrieval of basic and clinical science and the transfer from theory to practice across the wide range of problems in general practice as a challenge. Some students reflected upon their tendency for premature closure on a particular diagnosis, instead of keeping a degree of scepticism and a broader perspective. Others described a tendency to direct their initial reasoning towards the most serious and unlikely of diagnoses, and still others were uncertain of their knowledge base, which made it difficult to generate probable hypotheses.

### Professional development

Students described enhanced confidence in their work due to the wide range of patients' problems experienced, to self-reflection and to their GP tutor's constructive feedback. Awareness of one's own feelings and of external factors was mentioned, and difficult consultations were defined, where students had to disregard their own feelings and act professionally. Several students reflected on their identification of prejudiced attitudes towards certain patients, and how they learned to approach their patients unconditionally. Some students had identified ethical problems of clinical practice, mainly concerning patients' autonomy.

Self-reflection, video recordings of consultations, sit-ins by experienced colleagues, and joint group discussions were suggested as suitable methods for further development of communication skills. Students also acknowledged the importance of continuously updating their scientific knowledge and practical skills to maintain high quality in their work, including continuous self-evaluation and courage to seek advice when necessary.

### Other characteristics of general practice

Students' realised the requirement of a broad knowledge base for the exploration of patients' problems, to suggest investigations, and to formulate management plans with treatment and follow-up. They were required to recapitulate their knowledge in a vast range of medical conditions, consolidating previous knowledge and adding new facts related to their patient presentations.

Students also realised that health problems in general practice could cover a wide range from trivial to life-threatening conditions. General practice was emphasised as the first medical contact. Taking care of patients with non-specific symptoms, often in the early stage of an illness, made several students feel frustrated and insufficient. They learned the feasible strategy of using time as a tool, keeping in touch with the patient and awaiting further developments.

The co-ordinated care with other health professionals in primary care was appreciated by students, who had acquired enhanced respect for the competence of nurses and physiotherapists. Students emphasised the importance of 'working together as a team' for the benefit of the patient's quality of care.

# Assessment

## *Workplace-based assessment*

The results of the implementation and use of an assessment tool (*Paper II*) were investigated among the 464 students, 55% females, who finished the general practice course during the first three years with the tool. Half of the students, with equal gender distribution, had worked as locum covers. The total number of supervisors engaged was 151, of whom 58% were females. Forty-nine supervisors were responsible for 4–12 students during the three years, 45 for 2–3 students and 47 for only 1 student.

### Feedback

At the *first feedback session* almost all students were evaluated by the use of the tool. Both students and their supervisors assigned the lowest ratings to 'Investigations and treatment' and 'Working diagnoses', while the highest were awarded to 'Medical interview'. Male students rated themselves significantly higher than female students in three competency domains, but there was no significant difference in supervisors' assessment. Students who had worked as locum covers evaluated their average scores significantly higher than those who had not and also rated themselves significantly higher on three competency domains, partly in accordance with their supervisors.

The vast majority of students (88%) were supplied with specific goals. Most goals related to 'Medical interview', particularly the structure of the interview, and 'Explanation and planning' with the emphasis on shared understanding. Students supervised by GPs who used a wider range of scores were significantly more likely to receive specific goals. Female students with female supervisors were provided with specific goals to a significantly higher degree than remaining student-supervisor dyads.

At the *second feedback session* 58% of students were provided with specific feedback, and a third of these were additionally provided with 'feed forward', advice for the future. There was an almost perfect correlation between the distributions of specific feedback and specific goals among the eight competency domains.

*Long-term use* of the tool significantly increased the proportion of specific goals and specific feedback, when the first three semesters were compared to the last three. Supervisors' stringency of the assessment also increased with experience.

## Portfolio assessment

The portfolio pilot (*Paper III*) explored the themes of portfolio reflections by a group of final-year medical students. Notwithstanding the standardised format and the limited time available, students provided good evidence of their learning with a wide variety of dimensions of professional competence. The content and nature of the reflections were reported in the above section 'Students' learning experiences'.

Several students supplied deep reflections on their learning, applying their learning to future experiences or making plans for further development. The efforts of other students were more modest, only describing or discussing their experiences. Of a maximum score of 28, the mean of the four assessors' total scores for each student was 20.6 with a range of 11.3–27.5 (*results unpublished*).

The portfolio students took the final written test reduced in the number of general practice questions. On the part of the test that *all* students in class took, the mean score the *first* semester for portfolio students was 64.7 (95% CI 61-68.2) compared to remaining students 63.0 (95% CI 61.3-64.8). The mean score the *second* semester for portfolio students was 67.9 (95% CI 65.8-70.0) compared to remaining students 66.6 (95% CI 64.6-68.6) (*results unpublished*).

## Assessment criteria

### Reliability

*Paper II*: We estimated *internal consistency reliability* using Cronbach's alpha for each semester separately; 0.94–0.96; and for the whole study period; 0.95.

*Paper III*: Using qualitative criteria, the *reliability* (dependability) of the assessment process was strengthened by the verification of documents by the examiner, explicit assessment criteria (pass/fail) and an 'external' examiner. Standardisation of portfolio content, discussion between examiners, and the personal examiner interview also contributed to reliability.

For further psychometric evaluation of inter-rater reliability (*results unpublished*) we used three measurements. Firstly, for the estimation of internal consistency we used *Cronbach's α-coefficient*: 0.90; a value above 0.80 is regarded as substantial for consistency. Secondly, as a measurement estimate we used *factor analysis* that showed a first principal component of 77% to explain the agreement between assessors; a value exceeding 60% indicates the rating of a common construct. Thirdly, we used the *intra-class correlation coefficient* (ICC, two-way random model) to measure consistency: 0.89 (95% CI 0.82–0.94) and consensus: 0.87 (95% CI 0.77–0.93). The intra-class coefficient ranges between 0 and 1, and values closer to 1 show a high correlation.

### Validity

*Paper II*: The *face validity* of the assessment was ascertained by involvement of supervisors in the modification of the assessment tool before implementation, and *content validity* was ensured by alignment to the goals of the attachment. In the estimation of *concurrent validity*, we found a low correlation between supervisors' ranked average scores of students' clinical performance and students' ranked written examination scores (Spearman rho=0.16; p=0.001). If positive, the correlation coefficient results between 0 and 1, higher values imply higher correlation.

*Paper III*: *Face validity* in portfolio assessment is high, and we also believe that *content validity* (credibility) of the assessment structure was ensured by clear learning outcomes, a variety of written evidence of students' experiences and reflections, extended placement in practice, daily observation by practice supervisors, and documents signed by supervisors. The qualitative analysis of themes in students' reflections, linked to the documentary evidence, could also ensure content validity.

The *concurrent validity* of the portfolio pilot (*results unpublished*) was calculated by comparing students' portfolio scores (mean of four raters) with their results of the written test. Correlations between individual students' portfolio scores and their written test scores showed Spearman rho=0.37; p=0.155 for the first semester; and correlations between individual students' portfolio scores and their written test scores Spearman rho=0.21; p=0.397 for the second semester. If positive, the correlation coefficient results between 0 and 1, higher values imply higher correlation.

### Educational impact

*Paper II*: Students evaluated the assessment strategy in three short questions, and approximately 75% were completely satisfied with their supervisors' identification of their strengths and weaknesses, the specific advice provided, and the effectiveness of the follow-up feedback. Another 20% were partially satisfied. Students, provided with specific goals and specific feedback were significantly more satisfied.

Supervisors' evaluation of the assessment tool as an instrument for the provision of improved structure in the assessment of students became more positive with experience, and after six semesters only two supervisors rejected the tool. Supervisors who had been responsible for 4–12 students were significantly more positive than the rest.

The narrative comments of the follow-up feedback, aligned to personal goals, could be interpreted as students' developments in clinical performance, albeit not objectively measured.

*Paper III*: The 35 portfolio students' evaluation questionnaires resulted in a strong recommendation for the portfolio to be launched; however, instructions needed to be improved. Students were satisfied with their mentors' support and enjoyed the opportunity for reflective writing; however, the most positive experience was the final examiner interview with feedback on their reflections.

The analysis of the themes in students' reflections assured us of improvements in their knowledge and understanding and their enhanced self-awareness, but these issues were not objectively measured.

## Supervisors' perspectives

The GP teachers (*Paper I*) were interviewed about their attitudes, rewards and problems of the teaching of junior students. All except two interviewed GPs had a basically positive attitude towards this teaching. They found it interesting, satisfying and stimulating, and some also acknowledged it as an important task.

### Rewards of teaching

All but two teachers mentioned several benefits of their teaching, intellectual as well as emotional. The intellectual rewards were clearly dominated by the theme 'improved quality of own work'. The GPs also appreciated their role as teachers, facilitating students' learning and possibly influencing knowledge, skills and attitudes of the next generation of doctors. Renewed enthusiasm in work by contact with students was an important emotional theme, and some GPs emphasised gains in self-esteem and their personal relationship with the student.

### Students, colleagues and staff

Most students were regarded as highly motivated for the attachment, and problems with uninterested students were minor. In a third of health centres all colleagues had maintained their interest in teaching. However, the most common view was that the interest in and also the quality of teaching had deteriorated, as the work had become more stressful and the number of students had increased. Problems with individual unsupportive colleagues were mentioned, but almost all the interviewed teachers described their staff as supportive.

### Structural problems

The single most important issue was lack of time. Only in three health centres was there a small reduction in consultation rate or increased appointment length during teaching sessions. Teaching in protected time did not exist. Inadequate premises with lack of space were a problem in almost half of the health centres.

### Problems in teaching

Hardly any patients declined to see a student when asked for consent; however, almost half of the interviewed teachers were highly selective in their choice of appropriate patients for the students to see. Despite being careful, almost a third of the interviewed GPs were concerned about their relationship with patients when students were present, and some GPs worried about patient care and patient fatigue.

The provision of feedback to students was a problem for half of the GPs, who feared that corrective feedback would negatively influence students' self-confidence. Moreover, several GPs were not certain of what to expect from these junior students, others never saw the students in action with patients, and still others maintained lack of time as a reason for avoiding feedback.

### Relationship to the academic department

Despite understanding teachers' meetings as beneficial, almost all lead teachers were of the opinion that the academic department had unrealistic expectations of students' learning at the health centres. They emphasised the need for teacher training, including improved information on the new curriculum, what to expect from students, and on the course objectives and assessment. Patchy knowledge of all these issues was also revealed among half of the interviewed teachers.

The themes of GPs' own interpretation of the objectives agreed only in one of the academic departments' objectives for students' training: 'practising patient contact'. Only seven teachers mentioned examination skills training, and specific communication skills were hardly noted. The prevailing themes of GPs' own understanding of the objectives were 'introduction of students to general practice' and 'general practice as a contrast to hospital care'. 'Good role models' was another frequently mentioned theme, and several GPs also emphasised the opportunity for students to link their theoretical knowledge to practice. There was a high correlation between these objectives and GPs' personal views of what impressions from the attachment they wished students to remember.

### Comments on Paper I

The study in paper I was conducted several years ago, when teachers' meetings consisted of short gatherings of GP teachers, involved with students at a specific stage of training. The meetings were mainly informative, and did not include discussions or debates with GP teachers of feasible goals for students' attachments. Students' evaluations with feedback to each health centre were not provided by the academic department, and no teacher training was offered.

# Patients' perspectives

Patients' views on students' participation in their care were studied by questionnaires to patients who had talked to and/or been examined by students.

## *Patients and junior students*

The questionnaire study (*results unpublished*) concerned students in the early patient contact course, and is mentioned in Paper I. There were 241 respondents, but response rate was unknown as we did not know how many questionnaires were distributed. Of respondents, 63% were women, 89% supported medical students' training at the health centre, and 42% knew that medical students were trained there. Eighty-nine percent of patients were asked for consent for a student to be present, and 81% talked to the student alone, before the doctor joined the consultation.

All but 2% of patients (who were negative) thought students' presence was either a positive (49%) or neutral (49%) experience. Five percent of patients had problems telling the doctor everything they had planned to say. The majority (80%) would unconditionally let a student be present another time, and the rest depending on the nature of their complaints. The patients who were asked for consent were significantly more satisfied with the experience (compared to neutral) and significantly more positive about unconditionally participating another time.

## *Patients consulting with senior students*

In *Paper IV*, concerning final year students, 495 patients responded; however, the non-response rate for all distributed questionnaires could not be calculated. Mean age was 55 years; 62% were women. The vast majority, 95%, agreed that medical students' training at the health centre was a good idea. About half of the patients (46%) knew that medical students were trained at the health centre, and 31% reported having previously been examined by a student there.

### Informed consent

Almost half of the patients (46%) were asked for consent in the waiting area by the student alone, and another 37% by the GP and the student together. Very few patients were approached in the waiting area by the GP alone or were informed in advance when making their appointment.

### Patients' feelings after the consultation

The vast majority of patients, 92%, were satisfied with their consultations, and reasons were more personal than altruistic. Of the remaining patients, most were uncertain, but 5 patients were clearly dissatisfied. Those who were uncertain or dissatisfied found it difficult to talk about personal problems, thought the student was uncertain, or that the consultation took too much time. Furthermore, 3% of patients left without saying what they had planned to say, and 7% would rather have seen their doctor alone.

### Predictors of participation

Two thirds of all patients were prepared to unconditionally consult with a student again, before they saw their GP, and the rest (except for three patients) would agree to participate depending on the nature of their complaints. The 46% of patients, asked for consent in the waiting area by the student alone, were significantly more willing to see a student again.

The question on patients' willingness to talk to a student about an emotional problem showed that only half of all patients were unconditionally positive, 10% would refuse, and the remaining patients thought it depended on the student. Young women were significantly more reluctant than middle-aged and older women; among males no significant difference between age groups was found.

Of all patients, 59% would without reservations allow a student to perform an intimate examination. Women were significantly more negative or demanded a female student. Young men were significantly more hesitant than middle-aged and older men, but we did not quite reach significant difference between women age groups. The 31% of patients who had previously been examined by a student at the health centre were significantly more willing to allow a student to perform an intimate examination.

### Patients as teachers

One hundred and ten patients (22%) responded to the question if there was something they could teach the students. An analysis of patients' ideas, using the template previously described, verified the three themes, and an additional fourth theme emerged. The dominating theme was '*Patients as facilitators'* of students'

development of professional skills and attitudes. Students' communication skills, and particularly their listening skills and their ability to address patients' problems, were emphasised. '*Patients as experts*' on their condition included both patients' experiences and feelings about complex conditions, as well as their teaching about specified diseases and health problems and information about new treatments. '*Patients as exemplars*' of their condition was a more 'passive' teaching concept, where patients saw themselves as another memorable case for students to incorporate into their experience. Finally, some patients perceived themselves as '*Part of a real context'* that could motivate students by its relevance.

# Discussion

The discipline of general practice is characterized by patient-centred care, including holistic modelling and longitudinal continuity of care. GPs have a generalist perspective with a rather superficial but wide knowledge across the field of medicine, and their expertise is in simultaneous integration of physical, social and psychological components of illness. They are oriented towards their community and use decision-making processes, based on incidence and prevalence of illness and on their long-term knowledge of patients. Non-specific undifferentiated clinical problems are common, and include the issues of uncertainty and risk management.

For students, the general practice environment is clearly different from the highly specialised hospital wards and outpatient clinics, and an attachment to a health centre can even be described as a culture shock to some students. The Prologue of this thesis took of by a citation by Steve Iliffe (1992), questioning how future students and their teachers can '*organise clinical knowledge into usable forms'* in this more or less unpredictable environment, and recommending us to '*take stock of our resources'*.

This thesis deals with some of my initiatives to 'take stock of' the available resources for students' attachments in general practice, with the aim to optimise students' learning. I started by delineating the views of GPs and patients, and then took on the challenge to structure the general practice course for senior students. This included decision on appropriate learning outcomes to create a structure of the attachment and of the theoretical base of cases and lectures.

Students need to be assessed on their work-based learning and supplied with feedback, and two papers deal with research on this topic. The emphasis of assessment in those papers is on clinical performance in an authentic environment, on the provision of feedback, and on the importance of demonstrating reflective practice.

# Students' learning experiences

## *Early clinical experience*

Early clinical experience has been emphasised as a teaching concept to support and promote professional socialisation (Howe 2003; Goldie 2007). This might even be the *most* important learning issue of this method, according to the recent BEME guide on early clinical experience (Dornan et al. 2006).

Junior students' short reflections on their learning experiences from general practice, mentioned in *Paper I* (*results unpublished*), can not by far be regarded to provide the complete picture of students' thoughts and ideas. However, they did in some respects coincide with the GP teachers' own perceptions of the objectives of the course in the themes of 'good role models' and 'apply theoretical knowledge to practice'. Unfortunately, they also confirmed GPs' time constraints that negatively affected students' learning.

The students described good role models as GPs, who had a caring relationship with their patients, had considerable knowledge and experience, and were relaxed and friendly. Role models are considered to have a powerful impact on students' professional development (Howe 2003; Goldie et al. 2007; Passi et al. 2010). Positive attitudes to teaching and excellent doctor-patient relationships are two of the most important factors for students' identification of good role models in general practice (Lublin 1992; Silverstone et al. 2001). A few of the interviewed GPs in *Paper I* were clearly uninterested and even resentful towards teaching. The knowledge of good role models' influence on students' professional development further emphasises the importance of selecting motivated and trained teachers for students' early clinical experience.

## *Communication skills*

The results of final year students' reflections on their consultation skills learning in *Paper III* revealed five sub-themes: structure, active listening, patients' perspective, building relationship, and reaching shared understanding. Although these results were only based on the analysis of portfolio reflections by a group of 35 voluntary students, I still think it is safe to conclude on students' learning in particularly these five skills. Our findings are also supported by other research on communication skills training in general practice and by our findings in *Paper II*.

Silverman et al. (2004) consider the provision of *structure* of the interview and the building of relationship as two tasks that occur continuously throughout the interview. Early in the interview it is essential to summarise and negotiate an

agenda for the consultation, two skills that help provide further *structure* (*Paper III*). The importance of structure in the consultation was confirmed by students' and GP supervisors' agreed specific goals in *Paper II*, and followed up with feedback at the end of practice. These skills are considered not spontaneously learned despite several years' work as a physician (Aspegren & Lønberg-Madsen 2005). Others have also reported on improved skills for creating structure of the interview as benefits of communication training in general practice (Usherwood 1993; Egnew et al. 2004).

One of the most important learning issues for final-year students (*Paper III*) was *attentive listening* to the patient's opening statement without interruption. By listening attentively, students soon acknowledged that they got more information and saved time. Attentive listening is also an issue of fundamental importance from the patient's point of view. The four themes of patients' perceived teaching roles for medical students (*Paper IV*) were dominated by the 'facilitator' role of students' development of professional skills. Most comments by patients involved 'listening' and 'taking time to listen' with interest and respect towards the patient. Wahlqvist et al. (2005) noticed that final-year students in general practice tended to start the interview with an open question, but quickly after patients' mentioning of a symptom turned into collection of bio-medical facts, following a checklist; an approach known as clearly counter-productive (Silverman et al. 2004).

Understanding *patients' perspective* is one of the main issues in patient-centred care, and was discussed by several of the final-year students in their reflections in *Paper III*, and is also evident in students and supervisors' specific goals in *Paper II*. Elicitation of patients' ideas, feelings, concerns and expectations were acknowledged as important, and also contributed to an enhanced efficiency of the consultation. These findings are supported by other research from communication training in general practice (Usherwood 1993; Thistlethwaite & Jordan 1999).

*Building relationship* occurs throughout the interview (Silverman et al. 2004). Developing rapport with patients includes communication of empathy and support and interest into psycho-social aspects of the patient's history. Most students in *Paper III* reflected on their learning of these issues. Wahlqvist et al. (2005) confirmed these deficits in final-year students, who devoted little attention to the patient's social context and avoided emotional response to the patient's history. The skills of how to develop rapport with patients were also found lacking among several physicians as well as students in the study by Aspegren & Lønberg-Madsen (2005).

*Reaching shared understanding* at the end of the consultation by providing information, explanation and advice to patients were skills that the final-year students in *Paper III* were less acquainted with. In *Paper* II, in the domain of Explanation and planning, skills of relating explanations to patients' perspective

and checking patients' understanding were emphasised by GP supervisors. These tasks are evaluated as more difficult and located higher up in the communication skills hierarchy than history taking (Aspegren & Lønberg-Madsen 2005).

## *Clinical clerkships in general practice*

### Patient-centred care

In the theme of patient-centred care in final-year students' reflections in *Paper III*, the patient-doctor relationship and holistic modelling attracted most reflections. Students' comments on the patient-doctor relationship revealed their own concerns of being able to reach shared understanding and shared responsibility with patients. Students emphasised the importance of clear and effective information, and explanations that patients could understand and decide on. However, the patient's responsibility and the physician's respect towards the patient's autonomy were challenging issues discussed by a number of students. This is clearly an area where students need more support and training.

Holistic modelling was also frequently discussed in students' reflections (*Paper III*), and was by several students perceived as a specific strength of general practice, particularly the importance to identify and understand problems of the patients' social context. Attention to the impact of social environment on individuals' health is also a learning concept, emerging from other research on students' views on their learning in general practice (Worley et al. 2000; Howe 2001).

### Clinical reasoning

Clinical reasoning was a sub-theme of several final-year students' reflections on their consultations skills in *Paper III*. From reading the reflections, it was evident that students' training in diagnostic reasoning with real patients had previously been sparse. Even though they had a vast theoretical knowledge base, they perceived problems in transforming this knowledge into practice. Another reason for their difficulties was the wide range of patients' problems and complaints encountered in general practice.

Almost all students reflecting on the issue of clinical reasoning noticed a considerable improvement during their training, often expressed as a result of feedback from their GP supervisors. There was no mentioning of what strategies the students used in clinical reasoning and problem solving; however, the lasting impression was that they mainly used analytical approach, a model that relies on hypothesis testing and deductive logical reasoning (Eva 2004; Norman & Eva 2010). The improvement noticed by several students might also account for their

occasional use of a non-analytic strategy ('pattern recognition') with symptom presentations encountered more often.

Because of 'case and context specificity' the mixture of many different cases is a prerequisite for students' collection of a mental data base to allow more non-analytic reasoning (Eva 2004). In this respect, general practice seems to be an ideal context for clinical practice. Supervisors can have a great impact on students' learning in supporting the transfer of theoretical knowledge to practice by relating back to previous examples or to basic science (Eva 2004). However, our research has not provided us with knowledge of how supervisors undertake this teaching. Furthermore, the subject of clinical reasoning is scarcely mentioned as a specific learning issue in previous research on students' learning in general practice.

Several patients in *Paper IV*, defining their teaching roles, perceived themselves as 'examples' of their disease and commented on the importance of a breadth in students' experience. They were aware of that the same disease can present differently in different patients and that every patient's experience is unique. Maybe unknowingly, they touched the importance of students collecting a vast mental data base for non-analytic reasoning.

### Professional development

The main purpose of introducing the portfolio into final-year students' general practice course was for students to show reflective practice, as ability to reflect on one's experience is a prerequisite of professional development (Friedman Ben David et al. 2001; Howe 2003).

In the portfolio reflections (*Paper III*), students demonstrated an integration of cognitive, practical and affective dimensions of professional competence; however, the affective dimension was clearly dominating. We were surprised by the students' frankness and openness in their critical reflections on feelings, concern, attitudes and ethical problems. The students also supplied reflections on ideas of future development of knowledge and skills; representing cognitive and practical dimensions of professional competence. I would like to think that these results were achieved for two reasons. Firstly, students reflected on meaningful experiences in an authentic environment, relating to real day-to-day examples, proposed as most important for reflections on the concepts of medical professionalism (Tartwijk & Driessen 2009; Mann et al. 2009; Passi et al. 2010). Secondly, students were supported by mentors and were provided with feedback in a final interview, facts that might have enhanced the value of the reflective process to students.

# Assessment

Assessment of performance is a question of assessing the top of Miller's learning pyramid (Miller 1990), a notoriously difficult task (Wass et al. 2001). In this thesis I have studied assessment of students' clinical performance in two papers. Firstly, in *Paper II*, I used work-based assessment with feedback, where I think we fulfil the requirements for formative assessment with multiple authentic observations in the workplace over a longer period of time (Wass et al. 2001). Secondly, in *Paper III*, I used documentary evidence from the workplace and reflections on these for a summatively assessed portfolio. The work-based tool described in *Paper II* was used as one of the documents for students' reflections in *Paper III*.

## *Workplace-based assessment*

In our research on work-based assessment (*Paper II*) we tried to accomplish three basic requirements in the initiation of an assessment strategy. Firstly, GP supervisors were supplied with a structured assessment tool (Kogan et al. 2009); secondly they were involved in the planning, modification and implementation of the assessment (Daelmans et al. 2006); and thirdly, they were offered training in the rating of students' performance (Shumway & Harden 2003). As a result, almost all students were assessed by the tool at the first feedback session, and as many as 88% received specific goals. However, considerably fewer students (58%) were provided with written follow-up feedback on their achievements at the end of their practice.

We had three principal aims of this retrospective study. Firstly, we wanted to evaluate the content and nature of feedback provided, using interactive feedback methods: students' self assessment, specific agreed goals and follow-up feedback. Providing effective and honest feedback was difficult for several supervisors, who used inflated scores in their assessment and generalised nondescript praise in their follow-up feedback. However, others were more accurate; they used a wider range of scores, and their students also received significantly more specific goals. Students' evaluations also significantly supported specific goals and specific feedback. We were not able to find other published research on follow-up feedback during clinical training. However, interactive feedback methods have been described from assessment of clinical performance in general practice (Hastings et al. 2006; Braend et al. 2010) and in mixed final-year rotations (Fernando et al. 2008).

Secondly, we wished to investigate the effects of a long-term routine use of an assessment tool. To the best of our knowledge, no previous research has followed the use of an assessment tool on a long-term basis. We were able to conclude that

those supervisors, who had most experience with the tool, were significantly more satisfied than the rest. Several new supervisors joined the study during the first four semesters, compared to only a few during the last two semesters. This fact had certainly implications for the significantly increased proportion of specific goals and specific feedback during the last three semesters, compared to the first three. Another fact was an improved 'feedback culture' in practice, also among new supervisors, as there was no significant association between individual supervisors' length of experience of the tool and the proportion of specific goals and feedback they provided. However, supervisors' stringency in assessment increased significantly with experience.

Thirdly, we wanted to estimate the psychometrics of the assessment strategy. We found a low concurrent validity, measured as correlation between scores of the assessment tool and the written exam, a finding supporting results of previous research (Kogan et al. 2009). The performance assessment did not measure the same competencies as the written exam, even if a good theoretical knowledge base obviously was needed in clinical practice. The internal consistency reliability has been shown to reach very high values in prior research (Kogan et al. 2009), a finding confirmed in our study. Two thirds of students were only assessed with 1-2 scores by their supervisors, a fact that highly contributed to the high value of Cronbach's alpha. The educational impact of the assessment strategy was high, as measured by students' and supervisors' evaluations, corresponding to level 1 of Kirkpatrick's hierarchy (Kirkpatrick 1996). Even though most students were provided with specific feedback in the second session, aligned to their goals, these students' achievements were not objectively measured, which would have answered to level 2 of Kirkpatrick's hierarchy.

According to the five variables model provided by van der Vleuten (1996), we were satisfied with the high face and high content validity, and found the concurrent validity low, as expected. We also judged the reliability of the formative assessment as satisfactory, regarding the sampling across a vast content area (van der Vleuten & Schuwirth 2005). However, the opportunity to calculate the inter-rater reliability was traded off to the benefit of a high feasibility with two summarised assessment sessions, which was an obvious weakness of the assessment strategy. Another weakness was that our efforts to reach all supervisors for training were clearly insufficient; less than a third of supervisors attended training.

Since the study in Paper II was accomplished, the assessment tool has been regularly used for formative assessment of final-year students, and is included as documentary evidence in students' portfolio. However, the tool has been slightly changed with improved information for students and supervisors and a 5-point rating scale.

## *Portfolio assessment*

A portfolio assesses performance in practice over a period of time, and is regarded as highly suitable for work-based assessment (van Tartvijk & Driesen 2009). A large body of literature delineates prerequisites for a successful portfolio in the eyes of students and teachers.

In the planning of a portfolio as a summative, supplementary exam for 80 final-year students in general practice (*Paper III*), we realized that a pilot was needed for the evaluations of psychometrics, feasibility and educational impact. In trying to make use of applicable recommendations we opted for a lean, structured portfolio, clear guidelines and student support by a mentor (Driessen et al. 2007). To enhance the inter-rater reliability we developed clear assessment criteria of students' three reflections (Friedman Ben David et al. 2001) and also discussed the portfolios between examiners (Rees & Sheard 2004). The final examiner interview was intended to further increase reliability, and aimed to deepen students' reflections and to provide feedback (Davis et al. 2001). Another important aim of the pilot was to investigate whether students' reflections included sufficient dimensions of professional competence, notwithstanding the standardized format that might hamper students' individual, creative reflective writing.

The content and nature of students' reflections have been discussed in the previous paragraphs. Although only 35 voluntary students participated in the pilot, the content and quality of their reflections was highly variable. Furthermore, the structured format and the limited timeframe did not seem to impede students' reflective writing on professional issues.

Using qualitative criteria for the reliability (dependability) of the assessment process and for validity (credibility) of the assessment structure, we found these sufficient. The detailed qualitative analysis of students' reflections also contributed to establish validity. Our *unpublished results* on psychometric evaluation of inter-rater reliability, using three different instruments, supported acceptable inter-rater reliability. The concurrent validity was low, compared to the written test, which strengthened us in our belief that other competencies were measured by the portfolio than by the written test. The educational impact of the portfolio was high, measured by students' and examiners' satisfaction with the process. We could not claim more than level 1 of Kirkpatrick's hierarchy (Kirkpatrick 1996), even though the analysis of the content of students' reflections ensured us of students' improved knowledge and enhanced self-awareness.

We were not able to find more than one comparable portfolio with a similar design from a defined short course (Grant et al. 2007). Most published research on portfolios in clinical practice relate to lengthy attachments (Buckley et al. 2009). In the portfolio by Grant et al. from general practice, students did not appreciate

their experience of reflective writing, did not disclose their feelings, nor did they discuss professional issues. No final examiner interview with feedback was held, which I believe might be one of the reasons for students' hesitation.

Since the accomplishment of the portfolio pilot we incorporated the portfolio into the programme, where it has been used as a supplementary exam during the last four years. Apart from improvements of students' instructions, training of additional examiners, and the establishment of pass/fail limit in the assessment, the portfolio has been maintained in the original format. Students' evaluations have been very positive, with the vast majority agreeing on valuable learning experiences from their reflective writing.

# Supervisors' perspectives

## Rewards of teaching

The interview study (*Paper I*) of GPs' views on junior student teaching confirmed to a large extent previous research on the topic. GPs' main rewards were improved quality of practice and enjoyment in work by contact with students, findings supported by research, available at the time of publication of our results (Fine & Seabrook 1996; Grant & Fine 1997; Hampshire 1998; Grayson et al. 1998; Hartley et al. 1999; Howe 2000). Some later studies (Balder et al. 2001; Grant et al. 2010) have further verified these results.

Several of the interviewed teachers in *Paper I* additionally emphasised the teacher role as a separate benefit, the role of facilitating students' learning, watching students grow professionally. Belonging to a teacher group, learning about teaching, and sharing their experience with other GP teachers boosted teachers' morale. These themes were also mentioned by other researchers (Gray & Fine 1997; Hartley et al. 1999; Howe 2001; Baldor et al. 2001), and were prominent in the interview study by Starr et al. (2003), where community teachers with a strong interest in teaching were interviewed on their perceptions of their identity as teachers.

## Problems of teaching

Problems of teaching were predominantly seen as inadequate time for teaching, resulting in increased stress levels, increased lengths of working days and decreased productivity. These findings confirmed prior results of studies using GP teacher questionnaires (Wilson et al. 1996; Gray & Fine 1996; Grayson et al. 1998) or interviews (Fine & Seabrook 1996; Hartley et al. 1999; Howe 2000). Von Below et al. (2008) has later reported on strained facilitators in an early

professional contact course, and Grant et al. (2010) recently in a qualitative study confirmed that the teaching of undergraduates adds to GPs' workload.

Teaching models that do not remarkably influence consultation lengths have been described; however, these models are predominantly applicable for students who are well into their clinical clerkships. A parallel consulting model was used by Usatine et al. (2000) and Walters et al. (2008), and Irby & Wilkerson (2008) have reported on other time-efficient models from the literature, among them 'One-minute Preceptor Model' (Aagard et al. 2004) and 'SNAPPS' (Wolpaw et al. 2003). However, even though teaching can be made efficient and still valuable for students and teachers by the use of different models, we still have to realise that good teaching takes time.

Problems with unsupportive colleagues and uninterested or passive students were not prominent in our interviews, even though these factors were mentioned by some GPs. Hartley et al. (1999) and Howe (2000) discussed the adverse effects of negative attitudes from unsupportive colleagues on GP teachers' interest and enthusiasm for teaching.

A more distressing problem that emerged in our interviews was the GPs' concern about their relationship with patients and about negative effects on patient care. These findings supported previous research using GP teacher interviews (Fine & Seabrook 1996; Hartley et al. 1999), and have more recently been confirmed in a qualitative study by Grant et al. (2010). Balancing the needs and rights of patients with the educational needs of students is acknowledged as difficult. Patients always come first, they remain the primary responsibility; however, in the minds of experienced, engaged and highly student-rated GPs, students' needs are seen as compatible with patients' (Mann et al. 2001).

### Relationship to the academic department

The lasting impression of the interviews was the committed, engaged GPs, striving to introduce patient-centred general practice to junior students. This was also the GPs' most powerful motive for teaching, and coincided with their interpretation of students' course objectives. They also perceived themselves as good role models in their relationship with patients, an issue confirmed by other authors in their interviews with GPs on their identity as teachers (Mann et al. 2001; Starr et al. 2003).

From the interviews with the GPs in *Paper I*, lack of teacher training was evident. The GPs' knowledge was patchy, not only of the course objectives, but of the new curriculum, the assessment, and what to expect from the junior students. Importantly, half of the interviewed teachers were also uncertain of how to provide effective feedback. The commentary by Bradley (2001) to the results of our study at its publication (*Paper I*), emphasised the need for time and resources and

particularly teacher training, which also might have a positive effect in strengthening the relationship to the academic department.

# Patients' perspectives

In the questionnaire study of patients consulting with senior students (*Paper IV*) we reached high acceptance by patients for using general practice as a teaching environment, a result in accordance with previous research (Jones et al.1996; O'Flynn et al. 1999; Bentham et al. 1999; Salisbury et al.2004).

## Informed consent

Informed consent in our study was mainly sought by the student alone in the waiting area or by the student and the GP together. Patients, asked by students alone, were significantly more willing to see a student again, compared to patients asked otherwise. This was a surprising finding, contrasting to prior research. In several studies from the UK it has been concluded from patient interviews (Howe & Anderson 2003; Benson et al. 2005) or questionnaires (O'Flynn et al. 1997) that patients preferred to be asked in advance about participation in teaching, and not in front of the student. However, Waterbury (2001) and Mavis et al. (2006) have emphasised that patients make their decision on participation from students' introduction and interpersonal skills, which requires that students themselves seek consent.

Research from a Swedish hospital has shown that patients informed in advance felt 'more free' to decline participation than patients not provided with advance information; however, all patients participated in teaching, irrespective of advance information or not (Westberg et al. 2001; 2005). The question of informed consent might be more of a question of showing the patient proper courtesy and respect.

## Patients' feelings from participation

We found a high degree (92%) of satisfaction in patients' evaluations of their student encounters, supporting findings from prior research (Cooke et al. 1996; O'Malley et al. 1997; Frank et al. 1997; Bentham et al. 1999; Prislin et al. 2001; Price et al. 2008). Patients' reasons seemed to be personal rather than altruistic; however, the way the statements were put in the tick boxes, reliable conclusions were difficult to draw from this question. Chipp et al. (2004) and Salisbury et al. (2004) reported on more altruism than personal reasons.

Several of the 42 patients (8%), who were uncertain or dissatisfied with their student consultation, found it difficult to talk about personal problems or assessed the student as uncertain. Some patients felt insecure as they believed that their care

was left completely in the hands of a student. A minority of 3% left without saying what they came for, and 7% would rather have seen their doctor alone. O'Flynn et al. (1999) and Price et al. (2008) used similar questions to their patients, and found even higher percentages of patients admitting to these statements. However, on these two questions we also had the greatest number of non-respondents (*Paper IV*), maybe a sign of patients' ambivalence. Price et al. (2008) were able to show that these patients accepted participation in teaching, although they would have liked to refuse, but found it difficult when asked for consent. GPs' sensitivity to patients' feelings is highly important in these cases. To offer the patient time with their GP alone at the end of the consultation would solve many of these problems (O'Flynn et al. 1999; Hajioff & Birchall 1999).

### Predictors of participation

Concerning future participation in students' training, we asked patients for their views on possible student involvement in emotional problems and intimate examinations. Half of all patients were unconditionally positive to talk to a student, if they had an emotional problem. However, as many as 39% thought it depended on the student, a finding further supporting the importance of students' interpersonal skills in their introduction to patients (Mavis et al. 2006). In the study by O'Flynn et al. (1997), 67% of patients were found to accept to talk to a student when attending for emotional problems.

Concerning the question of intimate examinations, significantly more females than males would demand a student of the same gender, a finding consistent with previous research from general practice (O'Flynn et al. 1997; Chipp et al. 2004). From gynaecological care it has been shown that patients prefer female students to males (O'Flynn & Rymer 2002; Mavis et al. 2006), a fact that presents a problem for male students' education. Previous experience with students has been demonstrated to be a facilitating factor for female patients' decision to be involved in intimate examinations by students (Hartz & Beal 2000; Mavis et al. 2006), a finding confirmed in our study for patients irrespective gender. Among males we found a significant difference between male age groups in patients' acceptance of students in intimate examinations, where young males to a higher degree would refuse.

One of the reasons for conducting the questionnaire study of patients consulting with senior students was that previous research on senior students in this context was sparse. Some studies have shown that patients tended to be more positive to participate in students' education, if students were more experienced (Chipp et al. 2004; Passaperuma et al. 2008). We conducted a patient questionnaire study among junior students (*results unpublished*), but we can regrettably not fully compare the results between the two questionnaires, as conditions and questions

were partly different. However, most patients who saw a junior student were also satisfied, although these students' involvement in patients' care was less active; mainly allowing patients to present their history.

### Patients as teachers

At the time of our study (*Paper IV*), no previous research was available on unprepared patients' perceptions of their teaching role in a clinical context. We used a framework of published results from another community setting for our analysis (Stacy & Spencer 1999), and could confirm the three themes of patients as facilitators of the development of students' professional skills and attitudes; patients as experts of their disease; and patients as exemplars of their disease. A fourth theme also emerged, patients as part of a real context to support students' transition into 'reality' from their theoretical studies in medical school.

Most of these different roles have been commented upon previously in this discussion. However, the main learning issue from these statements by patients is that even 'ordinary' unprepared patients are confident in their contribution of several aspects of students' learning. Even patients, who only perceived themselves as fitting 'passive' teaching concepts of 'exemplars' or 'part of a real context', seemed well aware of their roles for students' learning.

# Methodological considerations

## *Qualitative methods*

### Editing analysis

The data in *Paper I* was analyzed using a method described by Malterud (1996) as similar to editing analysis style (Crabtree & Miller 1999). However, its origin was a phenomenological method, suited for the development of descriptions and concepts. Phenomenological approach is preferably applied to research that tries to explore individuals' experience, and the researchers should 'bracket' their own preconceptions (Crabtree & Miller 1999). Although the method was considerably modified by Malterud, it was probably not the most appropriate method for the analysis of the data from the structured interview schedule in *Paper I.* A framework approach (template analysis style) using findings from previous published work as a template would have been far more appropriate.

### Framework analysis

In *Paper III* a framework analysis with two templates, highly suitable for interpretation of precisely these data was used. Template style is particularly

helpful when good prior knowledge of the subject exists (Crabtree & Miller 1999). This approach seemed appropriate for data analysis in *Paper III* of students' reflections on their consultation skills, a subject defined in several publications. The approach was also apt to use on students' reflections on their case summaries, in which students referred to the WONCA definition of general practice (Box 1).

### Validity

To improve credibility (internal validity) in *Paper I* we used three different methods. Firstly, we used triangulation of sources and methods (Kuper et al. 2008) by investigation of patients' views in a questionnaire and a basic content analysis of students' short reflections on their learning experiences. However, some researchers perceive triangulation more as a method for ensuring comprehensiveness than for improving credibility (Mays & Pope 2000). Secondly, we used respondent validation (Kuper et al. 2008), which however by Mays & Pope (2000) is considered to be more for the process of error reduction than for validity improvement. Thirdly, I also believe we demonstrated reflexivity, including the researcher's sensitivity to the ways data collection might be influenced by the researcher's preconceptions and experiences (Mays & Pope 2000; Kuper et al. 2008).

In most qualitative research, external validity is not the goal, and findings are not intended to be generalisable (Kuper et al. 2008). However, readers must be able to assess the findings for their transferability. We believe that the setting, the sampling of interviewees and the data collection in *Paper I* held enough clarity in the report for readers to evaluate the applicability of the results to their own contexts. However, as for the data analysis, a more thorough description would have been valuable.

## *Quantitative methods*

### Assessment tool

The assessment tool we used in *Paper II* was inspired by the modified version of the Leicester Assessment Package (LAP), originally developed for assessment in general practice, and previously found to be valid and reliable (McKinley et al. 2000). Comparing this tool to the considerably more researched Mini-CEX (Norcini et al. 1995), results in several similarities; however there are also differences. The Mini-CEX consists of seven competency domains (history taking, physical examination, communication skills, clinical judgment, professionalism, organisation/efficiency and overall clinical care). The content of each of those domains is not explained in the tool. The Mini-CEX does not emphasise 'working diagnoses', 'problem solving', and 'investigations and treatment' as specific

domains; they are all involved in 'clinical judgment'. Additionally, in our assessment tool, the 'explanation and planning' is a specifically assessed competence, which does not exist in the Mini-CEX. As evident from the results of students' and GP supervisors' scores of the competency domains (with the lowest scores in 'working diagnoses' and 'investigation and treatment'), our assessment tool seems to be more suitable for the assessment of final-year students in general practice than the Mini-CEX.

### Patient questionnaire

In *Paper IV* a quantitative approach was taken, using a questionnaire instead of interviews to achieve an understanding of patients' satisfaction and their views on their teaching role. The main reason for the choice of method was the aim of the study: to get an overview of patients' views and to include respondents from all available health centres. The questionnaire was based on published literature on patients' satisfaction with students and on discussions in teachers' meetings, and was piloted with several patients in individual semi-structured interviews. At the time of the study we were not aware of any validated and reliability tested questionnaires for patients' evaluations of their student encounters.

However, as students were in their final year in medical school, we could have used one of the previously validated questionnaires for general practitioners (Evans et al. 2007). Braend et al (2010) used the EUROPEP (Grol et al. 2000) in a shortened 'student version', where different parts of the student's consultation were assessed by the patient (listening, thoroughness, physical examination, explanation, shared decision making, etc.). The EUROPEP did not have data on construct validity, but was tested for content validity and internal consistency (Evans et al. 2007).

A most important aim of the patient questionnaire study was to investigate unprepared patients' views of their teacher role. Unfortunately only a quarter of patients answered this question, as all patients probably did not have the time or the patience to formulate their opinions. However, we still received valuable answers on our request from over 100 patients.

### Inter-rater reliability

The inter-rater reliability result (*not published*) of the portfolio pilot (*Paper III*) merits further discussion. Stemler (2004) described three different categories for inter-rater reliability; consensus, consistency and measurement estimates. We did not use consensus estimates, as kappa-statistics must be computed separately for each item, and does not take full value of ordinal data. We needed an estimate where we could compare the sums of seven items and between all four judges. For consistency estimates we used *Cronbach's alpha,* suitable for multiple judges as a

measure of the internal consistency reliability. This is an appropriate method for consistency estimate when data are ordinal and summarisation is the goal (Stemler 2004). In measurement estimates we used *factor analysis* that determines the amount of shared variance in the ratings that could be accounted for by a common construct. (Stemler 2004). As a third measurement we used *Intra-class correlation* coefficient (ICC) that was calculated for both consensus and consistency. ICC is perfectly legitimate to use in the estimation of inter-rater reliability (Downing 2004).

In each of all three methods we reached acceptable inter-rater reliability between four raters. Previous research papers on portfolio assessment have compared scores from only two raters, using kappa statistics on sub-scores (Rees & Sheard 2004) or Spearman's correlation coefficient of the whole portfolio (Grant et al. 2007). Rees and Sheard (2004) have also used ICC for the whole portfolio and reached substantial agreement between two raters.

# Implications for practice and future research

Recruitment, retention, training and support of GP supervisors are the absolutely most important recommendations for the success of future student training in general practice. The GPs' teaching skills and their personal engagement in the students have the most powerful impact on students' learning.

When new courses or interventions are introduced into general practice, engagement of the GPs is required in the planning and implementation of feasible course objectives for practice. Protected time for teaching is essential.

More research is needed into the GPs' perception of their teaching role in the supervision of senior students. We need to know more about their teaching strategies, their knowledge and reasoning about teaching problems, their assessment of students, and their need for further teacher training and support.

Quality assurance of students' work-based learning is important, not the least because students are attached to a range of geographically dispersed practices and individualistic GPs. Specific feedback from students themselves is one of the key elements of quality assurance for health centres and GPs involved, but visits by teachers from the academic department are also required.

Initiatives are needed to enhance students' communication skills training during *all* clinical clerkships. From the results of this thesis, it is evident that several students at the start of their final year still lack important skills in structuring the interview and in developing rapport with patients. They are not likely to develop these skills by themselves during further clinical practice. Students also need

support and training in how to achieve shared understanding and decision making with patients.

Clinical reasoning is a skill that can be successfully trained in general practice with its wide range of undifferentiated clinical problems. Research is needed to understand students' models of reasoning, and GP supervisors' strategies in the teaching of this critical skill.

Direct observation with assessment of students in the work-place is a teaching strategy worth far more attention. Constructive feedback to students is imperative to this process, and can have a powerful impact on students' behaviour. This thesis has shown that it is possible to use a structured tool for work-based formative assessment, a strategy that also deserves an enhanced importance in postgraduate training.

Reflective portfolios with an examiner interview and provision of feedback can be developed for long-term clerkships, and is an excellent method for obtaining an understanding of students' professional development. When portfolios are used for summative assessment, research with a large number of portfolios and several raters is required to ensure an acceptable inter-rater reliability.

Patients' teaching role can be further enhanced in general practice, where the trustful and personal relationship with the GP can be used for partnership in the teaching of students. For patients there are benefits in learning more about their condition by taking part in discussions during the consultations.

Some patients are obviously concerned about taking part in teaching, and GPs' sensitivity to patients' needs for a personal consultation with their GP, maybe after seeing the student, must be emphasised. Further qualitative research is needed to understand how patients make their decision on whether to consent or to refuse participation in teaching, and how their concerns can be met.

# Conclusions

Students' learning experiences

- Senior students' learning in a portfolio pilot was dominated by the concepts of patient-centred communication, clinical reasoning and professional development.
- Junior students reflected on the importance of good role models.

Assessment

- Long term use of a formative work-based assessment tool for senior students contributed to an enhanced 'feedback culture' among supervisors.
- Senior students' main deficiencies in the consultation were in the domains of working diagnoses and management plans; however, supervisors emphasised goals of patient-centred communication and structure of the medical interview.
- The work-based formative tool and the reflective portfolio showed acceptable reliability, validity and educational impact for assessment.

GP supervisors' perspectives

- Supervisors were positive towards the teaching of junior students. Their rewards were dominated by improved quality of own work. Drawbacks were mainly inadequate time for teaching, but patient-relationship and provision of feedback were other concerns. Teacher training was required.

Patients' perspectives

- Almost all patients were satisfied with senior students' consultations, before seeing their GP. Their reasons were both personal and altruistic. Emotional problems and intimate examinations could be barriers. Patients should be offered the opportunity to talk to their doctor alone, if needed.
- Patients perceived their teaching role mainly as facilitators of the development of students' professional skills.
- Almost all patients who had a junior student present in their GP consultations were positive or neutral to the experience.

# Populärvetenskaplig sammanfattning

## Vårdcentralspraktik är viktig för blivande läkare

När du som patient besöker din vårdcentral, kan det hända att du erbjuds att få prata med och att få bli undersökt av en läkarkandidat, innan du träffar din läkare. Naturligtvis kan du tacka nej, men nästan alla patienter tycker att det är en positiv upplevelse. De flesta distriktsläkare är entusiastiska och duktiga handledare och läkarkandidaterna får en god utbildning under sin vårdcentralspraktik.

Den del av läkarutbildningen, då kandidaterna träffar patienter, har förr nästan enbart varit förlagd till universitetssjukhus. Nu kommer alltfler läkarkandidater ut till vårdcentralerna för olika praktikperioder. Vi vet väldigt lite om vad de läkarstuderande lär sig och får för erfarenheter av denna praktik, och vi vet inte heller så mycket om hur praktiken uppfattas av distriktsläkarna och deras patienter. I denna avhandling undersöker jag dessa frågor i fyra olika studier.

### Vad tycker patienterna?

Jag använde mig av enkäter för att ta reda på patienternas uppfattning om hur det kändes att prata med och/eller att bli undersökt av en läkarkandidat. När det gällde kandidater tidigt i utbildningen, var nästan alla patienter neutrala eller positiva till att ha en kandidat närvarande. De flesta skulle utan vidare göra om det, och de patienter, som hade tillfrågats innan de träffade kandidaten, var extra positiva (Studie I). Jag undersökte också vad patienterna tyckte om att samtala med och bli undersökta av en kandidat som gick sista året på sin utbildning, innan de fick träffa sin läkare. Det visade sig att nästan alla var nöjda, dels för att de hade blivit noggrant undersökta, men också för att det kändes bra att ha fått göra nytta för läkarutbildningen. Några tyckte att kandidaten verkade osäker eller att besöket tog för lång tid. Flera patienter menade att det var viktigt att också få prata med sin läkare ensam. De flesta patienterna skulle utan vidare delta igen, men om de behövde söka för personliga problem eller genomgå intima undersökningar, var en del mer tveksamma. Jag frågade också om patienterna tyckte de kunde lära kandidaterna något. Den uppgift de tyckte var extra viktig var att bidra med råd i kandidaternas utveckling av attityder och kommunikationsfärdigheter, men en del

patienter uppfattade sig även som experter på eller som exempel på sin sjukdom, eller som en ”del i en verklighet” (Studie IV).

### Vilka erfarenheter får läkarkandidaterna?

I den första studien ingick även en undersökning av läkarkandidaternas skrivna synpunkter på tre dagars praktik på vårdcentral. Den viktigaste erfarenheten var möten med goda ”rollmodeller” för läkaryrket, men kandidaterna upplevde också en ökad motivation för sina fortsatta studier, när de kunde koppla ihop sina teoretiska kunskaper med patienternas sjukdomssymtom. Flera hade också god nytta av de många möjligheter de fick på vårdcentralen för samtal med och kroppsundersökning av patienter (Studie I).

De läkarstuderande, som går sista året av sin utbildning, praktiserar sammanlagt sexton dagar på vårdcentral. De har en personlig handledare, som ofta är med dem i patientarbetet. Jag utvecklade ett strukturerat bedömningsformulär, som kunde användas för både kandidaternas självvärdering och för handledarnas synpunkter på kandidaternas styrkor och svagheter i patientarbetet. Det används efter halva praktiken, då man kommer överens om mål för fortsättningen, samt vid praktikens avslutning. Jag ville undersöka hur detta fungerade under en längre tidsperiod, och samlade in samliga formulär under sex terminer. Det visade sig att nästan alla kandidater fick specifika mål vid första bedömningstillfället, men att bara drygt hälften fick specifika synpunkter vid praktikens avslutning. Handledarna och kandidaterna enades ofta om mål, som rörde patientsamtalets struktur och ”patientcentrering”, trots att man var eniga om att de största svagheterna oftast var att ställa diagnos och föreslå behandling. Med ökad erfarenhet av formuläret blev handledarna lite strängare i sina bedömningar och alltmer nöjda med formuläret. Med tiden ökade andelen specifika mål och specifika synpunkter, delvis genom en förbättrad ”feedbackkultur” på vårdcentralen. Läkarkandidaterna själva var till övervägande del nöjda med de mål och de synpunkter de fick (Studie II).

Praktiken under utbildningens sista år ska inte bara ge kandidaterna möjlighet att utveckla sina kunskaper och färdigheter, utan även bidra till deras professionella utveckling med ökad självkännedom och förmåga till eftertanke. Detta kan inte bedömas genom vanliga skrivningsfrågor, utan en tilläggstentamen krävs. Vi gjorde därför ett försök med 35 frivilliga läkarkandidater, som samlade dokument från praktiken i en ”kursportfölj” och kompletterade med skrivna funderingar över vad de lärt sig under praktikperioden. Portföljen blev sedan utgångspunkten för en tentamen, där kandidaten fick diskutera och fördjupa sina tankar tillsammans med en lärare. Innehållet i de skrivna ”uppsatserna” undersöktes och visade sig vara av hög kvalitet. Det berörde flera olika delar av kandidaternas professionella utveckling med tankar kring kommunikation, attityder, empati och etik i möten med patienter. Fyra olika lärare läste och betygsatte senare alla uppsatser, och

beräkningar visade att tentamensformen kunde betraktas som rättvis. Kandidaterna var nöjda och rekommenderade att kursportföljen infördes som en tilläggstentamen för samtliga kandidater, vilket också skedde (Studie III).

## Vad tycker handledarna?

Jag intervjuade trettio handledande distriktsläkare vid lika många vårdcentraler om deras då helt nya uppgift att undervisa läkarkandidater i patientsamtal och kroppsundersökning under den tidiga delen av utbildningen. De flesta handledarna var positiva, och deras viktigaste drivkraft var att få visa hur viktigt arbetet på vårdcentralen var. För handledarna fanns flera vinster med undervisningen, där den viktigaste var att kvaliteten på deras eget arbete förbättrades. Handledarna tyckte också att arbetet blev trevligare genom kontakten med de motiverade och entusiastiska kandidaterna. Det största problemet var stress och tidsbrist, men flera var också oroliga över sin kontakt med patienterna eller hade svårt att ge utvecklande synpunkter på kandidaternas prestationer. Vi uppmärksammade också ett stort behov av handledarutbildning (Studie I).

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# Paper I

# Early patient contact in primary care: a new challenge

*Ann-Christin Haffling, Anders Håkansson & Barbro Hagander*

*Background* The Medical School of Lund University, Sweden, has introduced an early patient contact course, including training in communication and examination skills. The course runs parallel with theoretical subjects during the students' first two-and-a-half years. General practitioner (GP) participation is gradually increasing, and in the last half-year of the course GPs in all health centres in the area are involved. Little is known about the GPs' interest, competence and time for this new task.

*Aim* To describe the GPs' attitudes towards teaching and the rewards and problems they experience.

*Subjects* 30 GPs teaching third-year medical students.

*Method* Semistructured interview study. Data analysis by a method described by Malterud.

*Results* The attitude towards teaching was mostly positive and the teachers were confident about teaching examination procedure. Among rewards of teaching, improved quality of clinical practice was the main theme, but imparting knowledge to others, contact with enthusiastic students, and gains in self-esteem were also mentioned. Problems with teaching were mostly due to external factors such as lack of time and space, but concern about a negative effect on patient care was also recognized. Educational objectives of the course were not completely accepted. GPs were not fully aware about what to expect from the students, with subsequent problems concerning how to assess students' performance and how to give effective feedback.

*Conclusions* The teaching of junior medical students is maintained by the GPs' enthusiasm for teaching. However, teacher training is required and the crucial issues of time and space have to be considered.

*Keywords* Clinical competence; communication; education, medical, standards, methods; education, medical, undergraduate, *standards, methods; family practice; interviews; physician–patient relations; Sweden; teaching, *standards, methods.

*Medical Education 2001;35:901–908*

## Introduction

There seems to be an international trend in undergraduate medical education towards more teaching from a community base, even in the first part of the curriculum. The reasons for this change of setting from hospital to general practice were reflected in a debate in the UK at the end of the 1980s and the beginning of the 1990s.[1–4]

In 1993 the General Medical Council presented new recommendations for undergraduate medical education,[5] which were followed by those of the National Agency for Higher Education in Sweden in 1997.[6] Important aspects of the recommendations were early patient contact and acquisition of knowledge and skills in communication and clinical examination as well as an increased contribution to teaching by general practice.

Early patient contact increases the students' motivation for theoretical studies and offers opportunities for learning communication skills and how to establish a good doctor–patient relationship.[6] Communication skills training, started early and kept up throughout the undergraduate years, gives lasting results.[7] Not only can trained students better explore the patients' psychological and social concerns, but they are also more efficient and can elicit more relevant medical information from the patients.[8] GPs can make important contributions to the teaching of interviewing skills, even to students with only minimal clinical experience.[9]

General practice can provide appropriate clinical experience for junior students to acquire examination skills and thus complement the learning available in hospitals.[10] Clinical examination skills can be taught at

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### Key learning points

General practitioners (GPs) could successfully contribute to an early patient contact course by teaching communication and examination skills to junior students.

The rewards from teaching reported by GP teachers were dominated by improved quality of clinical practice, but imparting knowledge to others, and emotional themes, such as contact with enthusiastic students and gains in self-esteem, were also mentioned.

The problems reported by the GP teachers were mainly structural, such as lack of time and space; however concern about patient care and the doctor–patient relationship was also recognized.

Improved information, support and teacher training need to be provided by the academic department. By means of cooperation between the Medical School and the County Council, measures should be taken to remedy the crucial problems of time and space.

least as effectively in the community as in hospitals.[11] In addition, the students find the environment of general practice supportive and appreciate the variety of patients seen and the individual tuition. The competence of the tutors – both as doctors and as teachers – is essential for a good outcome of this teaching, and training programmes for the teachers have been developed.[10,12] The focus has been on giving effective feedback, assessing student performance and teaching practical skills.

In some studies from the UK, the GPs' experience of and interest in teaching undergraduate students have been investigated.[13–17] Although many GPs were enthusiastic and several rewards of teaching were identified, problems were also acknowledged.

Although there were forerunners in Sweden,[18] the Medical School at Lund University was the first of the 'old' universities to revise its curriculum for the first five semesters (two-and-a-half years) of the five-and-a-half-year curriculum. Beginning with the 1992 entry of first-year students, problem-based learning was gradually introduced together with a course in early patient contact and basic examination skills.[6] The course runs parallel with theoretical subjects, for 4 hours every second week throughout the former pre-clinical period. During the first year the students videorecord interviews with patients for analysis. Both trained GPs and hospital specialists take part in this element, and teacher training is essential. Examination skills training is conducted during the students' following three semesters, with increasing involvement of the GPs. In the fifth semester all the 30 public health centres in the area are allocated students, for five half-day or three whole-day sessions. No teacher training has been provided for the GPs involved in these sessions. However, informative teacher meetings are regularly held at the academic Department of Community Medicine. The aims and objectives of the attachments are for the students to practise patient interviews and basic examination skills in the GPs' surgeries. Having the same GP teacher every session for each student is desirable. Finally an exam is held, where the students are assessed individually in patient interview and examination by experienced, independent tutors.

Almost all health care in Sweden is publicly financed, and is administered through the County Councils. Only a small fraction of health centres are privately run. Attachments to the health centres for senior students have been part of the curriculum for many years in the area investigated. The public health centres are obliged to take on students, and are remunerated by the University. Teaching is included in the GPs' duties.

The GPs' workload has increased considerably during the 1990s, as more and also more severely ill patients are transferred from hospital care to the community. The early patient contact course presented a new challenge to GPs, who were already struggling to meet increasing service demands and to teach senior students. Furthermore, the aims and objectives of the course were different from the familiar ones involved in the teaching of senior students. Not much was known about the consequences for GPs of this additional teaching. No published Swedish studies of the GPs' attitudes towards teaching were found. Only a few interview studies concerning this subject were found in the international literature.[13–15]

The aim of this study was to describe the GPs' attitudes towards teaching junior students and also the rewards and problems they experienced. We chose to investigate the fifth (final) semester of the early patient contact course, which involved all the health centres in the area.

## Subjects and methods

The study was conducted in the southernmost part of Sweden, including the industrial town of Malmö (260 000 inhabitants) and the university town of Lund (100 000 inhabitants) and surrounding areas. Of the 30 health centres, seven were situated in medium-sized villages with a partly rural population, four were sub-

urban and 19 had an urban location. The number of GPs at each health centre varied between three and 11. Each semester, 85 fifth-semester students were attached to the health centres, and the number of GP teachers involved was almost as large.

In order to gain a good insight into the GPs' views, a qualitative study based on semistructured interviews following an interview schedule was undertaken. The sample of interviewees was selected by telephone calls to the lead teachers in all the 30 health centres participating in the programme. They were asked to collaborate in an interview. Of these, 15 accepted and the others recommended a colleague who was more involved in the teaching of these junior students. The sample included GPs with different backgrounds, with variations in length of time as specialists in general practice (1–19 years, mean 10 years), gender (12 men, 18 women) and teaching experience, and 18 teachers had attended a week-long course for postgraduate trainers.

An interview schedule with mostly open-ended questions was used. Areas covered included attitudes to teaching junior students, details of how teaching was organized, issues concerning the practice, the students and the patients, views on teachers' meetings, the teachers' interpretation of the objectives of the course and their personal rewards from teaching. Piloting with two very experienced GP teachers, not involved in the study, resulted in some changes in the schedule.

One of the authors (ACH), who worked as a GP in an adjacent area, interviewed all the participants. The interviewer was not involved in the course, but had wide experience in teaching senior students. All but one interview (which was conducted at the interviewee's home) took place at the interviewees' work premises. The interviews lasted around 45 min. The questions were asked in the same order in each interview. The participants were allowed to answer openly and freely. Notes were taken during the interview, aiming to get the interviewees' answers verbatim and as accurately as possible. Immediately afterwards the notes were completed and additional data and reflections dictated on tape. Then a fair copy of the whole interview was made.

The interviews were analysed systematically using a technique of Malterud,[19] similar to Giorgi's phenomenological method. Themes for coding were identified by an initial overview of the material. Text elements, or 'meaning units', including information about the themes covered by the codes were then identified. The text elements with the same code were collected and their common message expressed in more general terms as concepts. The essence of the concepts constituted the final categories. Eventually, the concepts and categories were compared with the whole from which they were derived and adjustments made. Quotations were highlighted. ACH undertook the data analysis, although there were continual discussions with the other authors, who also participated in data interpretation.

## Results

### Attitudes towards undergraduate teaching

The interviewed GP teachers, with two exceptions, had a basically positive attitude towards teaching these junior students, and they found it interesting and stimulating. Two of them also pointed out that it was a responsible task. However, half of the teachers also spontaneously mentioned the increasing time pressure, which had partly reduced their enthusiasm and made teaching more stressful.

In one-third of the health centres, all colleagues had maintained their interest in teaching, and in two of these teaching was given priority. However, the most common view was that the interest in and also the quality of teaching had deteriorated, as the work had become more stressful and the number of students had increased. Seven teachers mentioned problems with individual unsupportive colleagues. In three health centres there was no enthusiasm for teaching, and the teachers involved felt they only 'fulfilled their duties'. Almost all the interviewed teachers described their staff as supportive.

### Rewards of undergraduate teaching

All but two interviewed teachers were able to mention benefits of their teaching. The rewards were of both an intellectual and an emotional nature (Table 1).

*Improving quality of work* was the overall dominating theme. Having the students present in the consultation made the teachers feel 'reflected from outside' and seen by eyes other than those of their patients'. Challenging questions from the students made the teachers observant of their work routine and their patient management. Their own shortcomings and knowledge gaps became apparent to them, which stimulated them to learn and develop and to keep up to date in patient care.

*Imparting knowledge to others* – the true core of teaching – was another intellectual theme, which was mentioned by nine teachers. Sharing their knowledge with the students and facilitating student learning felt meaningful. The possibility of influencing the attitudes and knowledge of the next generation of doctors was also felt as satisfactory.

**Table 1** General practitioners' (GPs') responses to the question: 'What do you find rewarding about teaching?'

| |
|---|
| 'By teaching I discover my own shortcomings and try to improve.' [GP 9] |
| 'I have to sharpen up, structure my thoughts, fill the gaps in my knowledge.' [GP 14] |
| 'It gives me a certain feeling of satisfaction to be able to teach the students something they might remember in the future.' [GP 23] |
| 'I can meet young medical students – it gives me vitality, makes my profession alive.' [GP 28] |
| 'The students widen our general practice world a little. I like to have someone to talk to – we work alone a lot.' [GP 26] |
| 'It's kind of a show-off in front of the patient. It supports my self-esteem.' [GP 22] |
| 'It hardly gives me anything – teaching is just yet another issue that is loaded upon us, and that we lack resources for.' [GP 29] |

*Renewed enthusiasm in work from contact with students* was an important emotional issue. The everyday work of general practice was influenced by the keen, enthusiastic young students and made more interesting. The students were regarded as highly motivated with regard to the attachment. Three GP teachers also mentioned that the isolated nature of general practice was made more open by the presence of the student in their surgery, as someone with whom the GP could exchange thoughts and ideas.

*Gains in self-esteem* were mentioned by four teachers, who said they felt good having the students watch their work and giving them positive feedback in front of the patients. Teaching gave new value to their work as GPs.

Two teachers could not mention any rewards of teaching. One of them regarded teaching as an extra burden, as the required resources did not exist. The other preferred senior students, who could bring 'news from the hospital'. The fifth-semester students were seen as far too inexperienced for that purpose.

### Problems in undergraduate teaching

The experienced problems were of two kinds: 'external' structural problems concerning the health centre, the students and the patients, and 'internal' factors in the process of teaching.

The single most important issue among the structural problems was *lack of time.* Only in three health centres was there a small reduction in consultation rate or increased appointment length during teaching sessions. Teaching in protected time did not exist. The high stress level made some GPs feel guilty towards both patients and students. Inadequate premises with *lack of space* were a problem in almost half of the health centres. That made it difficult to let the students interview and examine patients on their own, and added further to the stress level.

Because of *the students'* brief clinical experience, 13 teachers said they had problems making their clinical work comprehensible to the students or were uncertain whether the students had understood. The students' ability to take initiatives in their work with the patients varied a great deal depending on their age, personality and previous experience. This was the view of half of the teachers. A few teachers found all students at this level shy and nervous in patient contact or passive and uninterested in the work at the health centre.

All GPs thought it very seldom happened that a *patient* refused to talk to or be examined by a student. However, the patients' acceptance of the students' presence was a concern of almost half of the interviewed GPs. They chose 'suitable' patients for the students' interviews and examinations, excluding patients with sensitive problems, such as gynaecological or psychiatric disorders. A few GPs were very sensitive towards the patients' feelings, and selected the patients with the utmost care. Two GPs were also worried about patient fatigue.

The dominating issue among the 'internal' problems was the *doctor–patient relationship*. Nine teachers said they had felt uneasy and dissatisfied with several consultations in the presence of a student. They had problems with concentration, and felt divided between the patient and the student. They were also concerned about the negative effect on patient care. Among these teachers were five very experienced female GPs, who described themselves as highly sensitive to patients' reactions, but the others were GPs with only a few years in practice. However, most GP teachers did not think that the consultation was altered, and four teachers thought their behaviour towards the patient rather improved in the presence of a student.

Giving constructive *feedback* to the students was a problem for half of the teachers. They had difficulties describing ineffective behaviours to the students, and were concerned about the students' losing self-confidence if the feedback was too frank. They described themselves as sensitive to the students' reactions. Five teachers also pointed out their uncertainty as to what to expect from the students. Because the lack of time, four teachers never gave feedback, and two of these never saw the students examine the patients.

In *teaching clinical skills* half of the GPs noted a difference between their own and the students' technique. However, most of these GPs interpreted the difference as natural because of the students' inexperience. Seven GPs judged it to be the result of insufficient instruction by previous teachers. The GPs seemed to be confident

about conducting and teaching consistent examination procedures, even if they sometimes made their own examinations brief and summary.

### Support from the academic department

The lead teachers used to participate in *teachers' meetings* at the academic department, where they were informed regularly about the students' evaluations of the attachments. Most of them had a feeling of community among peers, sharing problems about difficult students or helping each other with teaching problems. The meetings were said to bring new energy to tired teachers. However, the majority were also of the opinion that the academic department had unrealistic expectations of the students' education at the health centres and poor understanding of the GPs' situation. Three lead teachers pointed out the absence of proper teacher training. Only five of all the interviewed teachers had some training in problem-based learning, and 13 teachers said they were not familiar enough with the method. Half of all the teachers judged their knowledge of the new curriculum and of what to expect from the students as defective.

The GPs' own interpretation of the *aims and objectives* of the students' attachment to the health centres did not entirely correspond to that of the academic department. There was agreement about the importance of students' practising patient contact, which was the overall dominating theme here. However, only seven teachers mentioned training in examination skills as an essential issue. It was considered far more important to introduce the students to the work of general practice at this early stage of their education. The difference between primary and hospital care and the GPs' pride in and enthusiasm for their work were also emphasized. Another frequently mentioned theme was the importance of good role models. Some teachers also pointed out the opportunity for the students to apply their theoretical knowledge to practical work.

There was a very good correlation between the teachers' interpreted aims and objectives of the course and their *personal views* of what impressions from the attachment they wanted the students to remember (Table 2).

**Table 2** General practitioners' (GPs') responses to the question: 'What would you most like the students to remember?'

| |
|---|
| 'To see the patient as a whole person, not only as a disease.' [GP 8] |
| 'How different from one another the patients are. The importance of appreciating every patient as person on his own.' [GP 6] |
| 'Interest in people, curiosity. To see the delight in getting the patient's confidence.' [GP 20] |
| 'The importance of the role of the GP – the continuity of care and that we are easy to get in touch with.' [GP 15] |
| 'Everyday care. The difference from hospital care.' [GP 1] |
| 'Well, something in my way of being, how I take a history and so on – like a role model.' [GP 23] |

## Discussion

The method of selecting the interviewees did not offer the maximum variability in the range of views. Half of the interviewed GPs were lead teachers at their health centres, and were probably more positive towards teaching than the average GP. However, it was important to interview one GP in each of the participating health centres, as the centres were different as regards conditions of work, patient population and interest in teaching. This was accomplished. Furthermore, the sample of GPs interviewed turned out to be rather varied in terms of gender, background, time as qualified GPs and teaching experience. A wide variation of views was obtained, also including those of GPs who were negative about teaching junior students.

After careful consideration we decided to use note taking instead of tape recording, as the interview schedule was rather structured, even though most questions were open-ended. Tape recording could also be experienced as threatening and intrusive to the interviewees.[20] We felt that more honest answers to the issues and concerns would be given if note-taking were used. This view was strengthened by the fact that one of the piloted GPs had a negative attitude towards tape recording. Others have also used note taking instead of tape recording in interviewing medical teachers.[15]

The interviewer (ACH) had worked as a GP in an adjacent area for many years, and had therefore met some of the interviewees previously, mainly in connection with teachers' meetings. Even if no close relationship existed, there was a certain risk that this could compromise the objectivity of the interviewer and influence the data revealed in the interviews. However, there seemed to be no difference between these interviewees and the others in their openness at the interviews. All respondents seemed to be frank and honest in their answers and seemed to have no problems about disclosing negative feelings. Furthermore, the interviewer had no ties to the academic department, and was not involved in the teaching of junior students. The fact that the interviewer was a GP was if anything an advantage, as the respondents' points of view were easily understood and recognized.

To improve the validity of the results, an attempt at triangulation of both sources and methods was made,

by investigation of both patients' and students' perspectives. We used a patient questionnaire and a detailed evaluation of the students' essays on the attachment.

Even though respondent validation is a limited way of assuring validity,[21] we nevertheless presented the results of the study to all the interviewees as a report. The respondents who answered an inquiry were of the opinion that the results agreed with their reality. The results were also discussed at teachers' meetings, and an 'ongoing relationship'[20] with the respondents was established in that way.

Although only one researcher was involved in the data analysis, all authors participated in the discussion and interpretation of the data. The methodology used otherwise mainly agrees with suggested criteria for assessing qualitative research.[21,22]

In our study the enthusiasm for and interest in teaching were influenced by several factors. A number of both intellectual and emotional rewards of teaching were identified. These coincide with similar findings in previous studies.[13,17] The students were also regarded by most GPs as highly motivated, a point also made by the students themselves in their evaluations. To be able to 'relate to reality', and to see relevant patients, motivated the students in their theoretical studies. The attachment also made the students reflect on their future role as doctors. A positive one-to-one relationship with the student was to many GPs a parallel to the doctor–patient relationship. This was especially true if the desired aim of the same teacher being with the student for every session was feasible. A good relationship with the teacher was also a very important issue in the students' evaluations and essays. Respect and trust from the teacher made the student more confident and more willing to take initiatives and responsibility in the work with patients.

The problems and constraints of teaching were dominated in our study by the sense of pressure and lack of time. Lack of space was also a problem in several health centres. These findings correspond to those of the British studies.[13,14,17] The students also commented upon this issue, which had a deleterious effect on teaching. These structural problems might be difficult to solve, but increased remuneration might finance locum cover and pay for some reconstruction of premises. However, in one-third of the health centres all the GPs seemed to remain positive about teaching in spite of the increasing workload and number of students. Probably the attitude of the management was different in these health centres, with a greater acceptance of teaching, which in some cases also was given priority.

One-third of the interviewed teachers had felt disturbed during the consultation when a student attended, and were concerned about patient care. The fact that not only recently qualified GPs, but also GPs with many years in practice felt an impairment of the quality of consultation might suggest, that the GPs' personality is of equal importance as their experience. In a questionnaire study[17] one-quarter of all GPs were worried about an adverse effect on patient care, and in two interview studies also[13,14] negative effects on the doctor–patient relationship were mentioned as a problem. Teaching is a complex relationship between teacher, student and patient. The teacher is responsible for both the patient's care and the student's learning, and must attend to the needs of both.

Approximately half of the teachers were concerned about the patients' feelings when a student attended the consultation. In our patient survey we found that most of the patients seen by the fifth-semester students were positive or neutral about having a student attend the consultation. None of the patients would refuse to let a student attend the consultation next time, but 20% added that it depended on the nature of their complaint. This corresponds to a British study,[23] where many patients stated that they were less likely to see a student for emotional or intimate problems. Patients with these complaints were also those whom the GPs in our study tried to exclude from their teaching. For these junior students it is probably of little importance, but for senior students the GPs have to balance the rights of the patients with the educational needs of students.

A demand by GPs for training in how to teach examination skills, to provide consistent teaching of a method of examination, was found in the English studies.[10,12] This, however, was not confirmed here. The Swedish GPs seemed to have a greater confidence in their ability in consistent examination procedure. This possibly reflects the much longer consultations in Sweden with more thorough clinical examination of patients.

Improved information about the educational objectives of the course and about what to expect from students is essential. The academic department has a responsibility here. The aim to let the students practice basic examination skills was probably not known or accepted by all GP teachers. Many teachers also had a very vague idea about what to expect from the students, which also made assessment of student performance and effective feedback difficult. The students often commented on these issues, and mentioned problems with teachers who were ignorant of the aims and objectives of the attachment.

Several of the interviewed GPs were reluctant to give feedback to the students. The GPs' need for training

in giving effective feedback to students was one of the issues described in some previous studies,[10,12] and should be considered here too. Feedback is essential to the students' learning and development in both communication and examination skills. In giving feedback, the focus should be on strengths, but the weaknesses should also be pointed out and in a concrete and specific way. It is also of vital importance to check how the feedback is received.

The GPs' own second most important objective of the course was to give the students an introduction to the work of primary care. In spite of the workload, most GPs remained enthusiastic about their work, and took pride and an interest in presenting it to the students. General practice was also seen as the preferred location for teaching communication skills and practising patient contact. The students' essays showed that they appreciated the possibility of talking to a wide range of patients, differing in age, social class and ethnic group. In the fifth semester they also had sufficient theoretical knowledge to be able to apply it to some extent to practical work. This was a recurrent theme among the students, and was also mentioned by a few of the interviewed teachers. However, in spite of the GPs' enthusiasm and pride in their work, several students reacted to the stress and the tedious routine tasks – discouraging aspects of the work of a GP.

GPs' acting as positive role models was a theme mentioned by several of the GPs as well as the students. The importance of role models even at this early stage of the students' education should not be underestimated. Attitudes to work learned from an enthusiastic and confident teacher might stay with the students for years, and hopefully play a part in the development of their own roles as doctors. The students described positive role models as GPs who had a caring relationship with their patients, were good at communication, were relaxed and open, and had considerable knowledge, skills and experience in their work. This description agrees favourably with the findings of an Australian study, although the Australian students were in their fourth year.[24] In a British study, it was found that attachment to particular GP teachers was already important to the students' development in their third year, but even more so in their final year.[25]

In conclusion, this study has shown that GPs in most cases have a positive attitude towards teaching junior undergraduate students. They also have reasonable competence for the task, but can sometimes experience failing motivation and interest because of heavy workload and lack of time. General practice, not least because of its varied and appropriate range of patients, can also contribute to the training of junior students in communication and examination skills. The GP teachers have a key role here, and their enthusiasm for their work and the rewards from teaching take them a long way. However, to make good quality teaching possible, increased support and an improvement of teacher training in general practice must be considered by the medical school. Teaching the teachers to give effective feedback is one essential issue, as is improved and continuing information on the objectives of the early patient contact course. The GPs' concern about the doctor–patient relationship is another important issue for further discussion. However, good teaching also takes time, and the issues of time and space are vital to the continuing development of teaching in general practice. Increased remuneration from the University and improved cooperation between the medical school and the County Council, with the intention of gaining greater acceptance for teaching in the health centres, is a desirable scenario for the future.

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## Contributors

Ann-Christin Haffling participated in study design, collected and analysed the data, participated in data interpretation and writing the paper. At the time of the study she worked as a GP. Anders Håkansson participated in data interpretation and writing the paper, and at the time of the study was responsible for the teaching of senior students in primary care. Barbro Hagander participated in study design, data interpretation and writing the paper. Barbro Hagander has developed the early patient contact course, and was responsible for the course at the time of the study.

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# Paper II

# Paper III

WEB PAPER

# Students' reflections in a portfolio pilot: Highlighting professional issues

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## Abstract

**Background:** Portfolios are highlighted as potential assessment tools for professional competence. Although students' self-reflections are considered to be central in the portfolio, the content of reflections in practice-based portfolios is seldom analysed.

**Aim:** To investigate whether students' reflections include sufficient dimensions of professional competence, notwithstanding a standardized portfolio format, and to evaluate students' satisfaction with the portfolio.

**Methods:** Thirty-five voluntary final-year medical students piloted a standardized portfolio in a general practice (GP) attachment at Lund University, Sweden. Students' portfolio reflections were based upon documentary evidence from practice, and aimed to demonstrate students' learning. The reflections were qualitatively analysed, using a framework approach. Students' evaluations of the portfolio were subjected to quantitative and qualitative analysis.

**Results:** Among professional issues, an integration of cognitive, affective and practical dimensions in clinical practice was provided by students' reflections. The findings suggested an emphasis on affective issues, particularly on self-awareness of feelings, attitudes and concerns. In addition, ethical problems, clinical reasoning strategies and future communication skills training were subjects of several reflective commentaries. Students' reflections on their consultation skills demonstrated their endeavour to achieve structure in the medical interview by negotiation of an agenda for the consultation, keeping the interview on track, and using internal summarizing. The importance of active listening and exploration of patient's perspective was also emphasized. In students' case summaries, illustrating characteristic attributes of GP, the dominating theme was 'patient-centred care', including the patient–doctor relationship, holistic modelling and longitudinal continuity. Students were satisfied with the portfolio, but improved instructions were needed.

**Conclusions:** A standardized portfolio in a defined course with a limited timeframe provided ample opportunities for reflections on professional issues. Support by mentors and a final examiner interview contributed to the success of the portfolio with students. The interview also allowed students to deepen their reflections and to receive feedback.

## Introduction

Over the past 10–15 years, a variety of portfolios have been introduced as learning and assessment tools in undergraduate medical education (Driessen et al. 2007; Buckley et al. 2009). The main reason for this development has been a shift of focus in medical school curricula from acquisition of knowledge to development of competence.

Professional competence in medicine involves not only the use of knowledge and skills, but also integrates attitudes, values and an aptitude for communication, clinical reasoning and self-reflection (Epstein & Hundert 2002), attributes not easily assessed by traditional methods. The portfolio has been highlighted as a potential tool for learning and assessment of professionalism, as it emphasizes the development of reflective practice (van Tartwijk & Driessen 2009; Passi et al. 2010). A portfolio from clinical practice holds students' documentary evidence from the workplace, combined with a self-reflection (Snadden & Thomas 1998; Friedman Ben David et al. 2001).

Reflective ability is identified as a core skill for professional development (Friedman Ben David et al. 2001).

### Practice points

- Students' reflections in the learning and assessment portfolio in GP include sufficient professional issues of cognitive, affective and practical dimensions, notwithstanding a standardized format and a limited timeframe.
- Mentors can increase the acceptance of the portfolio with students.
- A final examiner interview is recommended to deepen students' reflections and to supply feedback.

Several definitions of the term reflection exist (Mann et al. 2007; Sandars 2009). Sandars proposes a rather wide definition: 'a metacognitive process that occurs before, during and after situations with the purpose of developing greater understanding of both the self and the situation so that future encounters with the situation are informed from previous encounters'. Reflection is also an important stage in Kolb's well-known 'experiential learning cycle', where an experience in practice is translated through reflection into

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abstract generalized concepts that can be applied in new situations (Kolb 1984). A reflection for learning in a portfolio is supposed to include analysis of educational achievements, identification of further learning needs and a learning plan (Challis 1999). Besides reflection for learning, reflection is also essential for building therapeutic relationships, a crucial part of professional competence (Epstein & Hundert 2002; Sandars 2009).

Reflections in a portfolio can be assessed separately from the documentary evidence (Friedman Ben David et al. 2001). Several instruments for the judgement of reflective writing exist (Mann et al. 2007; Sandars 2009), and are usually based on different 'levels' or 'depths' of reflection. The most superficial level means only a description of an event; the deepest level involves an analysis and an application of the reflective learning to future experiences.

Assessment of the portfolio is essential to foster reflective learning through feedback and to motivate and support further learning (Challis 1999). Summative assessment emphasizes the value of the portfolio to students, and has been highlighted as one of the key factors for a successful portfolio (Driessen et al. 2007). Inter-rater reliability can be improved by standardization of portfolio content, definition of analytical assessment criteria, clear guidelines to students (Friedman Ben David et al. 2001) and discussion and negotiation between examiners (Rees & Sheard 2004). Reliability can also be enhanced by a personal examiner interview (Davis et al. 2001; Gordon 2003; Burch & Seggie 2008).

Nevertheless, there is a crucial balance between standardizing the portfolio to enhance reliability and maintaining the personalized aspect of the portfolio (Driessen et al. 2005). Because portfolio assessment is primarily concerned with qualitative material, an alternative approach of using qualitative research criteria in assessment has been suggested (Webb et al. 2003; Driessen et al. 2005). In this approach, 'credibility' (internal validity) is used for the assessment structure and 'dependability' (reliability) for the assessment process.

The use of portfolios in undergraduate medical education has been reported in several papers. In pre-clinical education portfolios have been introduced to stimulate students to reflect on professionalism (Driessen et al. 2003; Gordon 2003) or their communication skills (Rees & Sheard 2004). In clinical practice, they have mainly been used in lengthy clinical attachments (Finlay et al. 1998; Davis et al. 2001; Burch & Seggie 2008), but they have also been applied to defined courses of shorter duration (Lonka et al. 2001; Amsellem-Quazana et al. 2006; Grant et al. 2007). However, although students' personal reflections are considered to be a central attribute in the portfolio, reflections were not included in all of these portfolios from clinical practice, and if reflections were included, the content was seldom subjected to analysis. Also, only a few researched portfolios from clinical practice used reflections to promote the integration of affective and cognitive dimensions of professional competence.

We aimed to develop a portfolio for the assessment of final-year students' professional development during their general practice (GP) attachment. Considering the limited time available for students to collect portfolio evidence and to write reflections, the portfolio had to be structured and standardized. We designed a pilot study with the principal aim of investigating whether themes of students' reflections would include satisfactory dimensions of professional competence, notwithstanding the standardized format. This article qualitatively explores the emergent themes of students' reflections, and also reports on students' evaluation of the portfolio.

## Methods

### Context

The medical school curriculum of Lund University, Sweden, has an intake of approximately 80 students twice a year, comprises five and a half years, and is followed by an internship of 18 months before qualification. During the revision of the curriculum in 2006, the demand for additional methods for the assessment of professional development was emphasized. The portfolio seemed to be a tool particularly well-suited for our final-year students, who were in a phase of medical training characterized by a large degree of authentic learning in the workplace. We aimed to use the portfolio for formative promotion of learning, but also as a complement in the summative assessment.

The programme of Community Medicine runs for 10 weeks in students' final year, and includes 16 days (4 days every 2nd week) of practice in a health centre. The final exam is a written case-based test on GP and other course subjects.

### Portfolio

Box 1 outlines the learning outcomes, the content and the areas for assessment of the portfolio. Assessment protocols (Box 1) are used in practice for self-assessment by students and for formative assessment by their GP supervisor. Students also utilize an 8-item checklist of practical skills (Box 1), and record patient consultations on video. The recordings are discussed in group seminars, where students' personal reflections on their consultations are completed by feedback from their peers and teacher on a feedback sheet.

The portfolio content was standardized to hold documentary evidence from the practice and the video seminar group, and also included two case summaries, intended to illustrate one or more of the 11 characteristic GP attributes (WONCA Europe 2005) that were supplemented (Box 2).

Three reflections on learning were required: one reflection on consultation skills, based upon documentation from the practice and video group, and two reflections on the two case summaries, where students' learning could deal with anything about the patient encounter and/or with the attributes (Box 2).

### Pilot

Students of two consecutive classes, of 76 and 71 students, respectively, were approached. Twenty students in each class were offered to voluntarily pilot a portfolio in GP as an addition to the written test, which for the participants would be reduced in the number of GP questions. A total of 35 students, 16 from the first and 19 from the second class, accepted. Twenty-four (69%) of them were women, as compared to

**Box 1.** The portfolio: learning outcomes, content and areas for assessment.

**Learning outcomes**
The student is expected to
- analyse his/her strengths and weaknesses in GP consultations, reflect on learning achieved, what areas need further development and how this development may take place
- discuss and critically examine characteristic attributes of GP, illustrated by two case summaries from practice, reflect on learning achieved and on how further development may take place

**Content**
**Documentary evidence**
- Assessment protocols (self-assessment and feedback) from practice (communication skills; history taking; physical examination; differential diagnoses; problem solving; management plan; explanation with patient and relationship/efficient use of time)
- Checklist of practical skills from practice (provide lifestyle advice to patients; examine patients with neck/shoulder pain or low lumbar pain; consult with old patients with multiple complaints; document patients' records; write hospital referral letters; write sick-notes; examine children in child welfare clinic and accompany the GP on home visits)
- Feedback sheet from video seminar
- Two case summaries (each 250–500 words), critical incidents or routine clinical experiences

**Reflections**
- One 500-word reflection on consultation skills, linked to documentation from practice and video group
- Two 250–500-word reflections, one on each case summary, linked to one or more of the 11 characteristic attributes of GP (WONCA Europe 2005)

**Areas for assessment**
**in each of the three reflections**
- Reflection on learning achieved, further learning needs and a learning plan
- Use of documentary evidence/GP attributes

**in the whole portfolio**
- Structure and written language

**Box 2.** Characteristic attributes of GP (WONCA Europe 2005).

**Accessibility** – first contact for all health care problems
**Co-ordinating care** – with other professionals in primary care and with other specialities
**Patient-centred approach** – centred on patient and context
**Patient–doctor relationship**
**Longitudinal continuity** of care
**Specific decision-making process** – based on incidence and prevalence
**Non-specific undifferentiated symptoms**
**Simultaneously manage acute and chronic health problems** in individual patients
**Promote health and well-being** – prevention
**Community orientation** – responsible for the health of the community
**Holistic modelling** – physical, psychological, social, cultural and existential dimensions
**Essential application features** – attitudinal, scientific and contextual aspects – are important for all doctors to apply the above core competencies in real life in the workplace setting.

59% of all students. At the time of the study, consent from the University's ethics committee was not required for projects involving students' assessments. Participating students were provided with both verbal and written guidelines on the purpose, format and assessment of their portfolios. Three of the authors (ACH, AP, AB) and a fourth teacher, all involved in teaching, acted as mentors to support their students in compiling the portfolio.

All documentary evidence, except for the case summaries, was formatively assessed in practice or in seminars, and the summative assessment only concerned the three reflections. Assessment in medical school, Lund University, is non-graded, pass/fail. The assessment of each of the three reflections was based upon three areas: the reflection of learning, the use of documentary evidence/GP attributes, and the structure and written language of the whole portfolio (Box 1). The four teachers acted as 'external' examiners for each other's students. Each portfolio took 1 hour to read and to prepare for the 30-minute personal interview with the student. The evaluation of 'borderline' students' reflections was discussed between examiners. The assessment was holistic, and the interview provided students with an opportunity to deepen their reflections.

## Qualitative analysis of students' reflections

To be able to conduct the qualitative analysis, students' reflections were written verbatim into a word processor by one of the authors (ACH). Each student was allocated a code number to prevent identification of individual students' comments. The text of the reflections constructed two separate units of analysis; 'consultation skills' and 'case summaries'.

The transcripts were read through several times to get a sense of the whole, and then analysed using a framework approach (Crabtree & Miller 1999). For 'consultation skills', the text was mapped against the Calgary Cambridge Guides (Silverman et al. 2004). For 'case summaries', the statement of WONCA Europe (2005), (Box 2), was used as a template for organizing the data.

In each of the two units of analysis, related segments of text were identified and indexed to the appropriate part of the thematic framework. Some codes were modified and new ones added to reflect as many nuances in the data as possible. 'Chunks' of related text under each code were examined together and distilled summaries made; this process involved a considerable amount of abstraction. The chunk summaries provided an analytical tool from which connections were made and sub-themes and themes identified.

ACH undertook the mapping of text and carried out the primary analysis of the data. The four teachers, involved in the pilot, examined in recurrent meetings whether the interpretation of the data was plausible. The codes and sub-themes were

**Table 1.** Students' reflections on their consultation skills (number of comments in brackets).

| Codes | Sub-themes | Themes |
|---|---|---|
| Time management<br>Negotiate agenda<br>Keep interview on task<br>Summarize periodically | Structure (51) | Process skills (103) |
| Listen attentively to the patient's opening statement, without interrupting or directing patient's response<br>Moving from open to closed questions<br>Facilitate patient's response by the use of silence | Active listening (17) | |
| Actively determine and explore patients' ideas, concerns and expectations<br>Pick up verbal and non-verbal cues | Patient's perspective (13) | |
| Use empathy to communicate understanding of patient's feelings<br>Write notes without interference with dialogue or rapport<br>Deal sensitively with embarrassing and disturbing topics | Building relationship (11) | |
| Use concise, easily understood language<br>Provide clear information<br>Relate explanation to patient's perspective | Reaching shared understanding (11) | |
| Self-concept and self-confidence<br>Awareness of one's own feelings<br>Awareness of one's own issues of concern | Self-awareness (20) | Perceptual skills (41) |
| Internal clinical reasoning | Clinical reasoning (11) | |
| Future communication skills training | Communication skills (10) | |
| Ask relevant questions to explore patient's problems<br>Formulate management plan<br>Maintain continued learning | Scientific aspects (21) | Content (34) |
| Elicit and interpret signs in physical examination<br>Future practical skills training | Practical skills (13) | |
| Co-ordinated care | Primary care (4) | Context (4) |

compared based on differences and similarities, and some were revised during this process of corroboration.

### Students' evaluation questionnaire

The short student evaluation form was supplied directly after the examiner interview, asking five questions about the portfolio instructions, the mentor contact and the examiner interview, using a 3-point scale ('yes', 'to some extent', 'no'). Students were also requested to provide free comments on positive and negative experiences of the portfolio, and to give suggestions for improvements. The results were subjected to quantitative and qualitative (content) analyses.

## Results

### Themes of students' reflections on their consultation skills

The analysis resulted in the assignment of 26 codes (Table 1). The codes were merged into 11 sub-themes. From the sub-themes, four themes were identified: 'Process skills', 'Perceptual skills', 'Content skills' and 'Context'. The first three are congruent with the three broad types of skills needed for the medical interview (Silverman et al. 2004), and the fourth theme 'Context' was added as a supplement.

*Process skills.* Most comments were assigned to the *structure* of the consultation. Many students described 'time management' as their greatest problem at the start of their practice. In the medical interview, they seemed to 'get lost' in details not relevant for patient's immediate problems. They learnt how to improve structure mainly by using three different skills: negotiating an agenda for the consultation, keeping the interview on track, and frequently using internal summarizing.

Setting an agenda required taking both the patient's and the doctor's needs into account, problems with time could be discussed, and the patient could be invited to take responsibility in proposing the most important problem.

> In the negotiation about what the consultation should deal with, I could have given the patient more responsibility in letting him propose the most important problem (student 12)

The interview could be kept on track by obtaining order and control between various sections to be covered. Students learned that they could interrupt over-talkative patients in 'a nice way' by acknowledging their comments and gently asking them to refocus, steering them back to the problem at hand.

> Now I am aware that I have to steer the interview a bit more and take control, by refocusing on the subject, clearly interrupting, or offering the patient alternatives, depending on the situation (student 27)

Besides playing a vital role in structuring the medical interview, internal summarizing had other advantages. It allowed the student to check the accuracy of the patient's history, it invited the patient to either confirm or correct the student's interpretation, and it encouraged the patient to continue his or her story. It could also be used together with

orienting statements to move from one section to another in the interview.

> The summary can also be used for 'checking' in the middle of an interview, for confirmation of what has been said, and to conclude one section and pass over to the next (student 19)

The importance of *active listening*, especially at the start of the interview, was realized by several students. By listening attentively without interruption of the patient's opening statement, they could get more information, improve the structure of the consultation, and save time.

> At the start of my attachment, I began my questioning as soon as there was a moment's silence, but I learned to let patients decide when they had completed their opening statement. I realized it didn't take more time and I got to know more (student 32)

To determine the *patient's perspective,* students learned to ask direct questions about the patient's ideas, concerns and expectations, and to pick up on the patient's cues. The importance of phrasing the questions carefully and using them with 'timing' was acknowledged. Improved efficiency of the consultation, when the patient's perspective was made clear, was recognized.

> The most useful skill has been to ask the patient for her ideas, concerns and expectations. I soon noticed that if I asked what the patient thought caused the symptoms, what worried her, and what she expected from me, the consultation became much more efficient (student 15)

In *building a relationship* throughout the consultation, some students had realized the importance of communicating their understanding back to the patient. Others commented on their note-taking during the initial part of the interview, which could deteriorate the rapport with the patient. A few students described how they had finally come to feel at ease asking questions about embarrassing and disturbing subjects, which they considered to be 'evidence of their professional development'. Others admitted that they still 'forgot' to ask these questions, realizing a 'subconscious fear of the answers'.

In the sub-theme of *reaching shared understanding,* some students commented on their improved skills of supplying information for patients in a clear and concise way, avoiding medical jargon. Others reflected on shared decision making, 'placing patients' own resources at the centre'.

*Perceptual skills*. *Self-awareness* was the predominant sub-theme. Several students described improved confidence in their work, partly due to the wide range of patients' problems experienced, partly due to self-reflection, based on their own analysis of their strengths and weaknesses and on their GP tutor's constructive feedback.

> I have improved in receiving and analysing feedback, using the feedback as a constructive tool in my personal development, and I now continuously reflect on my work (student 23)

Some students reflected on the importance of being observant of their own feelings of frustration or anger, as they might be projected from the patient. Others considered a heightened awareness of external factors that could negatively affect the quality of their consultations. By identifying these factors in advance, they could handle the situation with improved confidence.

*Clinical reasoning* was acknowledged as a problem by several students. They perceived the retrieval of basic and clinical science and the transfer from theory to practice across different problems as a challenge. They had, however, been supplied with constructive criticism and tools for further training by their GP tutors.

> My ability to transfer my knowledge from theory to practice hasn't really been tested until this semester (student 14)

Some students reflected upon their tendency for premature closure on a particular diagnosis, instead of keeping a degree of scepticism and a broader perspective. Others described a tendency to direct their initial reasoning towards the most serious and unlikely of diagnoses, and still others were uncertain of their knowledge base, which made it difficult to generate probable hypotheses.

A third of students reflected on their need for further development of their *communication skills*, using continuous self-reflection, video recordings of consultations, sit-ins by experienced colleagues, and joint group discussions.

*Content skills*. Eliciting and interpreting signs in physical examinations were skills practised frequently by students during their previous hospital clerkships. These issues were, however, still commented upon as learning issues by some students, who had considerably increased their 'reference library' of normal and pathological findings.

Formulating a management plan was a challenge to most students at the start of their attachment. They recognized the need of a good knowledge base as a background, but lacked the experience to use it across the non-specific complaints presented in GP. Students were encouraged, and sometimes 'forced', by their GP supervisors to make suggestions for investigations, treatments or follow-up arrangements for their patients.

> By direct feedback from my GP supervisor I have learnt to handle 'easy' cases independently, and I have improved in suggesting investigations and treatment in more complicated cases (student 23)

Several students acknowledged the importance of continuously updating their scientific knowledge and practical skills to maintain high quality in their work. This concept included continuous self-evaluation and the courage to seek advice when necessary.

## Themes of students' reflections on their case summaries

Twenty-eight codes were assigned (Table 2), of which 20 were merged into the 11 sub-themes of characteristic GP attributes

**Table 2.**
Students' reflections on their **case summaries** (number of comments in brackets).

| Codes | Sub-themes | Themes |
|---|---|---|
| Reaching shared understanding<br>Sharing power and responsibility<br>Personal relationship and trust | Patient–doctor relationship (36) | Patient-centred care (89) |
| Physical, psychological, social, cultural and existential dimensions | Holistic modelling (21) | |
| Oriented to the individual<br>Patient's belief, concerns, expectations, feelings and needs | Patient-centred approach (18) | |
| Longitudinal continuity of care | Longitudinal continuity (14) | |
| First medical contact – open and unlimited access<br>Full range of health conditions | Accessibility (13) | Primary care management (35) |
| Co-ordinate with other professionals in the primary care setting | Co-ordinating care (15) | |
| Interface with other specialities | | |
| In balance with available resources | Community orientation (7) | |
| Disease in early stage, non-specific signs<br>Use time as a tool, tolerate uncertainty<br>Effective and efficient use of diagnostic and therapeutic interventions | Non-specific undifferentiated symptoms (12) | Specific approach to patients' problems (24) |
| Decision making based on incidence and prevalence<br>Decision making based on knowledge of patients and community | Specific decision-making process (7) | |
| Hierarchical management of problems | Simultaneously manage acute and chronic health problems (3) | |
| Prevention | Promote health and well-being (2) | |
| Awareness of one's own feelings<br>Awareness of one's own issues of concern<br>Awareness of one's own attitudes | Self-awareness (24) | Perceptual skills (37) |
| Identifying ethical aspects of clinical practice | Ethics (6) | |
| Future communication skills training | Communication skills (7) | |
| Recapitulate basic and clinical science<br>Read and assess medical literature<br>Maintain continued learning | Scientific aspects (24) | Content (24) |
| Impact of the community | Contextual aspects (3) | Context (3) |

(WONCA Europe 2005). These sub-themes were condensed into three themes: 'patient-centred care'; 'primary care management' and 'specific approach to patients' problems'. The remaining nine codes were merged into another five sub-themes and then condensed into three themes: 'perceptual skills', 'content' and 'context', congruent with the essential application features (Box 2).

*Patient-centred care.* This was the dominant overall theme, and the most frequent reflection was on the *patient–doctor relationship.* Most students commented on the importance of providing adequate, effective information and explanation to patients, encouraging patients to voice their ideas and preferences, with the aim of reaching consensus through negotiation. This was not always possible, however. Several students discussed the patient's responsibility and the doctor's respect for the patient's autonomy, when the patient refused to accept suggested advice, investigations or treatment for his or her condition. Students recognized that power and responsibility are shared, and that an essential task is to supply the patient with information, support and empathy.

> I experienced how difficult it might be to try to motivate and help a patient to change his lifestyle and make him understand the seriousness of his condition (student 26)

Patients' personal relationship with their GP, based on mutual trust and established over time, was acknowledged to be of a much greater importance than students had previously believed.

*Holistic modelling* in patient contact was an issue in the reflections of several students who had observed underlying psychosocial problems in many of their patients. The exclusion of biomedical disease and reassurance that there was 'nothing wrong' was not always enough. The importance of identifying social and psychological factors, of 'thinking behind the biomedical perspective' was a valuable experience for some students.

> I learnt from this attachment that I have previously missed this holistic approach to patients, even if I have thought a lot about it before (student 14)

Many students emphasized the *patient-centred approach,* including the understanding of the individual's experience of illness and the importance of eliciting particularly the patient's feelings and fears, and being sensitive to patients' cues.

Students perceived *longitudinal continuity* as a unique strength of primary care. Longitudinal continuity was important to avoid unnecessary investigations, to create mutual trust and a holistic approach to patient's problems, and to give adequate advice about the patient's lifestyle, based on the GP's long-standing knowledge of the patient's life settings.

*Primary care management*. This theme evoked comments mainly on *accessibility* and co-ordinated care. GP was in most cases perceived as 'first medical contact' within the health care system, and students learnt that health problems in GP can cover a wide range from trivial to life-threatening conditions.

> Patients know that they can consult with all kinds of problems at the health centre and that they will be referred to a specialist if needed (student 34)

The *co-ordinated care* with other health professionals in primary care was appreciated by half of the students, who had acquired enhanced respect for the competence of nurses and physiotherapists. Students emphasized the importance of 'working together as a team' for the benefit of the patient's quality of care.

*Specific approach to the patient's problems*. Only one of the sub-themes was assigned a reasonable amount of reflective comments: *non-specific undifferentiated symptoms*. Taking care of patients with non-specific symptoms, often in the early stage of an illness, made several students feel frustrated and insufficient. They learnt the feasible strategy of using time as a tool, keeping in touch with the patient and awaiting further developments.

*Perceptual skills*. *Self-awareness* was the key emergent sub-theme, and the results of the analysis partly overlapped students' reflections on self-awareness in their reflections on consultation skills. Several students defined difficult consultations, where they had to disregard their own feelings and act professionally. Some reflections indicated concern about the problems in trustworthiness that they might later experience as young doctors. A third of the students reflected on their attitudes towards certain patients, being aware of how their own and their colleagues' attitudes can influence the start of a consultation. However, several patients did not at all correspond to their prejudiced expectations, and students learned to approach their patients unconditionally.

> This was my absolutely most important lesson from this patient encounter – not to be ruled by my prejudices (student 12)

Some students had identified ethical problems of clinical practice, mainly concerning patients' autonomy. Comments on future communication skills training were centred on how to practise getting patients involved in decision making and how to further develop motivational interviewing.

*Content*. A third of students had been required to recapitulate their knowledge of basic and clinical science in a vast range of medical conditions, consolidating previous knowledge and adding new facts related to their patient presentations. Only a few students had conducted a more thorough search of the literature in connection with problems they had come across in their patient encounters. Several students reflected on their plans to acquire further knowledge, striving constantly to keep their knowledge base up to date.

### Students' evaluation questionnaire

The 35 students all supplied their evaluations and presented numerous free comments. They were all satisfied with their mentors' support, and all students except one were comfortable with the feedback provided by the examiner in the final individual interview. Sixteen students found the instructions vague or ambiguous. The most positive experience recognized was the final interview with the examiner: 'the feedback was fantastic and quite necessary for compiling a meaningful portfolio'. Almost all students also emphasized the opportunity for reflective writing as positive: 'good to be 'forced' to reflect in a structured way on your strengths and weaknesses', 'learned several strategies to improve', 'great to see my development during the course'. The negative experiences were centred on the clearly deficient instructions in the portfolio, and some students also found the portfolio time-consuming. Despite this criticism, students strongly recommended us to launch the portfolio, with improved instructions, for all students in the programme.

## Discussion

This study explored the themes of portfolio reflections by a group of final-year medical students, undertaking a GP attachment. Notwithstanding the standardized format and the limited time available, students provided good evidence of their learning. We were encouraged that a wide variety of dimensions of professional competence was provided by students' reflections. The portfolio was popular with participating students.

The strength of our study is the insight into the content and nature of students' reflections, an issue only sparsely discussed in previous research (Buckley et al. 2009). Our study adds to the existing knowledge of students' learning experiences in GP in three principal fields: consultation skills, patient-centred care, and professional issues.

Firstly, students' reflections on their consultation skills showed that the most important learning issue in the theme of 'process skills' was how to achieve structure in the medical interview. Patient-centred communication can cause genuine concerns in students about losing control of the consultation and getting caught in a flow of less ordered information from the patient (Silverman et al. 2004). When students learned how to obtain structure, they also experienced better time management, enhanced self-confidence and an improved rapport with the patient.

Secondly, the theme of 'patient-centred care' was emphasized in students' case summaries. Patient-centred care is a major principle in GP, but is of essential interest to several other medical disciplines as well. Achieving shared decision making, understanding the patient as a whole person and exploring the patient's perspective are aspects shown to positively influence patients' satisfaction and enablement,

reduce their symptom burden and discomfort, and increase efficiency of care (Stewart et al. 2000; Little et al. 2001). We believe that these central dimensions of patient-centred care ought to be highlighted earlier in hospital clerkships.

Thirdly, the findings suggested integration of the cognitive, affective and practical dimensions of professional competence that can be acquired in a clinical learning environment (Mann et al. 2007; van Tartwijk & Driessen 2009; Passi et al. 2010). As expected, students reflected on their 'content skills' and provided evidence for their identification of deficits in knowledge and skills, their integration of new understanding, and their plans for development. However, 'perception skills' was a more prominent theme in both units of analysis. In their self-awareness of feelings, attitudes and concerns, students were unexpectedly open and frank about their deficiencies and about how they had tried to remedy them. They also acknowledged the importance of ethical issues and additional communication skills training, and openly reflected on their clinical reasoning. However, we found it remarkable that several students, in their final year in medical school, reflected on their initial problems in transferring theory to practice; a skill supposed to be frequently trained during previous hospital clerkships.

The main limitations of our study are the single group design and the relatively small group of participating students, who also were self-selected volunteers. The pilot naturally attracted students who were more prone to self-reflection and more capable in writing. However, it is likely that other students participated out of curiosity, excitement about a new intervention or attracted by the prospect of a shorter written test, as the results of students' efforts varied considerably. Another limitation is the fact that the study was conducted in one single institution, and the results of this qualitative study cannot be generalized to all other institutions or medical schools.

The final examiner interview and the support by academic teachers as mentors strongly contributed to students' positive evaluation of the portfolio. The interview also gave the examiners an opportunity to enable students to take their reflections to a deeper level and to supply feedback (Friedman Ben David et al. 2001). We believe that these factors also were crucial to students' openness in their reflections. Grant et al. (2007) described a GP portfolio with GP supervisors as mentors and without a final interview, and reported on students' perceived limited benefits from learning and on their unwillingness to discuss their feelings in their reflections.

The utility of the portfolio assessment can be discussed by using a conceptual model with five variables: validity, reliability, educational impact, acceptability and cost (van der Vleuten 1996). Face validity in portfolio assessment can hardly been contested. We also believe that the content validity (credibility) of the assessment structure is ensured by clear learning outcomes, a variety of written evidence of students' experiences and reflections, extended placement in practice, daily observation by practice supervisors and documents signed by supervisors (Webb et al. 2003). The qualitative analysis of themes in students' reflections, linked to the documentary evidence, can also ensure content validity.

The reliability (dependability) of the assessment process is strengthened by the verification of documents by the examiner, explicit assessment criteria (pass/fail) and an 'external' examiner (Webb et al. 2003). Standardization of portfolio content, discussion between examiners, and the personal examiner interview also contributes to reliability. However, the inter-reliability of the assessment warrants further psychometric evaluation.

As to the educational impact, we can hardly maintain more than the lowest level ('reaction') of Kirkpatrick's hierarchy, measuring students' satisfaction in their evaluation (Kirkpatrick 1996). The analysis of the themes in students' reflections assured us of improvements in their knowledge and understanding and their enhanced self-awareness, but these issues were not objectively measured.

The four teachers who took part in the pilot, in their combined roles of mentors and examiners, found the portfolio pilot an enjoyable experience. The reviewing of the portfolios and the individual interviews were regarded as a worthwhile use of their time, and the costs of the assessment were acceptable.

## Conclusions

In summary, this study demonstrated that a structured portfolio in a short timeframe provided abundant opportunities for students to reflect on personal and professional issues, notwithstanding the standardized format. We strongly recommend a final examiner interview to deepen students' reflections, to supply feedback and to raise the importance of reflective ability as a skill in future learning from practice.

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# Paper IV

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# Patients consulting with students in general practice: Survey of patients' satisfaction and their role in teaching

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## Abstract

**Background:** General practice is a common setting for medical students' clinical training. However, little is known about patients' views on consulting with senior students.

**Aims:** To investigate patients' attitudes to consultations conducted by senior students alone, before patients saw their GP; and to enquire into patients' perception of their teaching role.

**Method:** Adult patients attending 50 health centres in Sweden completed a questionnaire directly after their consultation with a fifth-year medical student and their GP. Results were analysed quantitatively and qualitatively.

**Results:** The questionnaire was completed by 495 patients, and 92% were satisfied with their consultation. Reasons were personal gain as well as altruism. Almost all patients were prepared to consult with a student again, however in a third of cases conditional on the nature of their presenting complaints. Emotional problems and intimate examinations could cause reluctance. Patients' conception of their teaching role supported previous research: patients as "facilitators of students" development of professional skills and as "experts" or "exemplars" of their condition. An additional theme, patients as "part of a real context", emerged.

**Conclusions:** Patients in general practice have a positive view towards consulting with senior students. Even unprepared patients see themselves as contributors to teaching, and their capacity in this respect is probably under-utilized.

## Introduction

Due to international changes in both medicine and medical education, general practice has to an increasing extent become the arena for clinical training of undergraduate medical students in various stages of their training (Jones et al. 2001; Sen Gupka & Spencer 2001). General practice means a personal doctor-patient relationship, emphasis on longitudinal continuity of care and often a need to address psychosocial issues during a consultation.

The curricula of many medical schools in Europe involve programmes of general practice at the end of the curriculum, often including attachments to health centres (Švab et al. 2001). The students at this stage can conduct consultations partly independently and can be trusted with medical interviews and physical examinations without full supervision. However, patients' attitudes to these students, undertaking consultations themselves before patients see their GP, have only been sparsely investigated. To our knowledge there is only one study documenting patients' views on senior students' consultations (Bentham et al. 1999). The vast majority of patients were satisfied, and a third even considered there were advantages compared to seeing their GP directly.

Published literature on patients' views about students in general practice mainly relates to students observing GPs during consultations or students performing supervised medical interviews and examinations (Cooke et al. 1996; O'Flynn et al. 1997, 1999; Salisbury et al. 2004; Benson et al. 2005; Choudhury et al. 2006). There are perceived benefits for patients for participation in teaching: feelings of altruism, learning more about their problem and having more time to talk (O'Flynn et al. 1999; Salisbury et al. 2004; Benson et al. 2005). However, patients' willingness to participate is conditional. It can be based on previous experience with students (Choudhury et al. 2006), students' gender (Cooke et al. 1996; Chipp et al. 2004; Benson et al. 2005) and the stage of the students' training (Chipp et al. 2004; Benson et al. 2005). It is also influenced by patients' ethnicity (Choudhury et al. 2006) and by the nature of their presenting complaints (O'Flynn et al. 1997, 1999; Benson et al. 2005). In consultations for emotional or intimate problems consent is less likely to be given. Patients also wish to be asked

### Practice points

- Patients in general practice hold mainly positive views about consulting alone with a student, before seeing their GP.
- Informed consent could be asked by students alone; a finding that has to be verified in further research.
- Emotional problems and intimate examinations could cause reluctance in patients.
- Even unprepared patients see themselves as contributors to teaching.

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for consent well in advance and preferably not in front of students (Howe & Anderson 2003; Benson et al. 2005).

Not much is known about unprepared patients' perception of their role as teachers in medical students' training. Usually patients are seen only as passive 'teaching material'. Published reviews of patients as teachers have focussed on patients carefully trained for special assignments (Spencer et al. 2000; Wykurz & Kelly 2002). We found only one study that explored 'ordinary' patients' perception of their role as teachers (Stacy & Spencer, 1999). These patients took part in a long-term community-based project and were asked in semi-structured interviews about their perceived contribution to students' learning. Patients saw themselves as experts on their condition, as exemplars of their condition or as facilitators of the development of students' professional skills and attitudes.

As organizers of a programme of community medicine in the medical students' last year at Lund University, Sweden, we sometimes hear students and GP tutors report on patients who are dissatisfied with their student encounter or reluctant to participate in teaching. To obtain an understanding of the magnitude of the problem we conducted a questionnaire survey with the aim of investigating the satisfaction of patients immediately after their consultation with a student and their GP. We also wished to enquire into patients' perceived role as teachers.

## Method

### Study setting

The medical school curriculum of Lund University, Sweden, comprises five and a half years, with an intake twice a year of approximately 80 students. The programme of community medicine runs in the last year, and includes sixteen days (4 days every second week) of practice in a health centre (Haffling et al. 2003). All health centres in the region are obliged to take on students, and are remunerated for teaching.

During their practice the students see a wide range of patients with common medical conditions and complaints. The patients are booked as normal surgery; sometimes with prolonged appointment time. Most students have their own room and share the GP tutor's patient list. The GP tutor is encouraged to let the student take an active role in the consultation; perform medical interviews and physical examinations alone and present working diagnoses and a plan to the tutor. After discussion with the tutor, the student should conclude the consultation by giving explanations and discussing management plans with the patient, supervised by the tutor. The GP tutor also frequently observes the student during medical interviews and physical examinations for a formative assessment of the student's performance.

The study was conducted in 50 health centres in the southernmost part of Sweden. Thirty health centres were urban or suburban, while twenty were situated in villages or small towns with a partly rural population.

### Study design

A questionnaire was designed on the basis of literature and discussions in GP tutors' meetings. It was later modified after informal semi-structured interviews with a pilot sample of seven patients in two different health centres, directly after their consultations with students. The questionnaire consisted of tick boxes, except for the last question about the patients' perceived teaching role (Box 1).

The students of three classes were approached. They were each asked to give out five consecutively numbered questionnaires to five patients over 18 and to fill in the patients' age and gender on an accompanying code list of corresponding numbers. The students took part voluntarily in the study, and could not be individually identified. The GP tutors were thoroughly informed about the project, but general information to patients in the reception area was not supplied.

To avoid the students choosing 'positive' patients, they were instructed to give the questionnaire to their first patient of the day on five different days. Patients with dementia, impaired eyesight or language difficulties were excluded. An accompanying letter informed patients of the study and assured anonymity. Patients were encouraged to complete the questionnaire, put it into a return envelope and post it before leaving the surgery.

In the first semester of the study we distributed the questionnaires to the students on their first day at school; in the last two semesters they were sent to the health centres in advance.

Ethical approval was obtained from the regional ethics committee at Lund University (LU 678-02).

The quantitative data were analysed using the software package SPSS, version 12.0. Only significant differences ($p < 0.05$) between groups are reported. Patients' comments on their perceived role in teaching were analysed using the three sub-themes of Stacy & Spencer (1999) as a template for organizing the data; patients' as facilitators of the development of students' professional skills and attitudes, patients as experts of their condition and patients as exemplars of their condition. The text was computer-coded; segments were sorted, sub-themes were identified and connections were found. Summaries of findings were discussed between the two authors and corroborated (Crabtree & Miller 1999).

## Results

### Students

During the three semesters 222 students were attached to the programme and allocated to the health centres (Figure 1). The students' mean age was 28 years (median 26 years, range 23–46 years) and 115 (52%) were women. One hundred and fifty students (68%) participated in the survey.

One hundred and five students supplied the code lists of patients' age and gender, and 45 did not (Figure 1). The 105 students distributed 473 questionnaires, of which 400 were completed; non-respondents 73 (15%). Another 95 completed questionnaires were returned, distributed by the 45 students

**Box 1. Patient questionnaire.**

Demographic details: Age and gender

**1.** Did you know since before that medical students are trained at the health centre?

☐ Yes ☐ No

**2.** What do you think about training medical students at the health centre?

☐ I think it is a good idea ☐ I do not like it ☐ I am not sure

**3.** Have you previously been examined by a medical student at the health centre?

☐ Yes ☐ No

**4.** How was consent obtained about seeing a medical student today, before you saw your GP?

☐ By the student in the waiting area ☐ By my doctor in the waiting area ☐ By the student and my doctor together in the waiting area
☐ By my doctor in advance ☐ By nurse/receptionist when making my appointment

**5.** How did you feel about consulting with a student before seeing your doctor today?

Possible responses: please see **Table 1!**

**6.** Were there subjects you did not mention to your doctor because a student was present?

☐ Yes, there were subjects I did not mention ☐ No, I could tell my doctor everything I had planned

**7.** Would you rather have seen your doctor on your own today?

☐ Yes ☐ No

**8.** In future, would you be prepared to consult with a student, before seeing your doctor?

☐ Yes ☐ Sometimes, depending on the nature of my complaints ☐ No

**9.** If you had an appointment for an emotional problem, would you have talked to a student before seeing your doctor?

☐ Yes definitely ☐ Yes, possibly, but it would depend on the student ☐ No

**10.** If you had an appointment for a pelvic or rectal problem, would you let a student examine you?

☐ Yes definitely ☐ Yes, but only if it was a female student ☐ Yes, but only if it was a male student ☐ No

**11.** Do you think there is something you could teach the students? If so, try to express clearly what they could learn from you!

who did not fill in the code lists. The non-response rate here was unknown.

## Responding patients

The mean age of all respondents was 55 years (median 58 years; range 18–89 years); 62% were female. They were divided into three age groups: young (18–44 years; $n = 149$; 30%) middle-aged (45–64 years; $n = 160$; 32%) and old (≥65 years; $n = 186$; 38%).

The 95 unlisted respondents did not differ significantly from the main group in age, gender or responses in the survey. However, we noted a significant response bias between the 73 listed non-respondents and the 400 listed respondents. The non-respondent group was younger (mean age 48 years vs 54 years) and consisted to a greater extent of males (53% vs. 38%).

The non-response rate to individual questions was very low (0–2%), except for the question concerning the patients' wish to have rather seen their doctor alone (4%).

## Medical students at the health centre

Two hundred and twenty-five patients (46%) knew that medical students were training at the health centre, and 154 patients (31%) reported having previously been examined by a student there. The vast majority (469 patients; 95%) thought medical students' training at the health centre was a good idea, while 25 patients did not know and one patient was negative.

## Obtaining informed consent

The most common method used to obtain consent for a consultation with a student was information supplied in the waiting area, either by the student alone (226 patients; 46%), or by the GP and the student together (181 patients; 37%). Sixty-two patients (13%) were approached by the GP alone in the waiting area, and only 21 patients (4%) were informed in advance.

## Patients' feelings about the consultation

A clear majority, 453 patients (92%), were satisfied to consult with a student before seeing their GP (Table 1). Of the remaining 42 patients, 5 were dissatisfied and 37 uncertain. Most respondents based their statement on several reasons in the tick boxes and some also supplied other reasons. For a positive statement these other reasons were dominated by the student's good communication skills or professional behaviour. For a negative statement the prevailing other reason was the feeling of insecurity, as the patient thought the student was left with too much responsibility.

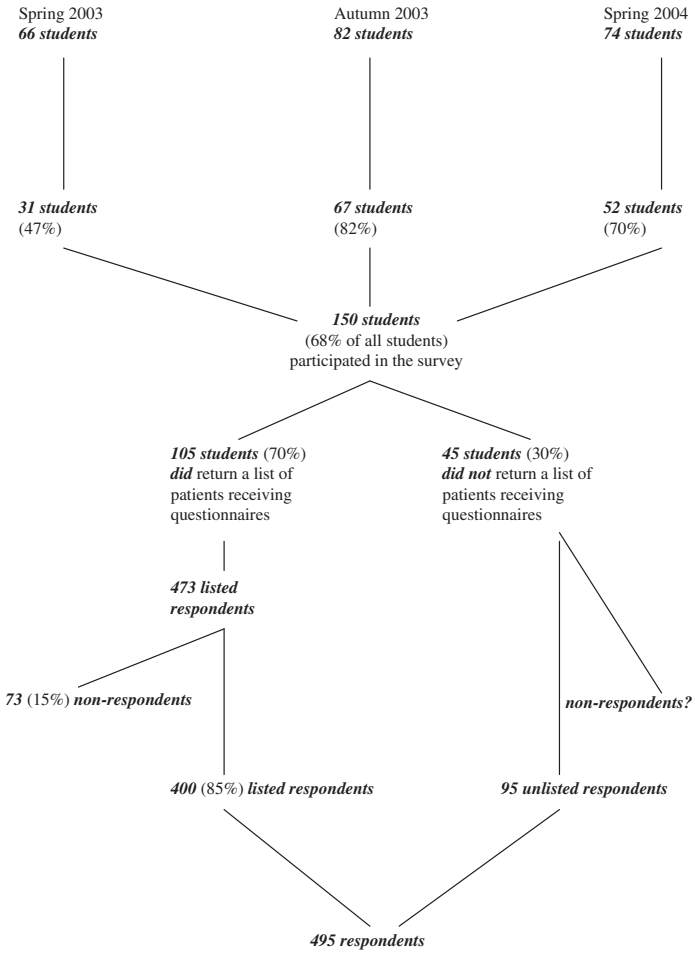


**Figure 1.** Flow chart of students and respondents.

**Table 1.** Patients' feelings about the consultation.

*'How did you feel about consulting with a student before seeing your doctor today?'*

| | Number | | | |
|---|---|---|---|---|
| | Satisfied $N=453$ | Uncertain $N=37$ | Dissatisfied $N=5$ | Total $N=495$ |
| **I liked it, because:** | | | | |
| • I had a very thorough examination | 273 | 9 | | 282 |
| • I was able to help in the training of medical students | 263 | 18 | | 281 |
| • I had a second opinion on my problem | 237 | 16 | | 253 |
| • I had more time to talk about my problems | 206 | 10 | | 216 |
| Other reasons | 47 | 1 | | 48 |
| **I did not like it, because:** | | | | |
| • I found it difficult to talk about personal problems | | 11 | 2 | 13 |
| • The student seemed so uncertain | | 10 | 2 | 12 |
| • The consultation took too much time | | 10 | 1 | 11 |
| • The doctor concentrated more on the student than on me | | 5 | 1 | 6 |
| Other reasons | | 9 | 3 | 12 |

Almost all patients (469; 97%) thought they could say what they wanted to say to their doctor, even if they also consulted with a student. However, 15 patients (3%) left without saying what they wanted to say. Eleven patients did not respond to this question.

Thirty-one patients (7%) would rather have seen their doctor on their own that day. Non-respondents here were 22 patients.

## Interest in future participation

Two thirds of the patients (312; 64%) were unconditionally prepared to consult with a student again, before seeing their GP. The rest – except for 3 patients, who would refuse – would be willing to do it sometimes, depending on the nature of their complaints.

The 226 patients (46%) who had been informed and asked for consent by a student alone were significantly more positive about future participation than patients informed otherwise (69% vs 58%; $\chi^2 = 5.5$; $p = 0.02$).

## Sensitive and intimate complaints

Only half of all patients, 51%, were unconditionally positive about talking to a student about an emotional problem before seeing their GP, and quite a few (39%) thought it depended on the student (Table 2). No significant difference between genders was found, but young females were significantly more reluctant than older females.

Of all patients, 59% would without reservations, accept letting a student perform an internal examination, gynaecological or rectal (Table 3). Highly significant differences between genders were established here; females being more negative or demanding a student of the same gender. However, also young males were significantly more cautious, compared to older males.

There was a significant difference between the 154 patients (31%) who had previously been examined by a student at the health centre and those who had not. The former would unconditionally accept a student performing an internal examination in 65%, while the latter only in 54% ($\chi^2 = 5.2$; $p = 0.02$).

## Patients as teachers

One hundred and ten patients (22%) were of the opinion that there was something they could teach the students and presented their ideas. Gender distribution was the same as for all respondents, but the middle-aged group dominated, 42%. An analysis of patients' ideas using the template previously described verified the three themes. An additional fourth theme emerged (Box 2).

Patients as facilitators of the development of students' professional skills and attitudes was the overall

**Table 2.** Patients' views about student involvement in emotional problems.

*'If you had an appointment for an emotional problem – would you have talked to a student before seeing your doctor?'*

| | Males (%) | | | | Females (%) | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | 18–44 years $N = 54$ | 45–64 years $N = 61$ | 65–years $N = 74$ | Total $N = 189$ | 18–44 Years $N = 93$ | 45–64 years $N = 96$ | 65–years $N = 109$ | Total $N = 298$ | $N = 487$ |
| Yes, definitely | 56 | 54 | 61 | 57 | 35 | 44 | 61 | 47 | 51 |
| Yes, possibly, but it would depend on the student | 37 | 36 | 32 | 35 | 52 | 42 | 33 | 42 | 39 |
| No | 7 | 10 | 7 | 8 | 13 | 14 | 6 | 11 | 10 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Between gender: $\chi^2 = 4.7$; $p = 0.10$; Between male age groups: $\chi^2 = 0.95$; $p = 0.92$; Between female age groups: $\chi^2 = 14.7$; $p = 0.005$.

**Table 3.** Patients' views about student involvement in intimate examinations.

*'If you have an appointment for a pelvic or rectal problem – would you let a student examine you?'*

| | Males (%) | | | | Females (%) | | | | Total |
|---|---|---|---|---|---|---|---|---|---|
| | 18–44 years $N = 54$ | 45–64 years $N = 61$ | 65–years $N = 72$ | Total $N = 187$ | 18–44 Years $N = 93$ | 45–64 years $N = 97$ | 65–years $N = 106$ | Total $N = 296$ | $N = 483$ |
| Yes, definitely | 63 | 87 | 74 | 75 | 37 | 54 | 57 | 49 | 59 |
| Yes, but only if it had been a female studen | 9 | 0 | 0 | 3 | 37 | 24 | 26 | 29 | 19 |
| Yes, but only if it had been a male studen | 9 | 7 | 12 | 9 | 0 | 1 | 0 | 1 | 4 |
| No | 19 | 6 | 14 | 13 | 26 | 14 | 17 | 21 | 18 |
| Total | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 | 100 |

Between gender: $\chi^2 = 84.6$; $p < 0.001$; Between male age groups: $\chi^2 = 19.1$; $p = 0.004$; Between female age groups: $\chi^2 = 12.0$; $p = 0.06$.

**Box 2.** Quotations from patients about their perceived teaching role.

**Patients as facilitators of the development of students' professional skills and attitude (55 comments)**

- Listen to the patients – we are the ones who best know our body and our symptoms (woman, aged 46)
- Be natural, and you will have the best contact with the patient (man, aged 56)
- I can point out to the students if they are heavy-handed in physical examinations (woman, aged 32)

**Patients as experts in their condition (24 comments)**

- As I have been through several difficult diseases and operations, I informed the student about my experiences as a patient and about how I manage my day (woman, aged 82)
- The student knew nothing about polio or post-polio syndrome, so I think training at a health centre is important (woman, aged 66)
- I told the student about a new treatment I have tried for pain relief (woman, aged 65)

**Patients as exemplars of their condition (22 comments)**

- It is important that they see many patients with varying problems (man, aged 60)
- A chance to see that a disease presents differently in different persons (man, aged 46)
- Good for the student to get as wide experience as possible of different problems (woman, aged 60)

**Patients as part of a real context (9 comments)**

- Patient contact during the students' practice is a good complement to their theoretical knowledge (man, aged 66)
- A medical student needs practice and not only theoretical knowledge. It is important for them to see patients (woman, aged 66)
- They need to get out into professional life and get some real experience (man, aged 37)

prevailing theme. It also involved giving advice and feedback to students. Respondents focussed chiefly on the student's communication skills, mainly on the ability to listen closely, sensitively and respectfully to the patient's history. The importance of the student showing consideration and interest in the patient's problems was pointed out. Some patients also advised their student to relax in the communication with patients. Others suggested feedback on the student's physical examination technique.

Patients as experts on their condition was also a common theme. It included both patients' experiences and feelings about complex conditions, as well as teaching about specified diseases and problems, such as chronic pain, diabetes, post-polio and old age. Some patients wanted to inform about new treatments, others about long-term effects of medication.

Patients as exemplars of their condition was a more 'passive' teaching concept – being another memorable case to incorporate into the student's experience. These respondents emphasized the importance of the students' meeting a lot of patients, as the variation in age, gender and personalities can influence the presentation of a disease.

Patients as part of a real context was a new theme, where the respondents saw themselves as representing 'real problems' in students' learning. The practice at the health centre was recognized as an essential complement to theory learned at medical school, and could motivate the students through its relevance.

## Discussion

### Main findings

The vast majority of patients were satisfied with their consultations, and almost all were prepared to consult with a student again; in a third of cases, however, this was conditional on the nature of their presenting complaints. The results indicated that especially younger women had problems in seeing students for emotional problems, and that not only women of all ages, but also young men, were reluctant to let a student perform an intimate examination. More than one hundred patients had put their conception of their own teaching role into words. Facilitating the student's development of professional skills and appropriate attitudes was the predominant theme.

### Strengths and limitations of the study

The strength of our study is the large sample size, the good response rate and the participation of as many as 50 different health centres. The study also contributes to further insight into two areas, where earlier research has been sparse: patients' views on consulting with a student alone, before seeing their GP (Bentham et al. 1999), and patients' perception of their teaching role (Stacy & Spencer 1999).

The limitations are possible biases in the selection of participating students and patients. Sixty-eight percent of the students took part in the survey voluntarily and anonymously, and we do not know whether these students differed from the rest. A clear majority of students participated during the last two semesters, but during the first semester participation was lower, probably due to insufficient routines for distribution of questionnaires (Figure 1). However, there was no significant difference in the age and gender of the student class of the first semester, compared to the rest of students; neither did the responding patients differ significantly from the main group in age, gender or responses in the survey.

The 95 questionnaires that were returned without the accompanying code list made it impossible to calculate

the non-response rate for all the distributed questionnaires. These unlisted respondents were however included in the study, as they did not differ significantly from the main group in age, gender or responses in the survey.

The distribution of the questionnaires to the patients by the students themselves could of course bias the patients towards more positive responses in the questionnaires. However, there was no other reliable way to organize the distribution in 50 different health centres. Others have also used this method of distribution, resulting in a high response rate (Cooke et al. 1996; Bentham et al. 1999).

The patients the students cared for were randomly selected from the common list with their tutor. However, sometimes the GP tutors probably selected patients whom they believed could offer special learning opportunities for their students. These patients were likely to be more satisfied with students' participation in their care.

### Comparison with existing literature

The results of this study support the smaller study by Bentham et al. (1999) about patients being even more positive to participation in student training, if students undertake consultations alone, before their GP is involved. For patients in our study personal gain seemed as important as altruism as a reason for being satisfied. In other studies altruism was reported to be the main reason (Chipp et al. 2004; Salisbury et al. 2004). Maybe some patients regarded these experienced students more as young doctors, and accordingly appreciated benefits such as 'more time to talk', 'a thorough examination' and 'a second opinion'.

Our results related to the issue of informed consent were surprising, compared to the results from earlier studies (Howe & Anderson 2003; Benson et al. 2005). Almost half of the patients were simply asked for consent in the waiting area by the student alone. These patients were significantly more positive about consulting with a student again, before seeing their GP, compared to patients informed and asked otherwise. Our findings support the statement by Waterbury (2001) that patients have to see the student to be able to make a decision whether to accept or refuse. These experienced students were probably advantaged also here, compared to junior students.

However, even with experienced students, there are limitations to patients' participation. Emotional problems have been shown to be a barrier (O'Flynn et al. 1997, 1999), and these facts were confirmed in our study. The involvement of students in intimate examinations can cause reluctance, especially among female patients (O'Flynn et al. 1997, 1999; Bentham et al. 1999; Benson et al. 2005). In our survey one fifth of the women refused participation and almost another third requested a female student. Preference for a female student in gynaecological examinations is known from gynaecological care (O'Flynn & Rymer, 2002; Mavis et al. 2006). Older women are more likely to allow both male and female students. In our study, however, we did not quite reach significance between female age groups. Not only females but also young male patients in our survey were reluctant to let students participate in intimate examinations. Prior experience of medical students has proved to be a strong positive predictor of patients' willingness to participate in intimate examinations performed by students (Mavis et al. 2006). These data were supported by our study.

To allow patients time alone with their doctor at the end of the consultation can increase their acceptance of students (O'Flynn et al. 1999; Hajioff & Birchall 1999). In our survey 31 patients (7%) preferred to have seen their doctor on their own that day. However, this question had the greatest number of non-responders, which we understand as a proof of patients' ambivalence.

Another approach to improve patients' experience of students is to work in partnership with patients with discussion between the doctor, the student and the patient during the consultation (Williamson 1997). Patients might perceive primary care, compared to hospital care, as the patients' territory with a more intimate, on-going relationship with their GP (Benson et al. 2005). They bring their own expertise into the consultation, as shown by many patients in our study, who perceived their teaching role as 'facilitators in students' development of professional skills' or as 'experts on their condition'.

In the more 'passive' teaching concepts of 'patients as exemplars of their condition' and 'patients as part of a real context', the patients, maybe unknowingly, touched on the issue of learning clinical reasoning in a non-analytical (pattern recognition) approach. Collecting a mental database of many different cases in diverse contexts is most essential to students' developing non-analytical clinical reasoning (Spencer et al. 2000; Eva 2005). It has also been proved that 'mixed practice', where students see miscellaneous cases of multiple categories, is pedagogically optimal (Eva 2005). This is of course highly applicable to general practice.

The GP tutor has a key role in maximizing patients' satisfaction when patients participate in teaching. However, GPs' concern about teaching activities leading to impairment of their relation to the patient and an adverse effect on patient care has been recognized (Gray & Fine 1997; Haffling et al. 2001; O'Flynn et al. 1999). The balance between patients' and students' rights and needs might sometimes be difficult to uphold. The issue of increasing GPs' skills in communication with patients in learning situations with students has been raised (Williamson 1997; Howe & Anderson 2003). The trustful and personal doctor-patient relationship in general practice could, instead of being a cause of concern, be used by GPs to enhance their patients' teaching role in medical student encounters.

## Conclusion

Patients in general practice are mainly satisfied with experienced students' consultations, before seeing their GP. Informed consent could be asked for by students alone, a potentially important finding that has to be verified in further research. The benefits for patients include learning more about their problem, having their case thoroughly reviewed, and feelings of altruism. Emotional problems or intimate examinations can sometimes be barriers. Patients' satisfaction can be further improved by offering the opportunity to talk to their doctor alone, if needed.

Even unprepared patients see themselves as contributors to teaching, chiefly as facilitators of the development of students' professional skills. The benefits for patients can certainly be further increased by strengthening their teacher role, respecting their views and valuing their feedback. Patients' capacity as teachers is probably under-utilized, in our belief. Ordinary patients can probably be used for facilitation and feedback on students' professional skills more than we generally ask them for. Some also have a role as experts on their condition. Further research with a qualitative approach, to obtain a deeper understanding of patients' views on different models of involvement in teaching and to interpret some patients' reluctance to participation, would be valuable.

## Notes on contributors

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