Mentoring in Medicine:

Forms, Concepts and Experiences

A Report on Mentoring Programs at the University Hospital and in the Medical Faculty of the University of Zurich, 2002 – 2011

Prof. Dr. med. Barbara Buddeberg-Fischer
with the collaboration of Dr. phil. Martina Stamm

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Home Affairs FDHA
State Secretariat for Education and Research SER

Das Staatssekretariat für Bildung und Forschung veröffentlicht in seiner „Schriftenreihe SBF“ konzeptionelle Arbeiten, Forschungsergebnisse und Berichte zu aktuellen Themen in den Bereichen Bildung und Forschung, die damit einem breiteren Publikum zugänglich gemacht und zur Diskussion gestellt werden sollen. Die präsentierten Analysen geben nicht notwendigerweise die Meinung des Staatssekretariats für Bildung und Forschung wieder.

ISSN: 1424-3342

Cover: Jean (Hans) Arp. Two Heads (1929)

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Home Affairs FDHA
State Secretariat for Education and Research SER
Universities

Hallwylstrasse 4
CH-3003 Bern
T +41 31 322 96 62
F +41 31 322 78 54
info@sbf.admin.ch
www.sbf.admin.ch

Mentoring in Medicine:

Forms, Concepts and Experiences

A Report on Mentoring Programs at the University Hospital and in the Medical Faculty of the University of Zurich, 2002 – 2011

Prof. Dr. med. Barbara Buddeberg-Fischer
with the collaboration of Dr. phil. Martina Stamm

Contents

Foreword

The report that lies before you documents the work done by Prof. Barbara Buddeberg-Fischer at the University Hospital and the Medical Faculty of the University of Zurich from 2002 to 2011. It paints a distinct picture of the development of mentoring in university medicine from its beginnings in 2002, through the setting up, differentiation and expansion of the programs up to 2011.

By now, mentoring has stood the test of time in the scientific system as an tool for junior staff support and human resources development.

Even if the proportion of women chairs in medicine is – at 10 per cent – still very modest, this mentoring report can serve as a guideline when it comes to enhancing junior staff development and increasing the percentage of women in leadership positions in university hospitals and with full professorships in the medical faculty.

Every academic culture has and cherishes its peculiarities, and career paths are also affected by these. A clinical assistant professorship requires a different academic profile than, for example, a full professorship in the social sciences.

With the mentoring program for female and male physicians that Prof. Barbara Buddeberg-Fischer has with such dedication set up and expanded over the last ten years in university medicine – for several years now, there has also been mentoring for medical students – a career-advancement model was developed that matched the specialist requirements of medicine.

In their report, the authors have impressively concluded that not only mentees but mentors can benefit from the mentoring process:

Mentoring helps our young colleagues develop their career plans strategically and to work purposefully towards achieving these plans. Mentoring also conveys the feeling of feasibility and equips academics with suitable skills and courses of action that are invaluable companions on one's career path. Institutionalized mentoring renders career support transparent and increases the pool of qualified junior academics.

The ongoing support provided by mentors to a mentee's career planning encourages mentors to reflect on their own careers. Structured mentoring establishes a professional distance that enables advice – including that of a personal nature – to be given.

Our sincere thanks to Prof. Barbara Buddeberg-Fischer for the work she has done. We wish her all the best for the years to come.

Prof. Gregor Zünd, Director of Research and Education, University Hospital Zurich

Prof. Klaus Grätz, Dean of the Medical Faculty of the University of Zurich

Zurich, June 2012

1 Summary

1.1 Initial Situation

In the last few decades, medicine in the West has changed from a predominantly male profession to a woman's career. Today, about two-thirds of first-year students in human medicine are women, and the percentage of women is also higher among residents in postgraduate training. In senior positions such as heads of departments, clinic directors and full professors, however, women are still hardly to be found. Nowadays, women physicians take advantage of postgraduate training opportunities, and aspire to an occupation even after they have started a family, but their still largely traditional notions concerning their roles as mothers prevent them to an extent from planning their medium-to-longer-term professional careers in good time. These internal barriers are reinforced by external obstacles: social conceptions of gender roles, which are characterized by sexual stereotypes, the high demands of postgraduate education, and rigid regulations and rituals for steps towards academic qualifications such as an *Habilitation* or full professorship. Added to this is the inflexible attitude of many institute and clinic directors towards part-time versus full-time employment, which is still geared towards male professional careers. The upshot is that many female physicians regard a management position as not worth striving for. The manifold clinical, research and administrative demands made by a senior position, combined with personnel management and possibly also teaching commitments, are seen by them as incompatible with a healthy work/life balance.

Of women physicians up to 40 years old, forty per cent live in a dual-doctor relationship, and the same percentage have a partner with another academic degree. With male doctors, thirty per cent of their partners are doctors, and the same percentage are academics in other fields. The majority of the younger medics live as dual-career couples. Despite possessing the same level of qualification at the outset of their professional career, a shearing phenomenon can be observed no later than after completion of training in a medical specialty. After starting a family, female physicians usually work part-time, thereby slowing their career progress, while male physicians with a family (can) continue to pursue their careers without limitations. Various studies show that female doctors – especially in hierarchically structured specialist disciplines such as surgery or other interventional fields – experience less career support, and benefit less often from support measures. In 2001, the University Hospital Zurich's hospital management saw the need to take action by introducing junior staff development measures, particularly with a view to enabling qualified female doctors (with families) to be promoted to senior positions. In 2002, a working party headed by Barbara Buddeberg-Fischer developed ideas and recommendations for the setting-up and implementation of mentoring programs.

These mentoring programs were intended *inter alia* to support female doctors in their careers, but were open to both female **and** male physicians for two reasons. Clinical and research activity entails working in teams which are usually mixed-gender in composition. It therefore makes sense to support women in learning how to assert and establish themselves in a professional network of both women and men. The second reason was that a support instrument designed solely for women would not be taken seriously by men, and might even lead to the further marginalization of women in senior positions.

Since 2002, the mentoring program at the University Hospital Zurich has been developed in several phases. The Federal Equal Opportunities Program which co-financed the mentoring program from 2004-2011 has contributed substantially to the institutionalization and recognition of mentoring in a university context. Mentoring was also recognized as an important building-block of support for junior academic staff of both sexes by the Medical Faculty of the University of Zurich. Since 2008, the Dean's Office of the Medical Faculty has formed the third pillar supporting the mentoring program for medical students, resident physicians, and junior academic staff.

1.2 Mentoring Programs – Forms, Target Groups and Outcomes

1.2.1 Mentoring Programs for Female and Male Physicians in the Postgraduate Training Phase

After about two years' experience practicing medicine – either within the framework of further clinical training or of a research activity – a certain routine and confidence in one's ability to cope with the everyday demands of

the profession have taken root in young doctors of both sexes. This is a good time for individuals to flesh out career plans, bearing in mind their career goals and their personal life plan, and to initiate further steps in their careers. Mentoring programs can offer valuable support at this stage.

From 2002-2007, the pilot and set-up phase, 134 doctors of both sexes undergoing further specialist training took part in University Hospital Zurich mentoring programs. For these mentees, **group mentoring** proved a success. Three to six male and female doctors working in similar specialist areas constituted a peer group. It proved advantageous if the members of the group already knew one other before the start of the program, and if a certain group coherence was already present. This meant that neither organizing the mentoring meetings or the subject of confidentiality in the group was a problem. The peers approached senior consultants (*Oberärzte*) or chief consultants (*Leitende Ärzte*)[1] whom they trusted to be their mentors. It was important that the relationship between mentors and mentees should not be one of superiors to subordinates. A skills assessment and critical reflection on the participants' professional and personal situation via a questionnaire at the outset of the work in the mentoring groups was felt to be helpful. Both the advice from the mentor as well as the personal and professional exchange and mutual encouragement among the peers was valued. A further favorable effect was that the solidarity experienced in the group mentoring had a positive impact on the atmosphere in the institutes or clinics in which the mentees worked.

Young female physicians in particular benefited from the mentoring. They were encouraged to give some timely thought to their medium-term career plans, to discuss these proactively with their respective bosses, and not to let themselves be deterred by barriers. Having female mentors as role models was important for female physicians.

Traditionally, when it comes to the provision of support to junior staff, a boss decides which younger colleagues are worthy of advancement. Not infrequently, female doctors are "forgotten" here, because they communicate their career intentions less clearly. The mentoring experience encouraged even reticent individuals to plan their careers proactively and to ask their bosses "bottom-up" for support.

The mentoring programs were particularly appreciated in large clinics and institutes. In these institutions, contact between clinic directors and residents is more distant and less personal. Thanks to contact with mentors and discussions in the peer group, the residents were able to prepare their career questions, and in the course of this process develop greater clarity as to their own career goals. Subsequently, they were able to discuss their career plans in a more concrete and goal-oriented manner with the head of the clinic or institute in question, and come to an arrangement with them.

1.2.2 Mentoring-Programme für akademische Nachwuchskräfte

In an advanced stage of a career, particularly if an academic career is being sought, **one-to-one mentoring** is ideal. In this case, the mentor should be an established scientist, have him/herself successfully completed an academic degree, and be well connected in his/her specialist field. If the mentee needs strategic advice for his/her further career steps, the mentor may also come from another field. If technical aspects – especially networking in the scientific community – are of prime importance, then the mentor should be rooted in a similar research field to the mentee. In some cases, after a mentoring relationship has continued for a certain length of time, it makes sense for the mentee to look for a new mentor which whom s/he can discuss further-reaching aspects of his/her career.

---

[1] The terms used to describe the various qualification and hierarchy levels in medicine vary from one country to another, and even within the English-speaking world. Listed below are the equivalents used in this report:

Assistenzarzt = resident
Oberarzt = senior consultant
Leitender Arzt = chief consultant
Chefarzt = clinic director / head of department

Habilitationsschrift = habilitation thesis
Habilitation (*Venia Legendi*) = habilitation
Privatdozent = an academic title used in the German-speaking world. It refers to an academic with a PhD and a successful habilitation who is given permission to teach at the university level

Mentoring is an important addition to career support from the director of an institute or clinic. Often, in the phase before the *Habilitation* is awarded, tensions can arise between a senior faculty member and a junior staff if the former sets unnecessarily high requirements for the submission of the latter's thesis and withdraws time or material resources. In many cases, more or less conscious rivalries lie behind this. Particularly for female physicians, who by this stage may have already started a family, objective advice from a mentor which is not guided by the interests of an institute or clinic can be invaluable. Having a baby should not lead to a young academic experiencing career obstacles and giving up her career plans.

The evaluation of the faculty mentoring program (2008-2011) in which 55 mentees from the University Hospital and other university institutes and clinics took part, the majority of them in one-to-one mentoring, showed that a written agreement on objectives between mentee and mentor at the outset of the mentoring process was felt by both sides to be helpful, since it implied a commitment to working together. The (male and female) mentors were members of the Medical Faculty of the University of Zurich, but also came from the Universities of Basel and Bern. The commitment of these mentors to their mentees' professional and personal development was rated as very high by the mentees. Over the course of the mentoring relationship, the mentees were able to implement positive career steps in terms of publications, acquisition of third-party funding, research awards, stays abroad, and completion of the habilitation thesis. These success parameters cannot be attributed to mentoring alone, however. Support within the institute or clinic in question is a basic requirement for making mentoring truly effective. The mentors also experienced their mentoring role as enriching, and considered their outsider's perspective – free as it was of institutional dependencies – to be an important addition to the career advice received by their mentees.

1.2.3 Mentoring Programs for Medical Students

The positive benefits of the mentoring programs experienced by male and female physicians in the postgraduate phase of their careers were an impetus to develop a mentoring program specifically for (undergraduate) medical students at the University of Zurich. In a first phase, the program was geared to interested individuals in the third year of their studies. Heads of departments, chief consultants and senior consultants from all hierarchy levels from clinics, research and practice made themselves available as mentors. The aim of the MedStudMent Project was to advise the mentees in the planning of their elective year, and to afford them an insight into everyday clinical routine as well as into different career paths and specialties. In addition, it was hoped that the mentors would serve as role models.

The evaluation of the 106 one-to-one mentorships set up in 2010 revealed great satisfaction on both sides in the majority of cases. Not everyone had been aware, however, that entering into a mentoring relationship would entail mutual commitment and responsibility. Several mentoring relationships "fizzled out" because the mentee or mentor made too little effort to maintain the relationship. At this stage of education it appears to be a good idea to initially limit the mentoring of students to one year. If the mutual benefit is high and the mentor-mentee relationship develops favorably, the relationship will continue in any case. Several comments indicated that longer-lasting relationships were particularly likely to arise between mentors in private practice and mentees who were considering a career in practice. Gaining an insight into everyday practice while still a student is an invaluable experience.

1.3 Conclusions and Recommendations for Mentoring Programs in Medicine

Mentoring is intended as a supplement to the junior-staff support provided in institutes and clinics, and should be rooted in the institutions as an instrument of personal development. The aim of mentoring is to support male and female doctors in making optimal use of their individual professional skills and incorporating these into their personal life plans. In this way, mentoring makes a contribution to the use of highly qualified human resources.

Mentoring does not absolve young female and male physicians of the responsibility of goal-oriented career planning. Mentoring should provide junior staff with important career-relevant information, encourage them to take new steps, and allow them to benefit from well-intentioned feedback from their mentors. This in turn enables

mentees to make independent decisions on their future careers. Mentoring is a reciprocal relationship in which not only the mentee but also the mentor benefits by gaining insight into the issues of importance for younger colleagues and being encouraged to reflect upon his own professional and personal development. The motivation to mentor junior employees is often based on one's own positive mentoring experiences, or on the recognition that these experiences were missing from one's own career. Mentors should receive guidance on how to carry out their role.

The implementation of mentoring programs occurs as a process on an institutional and individual level that extends over a fairly long period of time until it becomes institutionalized, and that requires continuous adaptation to the needs of the participants. Program directors should stay in regular contact with both mentors and mentees, continuously evaluate the program in terms of its effectiveness, and provide fresh stimulus for further development.

In the ideal case scenario, mentoring is a "customized instrument" for junior-staff development which must be tailored to different circumstances depending upon factors such as discipline and specialty, undergraduate or postgraduate status, intended career goal, and the institution in question. Mentoring is more or less intensive depending on educational phase, and particularly helpful at times of career transition. Early experiences with mentoring lead junior staff to actively and deliberately seek mentors in later phases of their career as well.

Mentoring programs should be accompanied by research projects in which individual, institutional and social determinants of the career development of female and male physicians are investigated. The interaction between the mentoring programs and the SwissMedCareer Study carried out in parallel between 2001-2011 under the direction of Barbara Buddeberg-Fischer proved to be extremely fruitful. Discoveries and findings from the SwissMedCareer Study provided important input for the mentoring programs. Likewise, numerous pointers for the interpretation and discussion of the research results were gleaned from the mentoring programs.

Tips for reading this report

At the end of each subchapter, the most important experiences and findings are summarized in a box as "Key Messages".

Further publications of the Zurich Research Group and Working Party on mentoring in medicine and career paths of physicians of both sexes:

Buddeberg-Fischer B, Herta KD: Formal mentoring programs for medical students and doctors –a review of the Medline literature. Med Teach 2006, 28(3):248-257 (cf. Appendix 12.1, from p. 85)

Frei E, Stamm M, Buddeberg-Fischer B: Mentoring programs for medical students - a review of the PubMed literature 2000–2008. BMC Med Educ 2010, 10:32 (cf. Appendix 12.4, from p. 85)

Stamm M, Buddeberg-Fischer B: The impact of mentoring during postgraduate training on doctors' career success. Med Educ 2011, 45: 488-496.

Buddeberg-Fischer B, Stamm M, Buddeberg C, Bauer G, Hämmig O, Knecht M, Klaghofer R: The impact of gender and parenthood on physicians' careers – professional and personal situation seven years after graduation. BMC Health Serv Res 2010, 10:40

Buddeberg-Fischer B, Stamm M, Klaghofer R: Career paths in physicians' postgraduate training – an eight-year follow-up study. Swiss Med Wkly 2010, 140(w13056).

2 Introduction[2]

2.1 Overview

The report you have before you aims to describe the process of development of mentoring programs at the University Hospital and the Medical Faculty of the University of Zurich between the years 2002-2011.

Mentoring is first defined in comparison to coaching and tutoring, and different forms of mentoring are described. Special features of the mentoring program in medicine as compared to other scientific disciplines are presented in detail (Chapter 2). In an overview of the literature (Chapter 3), relevant studies on mentoring programs for medical students/postgraduates and mentoring programs for female physicians are summarized. Characteristics of a successful mentoring relationship and the effects of mentoring on career success are highlighted.

Chapter 4 describes the initial situation for the development of the mentoring programs at the University Hospital and at the Medical Faculty of the University of Zurich. The analysis of junior-staff development at the University Hospital from a gender perspective in 2001 showed that female physicians were discriminated against, and led to the mandate of the hospital management to ensure equal career opportunities through mentoring programs. Published in 2000, the *Bundesprogramm Chancengleichheit* (Swiss Federal Equal Opportunities Program) was an important element in institutionalizing mentoring programs in the universities. From 2004-2011, the mentoring programs set up at the Medical Faculty of the University of Zurich also benefited from co-financing by the Federal Program.

Chapter 5 describes the various phases of the mentoring program for female and male physicians: the Pilot Phase (2002) and Setup Phase (2003-2007) for residents in postgraduate training at the University Hospital, as well as the faculty mentoring program for junior academic staff in medicine (2008-2011). Two portraits follow – one of a mentee, one of a mentor.

Chapter 6 comprises the description of a mentoring program for medical students.

Some findings of the prospective study on the career development of young female and male physicians (Swiss-MedCareer Study, 2001-2011) are reported in Chapter 7. These point to gender-relevant differences in career support to the detriment of female doctors, particularly with respect to mentoring.

Chapter 8 focuses on the national and international impact of the Zurich mentoring program at other universities.

Chapter 9 formulates and describes conclusions and recommendations for mentoring programs in human medicine.

2.2 What is Mentoring?

The term “mentoring” has its roots in Greek mythology. When Odysseus left for the Trojan War, he entrusted his friend Mentor with the task of raising his son Telemachos in his absence and of furthering the boy’s development. This type of relationship constellation between a professionally experienced person (the mentor) who has an interest in supporting a less-experienced person (mentee) in his professional development, also characterizes a mentoring relationship. Mentoring as an instrument of junior-staff development, personal development and knowledge transfer was developed in large industrial concerns in the United States in the 1970s with a view to supporting young executives. From 1990 mentoring also found its way into medicine, initially for the most part in the caring professions. Formal mentoring programs for medical students and female and male physicians were only developed in the late 1990s. Since then, the term “mentoring” has been used in a wide variety of contexts, so that the boundary between mentoring and coaching or tutoring is often fuzzy.

There are many **definitions of mentoring**. Essentially, mentoring can be defined as when an experienced professional (the mentor) – who usually occupies a higher position in the hierarchy and who is acknowledged and

[2] In this report, the masculine singular pronouns “he”, “him” and “his” are in some instances used to represent an individual of non-specific gender, in order to avoid awkward and long-winded constructions such as “he/she”, “him/her” and “his/her”. Where a particular sex is intended, the terms “male” or “female” are used as appropriate. The phrases “of both sexes” or “female and male”/”male and female” are used interchangeably to emphasize that both sexes are meant.

firmly rooted in his field of expertise – passes on his experience to a younger and professionally less-experienced person (the mentee). The aim of the mentoring relationship is to **support the professional and personal development of the mentee.** In formal terms, mentoring involves support outside of the institutional superior-subordinate relationship. In terms of content, mentoring encompasses the following aspects: giving practical, concrete advice; introducing the mentee to existing networks; imparting informal rules to the mentee; and providing long-term support for the latter's career. In the English-language literature, the definition of the Standing Committee on Postgraduate Medical and Dental Education (SCOPME) is usually employed [1][3]: "A process whereby an experienced, highly regarded, empathetic person (the mentor) guides another (usually younger) individual (the mentee) in the development and re-examination of their own ideas, learning, and personal and professional development. The mentor, who often (but not necessarily) works in the same organization or field as the mentee, achieves this by listening or talking in confidence to the mentee." Garmel [2] describes mentoring as a process in which the experience and wisdom of the mentor is used and if need be modified, but also as a process that is supportive and protective. A successful mentor-mentee relationship demands active participation from both partners.

The mentoring relationship can be *informal* or *formal* (see Chap. 2.3), and can be of short duration or persist over a fairly long period of time. The mentoring relationship is a dynamic relationship that develops over time, and which should be non-competitive. The mentor has not usually been specifically trained for his mentorship role, but simply has a head-start in terms of experience and knowledge. His motivation stems from his interest in mentoring, and the satisfaction derived from passing on his experience to younger colleagues.

Key Messages

- Mentoring relationships are characterized by a mentor monitoring the mentee's professional and personal development, encouraging the mentee to take new steps, providing the mentee with important information, supporting the mentee professionally and personally, and providing the mentee with well-intentioned feedback.
- Not only the mentee but the mentor benefits from the mentoring process, as it gives the mentor insight into the issues concerning his young professional colleagues, as well as encouraging him to reflect on his own professional and personal development.

Unlike mentoring, **coaching** focuses on advising an individual or team with a view to helping them **improve and enhance their professional performance**. Within the framework of the coaching process, **circumscribed professional goals are defined and the person is advised as to how he can achieve these goals within a given period of time.** Coaching generally only makes sense from a certain career stage onwards in which either leadership is expected or the individual concerned already occupies a leadership position. The coach has usually undergone a specific training as a coach, and his advice is a type of service for which he is generally paid. In many cases, a coach comes not from a medical-scientific background, but instead has a social-sciences degree and postgraduate training with a specialization in coaching. Coaching is a fixed-term service, and unlike mentoring is not based on a personal relationship between two professionals. Rather, it is a hierarchical type of relationship with a "top-down" structure. The essential thing about the mentoring process, by contrast, is the reciprocity of the relationship, with both mentor and mentee benefiting from the support instrument.

A further instrument of personal development, **counseling** is difficult to differentiate from coaching. Counseling is usually performed by a superior whose task it is to provide structured supervision of an employee's working method. This sort of support and advice will make it easier for the employee to "grow into" new tasks.

Tutoring is also to be distinguished from mentoring. The term "tutor" derives from Latin and means "custodian" or "guardian". In undergraduate and postgraduate medical education, a "tutor" has the task of **teaching students** and **guiding residents, particularly in the initial phase of their postgraduate specialist training** as well as advising them in the case of institutional problems. This type of relationship is often institutionally anchored and cannot be freely chosen; a tutor is assigned to a student or resident in the institution in question.

[3] The numbers in brackets refer to the consecutively numbered publications in the References (from page 76).

2.3 Forms of Mentoring[4]

There are different forms of mentoring and mentoring relationships. The majority of mentoring relationships arise **informally**, with a student or young medic asking an older, experienced professional who usually occupies a senior position for professional and/or personal advice. Sometimes these encounters are brief; sometimes, however, relationships of trust lasting over a longer period of time develop from them. This is particularly the case if the mentor is, for example, acting as the supervisor of their younger colleague's master's or Ph.D. thesis. There is also the reverse case, where an experienced professional takes notice of a younger colleague, whether in lectures or in clinical or academic work, and wishes to encourage the latter in his professional and personal development. Various authors point out that men enter into informal mentoring relationships far more often than women [3-5]. Here, the "old-boy network" obviously plays a role. Among others, two reasons are given for this. Firstly, women frequently do not plan their careers as purposefully as men do, since they anticipate future difficulties in combining career and family. Secondly, women are rather hesitant to approach experienced (male) professional colleagues of higher standing for advice and support. However, bosses also hesitate to offer a young female colleague mentorship, since they don't want to come under suspicion of attempting to get close for personal reasons. To overcome these barriers, formal mentoring programs are important and helpful for women in particular. Informal mentoring has a further drawback. Although it arises more spontaneously, it is often of shorter duration, has no circumscribed objectives, and both mentee and mentor feel less committed to the continuation and cultivation of the relationship.

With **formal mentoring**, we distinguish between traditional one-to-one or dyadic mentoring, multiple senior mentoring, group mentoring, and peer mentoring. As a rule, formal mentoring takes place within the framework of a mentoring program. The program is advertised, there are program directors, and interested young colleagues can apply for a mentorship with a selection process. Mentor-mentee matching is undertaken by the program directors either by lot, according to specific matching criteria such as gender and subject-matter/content factors derived from the initial survey of the interested mentee, or according to the self-selection process of the mentee. Assignment by lot has proven to be largely unsuitable [6]. Even though mentors perform their mentoring function free of charge, mentoring programs require financial, human and spatial resources for program management and organization, meetings and the associated workshops. Moreover, they should receive both moral and professional support from the institution. Formal mentoring programs usually have a specific duration, i.e. this form of mentoring is also generally limited to 1-2 years. However, this does not mean that the relationship between mentor and mentee cannot continue on the basis of personal initiative. In recent years, the evaluation of the effectiveness of mentoring has been an important component of a program.

Depending on the current educational stage of the mentee – undergraduate or postgraduate – one or another type of formal mentoring has proven to be suitable. As various studies show (overview in [7]), mentoring for students often occurs as **group mentoring**. Students often have similar questions with regard to choice of internships, subjects and mode of supervision of master's or dissertation projects, and above all in terms of the planning of their postgraduate training. A mentor who is mentoring a group of 6-8 students can then both give general support and information as well as go into greater detail for individuals.

Dyadic mentoring is the most common form of mentoring within the framework of a **one-to-one relationship**. With this form, the fit between mentor and mentee is particularly important. The further on a mentee is in his career, the more important one-to-one mentoring is, since the questions and needs arising are highly individual. Whereas with group mentoring of students the mentor should be experienced, but not necessarily occupy a high professional position, for a mentee advanced in his or her career, a mentor who already has a large network, a good reputation, and high status in the institution or in their professional world is helpful.

Peer-Mentoring is a further form of mentoring [8-10]. It is gaining ground mostly with mentees who are at a midway point in their careers. Younger colleagues who work in a similar specialty and are pursuing similar career objectives set up a peer group. They formulate goals that they wish to achieve in and with the support of the group, e.g. project management, lecturing and publishing activity, feedback culture, suggestions from colleagues who work in a related but not the same field. Especially in academic fields such as the humanities or law, where individuals do

[4] Henceforth, we will primarily cite papers on mentoring in medicine.

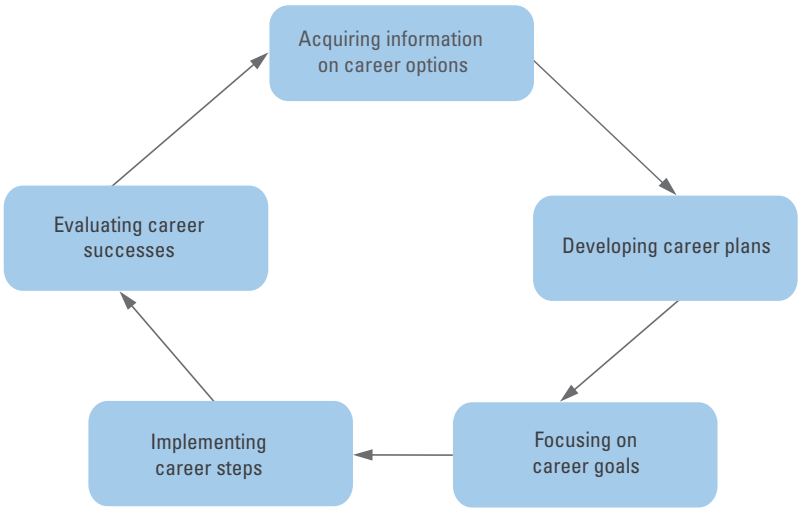
not work as part of a team, the peer group serves as an important meeting-point for sharing one's own ideas and plans, and offers the chance for reflection as well as personal and social support. Most peer groups in an academic context can rely on the advice and support of a group of high-ranking academics.

Some authors [11-13] report a **sequential mentoring setting**: in the first year of the program one-to-one mentoring is established, in the second year the mentee is supervised by several senior mentors, and in the third year the switch to a peer group is envisaged. For highly demanding careers such as those of postgraduate students on an MDPhD program or assistant professorships, this makes sense. Here, however, good coordination between the mentors is essential in order to avoid rivalry for the mentee. The mentee should already have firmly established professional and personal ideas of his own so that he is in a position to weigh up the mentors' suggestions for himself and these suggestions serve to help rather than confuse him in his decision-making process.

2.4 Mentoring as a Career Development Process

Career development is a process that goes through certain circularly intertwined phases. The following phases can be distinguished (Fig. 2.1): Acquiring information on academic and professional career options; Developing career plans; Focusing on career goals; Implementing career steps; Evaluating career successes [6, 14]. The aforementioned **five phases of career development** may occur successively. Looking at an individual's professional life over a fairly long period of time, we see that a mentee will inevitably return again and again to a previous career-development phase, but at a higher level. The task of the mentor in this process is on the one hand to provide important career-related information to the mentee and to use his influence, network and overview in the scientific community for the mentee's benefit; and on the other hand to enable the mentee to critically weigh up the experience and advice of the mentor for himself, and to advance his career under his own steam. A good mutual feedback mechanism between mentor and mentee is of critical importance in all phases of this process.

Figure 2.1: Mentoring as a career-development process [6, 14]



3 Mentoring in Medicine – an Overview of the Literature

3.1 Context and Setting

First established in large commercial corporations, mentoring was only gradually introduced to academic institutions. One reason for this development might have been the strongly hierarchically structured academic systems existing well into the 1990s. Medicine was, and to this day in part still remains, a male-dominated, hierarchically organized discipline in which a dependency relationship with a distinct power imbalance existed, and in some cases still exists, between the boss and his staff. **Despite the difference in professional experience between mentor and metee, a mentoring relationship is by definition a partnership relationship.**

In general, a mentor should not also be the mentee's superior. Even if a boss regularly conducts career-advice sessions with his staff, he should accept that a different colleague from another institution, or from another medical specialty or research field, will be advising junior researchers from his institution as part of a mentoring relationship. For a boss, accepting this means *inter alia* relinquishing the claim to sole responsibility for, and management of, junior-staff development. Supporting junior staff is then understood as a matter of teamwork.

A further aspect must be borne in mind when mentoring junior staff aspiring to an academic career in clinical medicine. Parallel to the academic career in the scientific community, the high demands of a clinical postgraduate specialist medical training must be met [15]. In surgical fields in particular, this requires a high degree of planning, organization, and support from senior colleagues in the clinic. This is also where the greatest risk of dependency exists. For this reason, when advising a mentee, a mentor should always suggest that the mentee seek a dialogue with his superiors and discuss his plans with them of his own accord. Despite the confidentiality of the mentoring relationship, mentoring is not meant to be practiced "past" the head of the clinic or institute [6].

In addition to the double burden of patient care and research activity, mentees who work in clinical research face yet another disadvantage. Although clinical studies are often highly complex and require a high level of cooperation with various teams, clinical research is not rated as highly in the scientific community as basic medical research is. Here too, a mentor can provide an important impetus and valuable support for networking.

A consequence of the high degree of professionalization of medicine is its long undergraduate and postgraduate training and continuing professional development. Depending upon the stage of (undergraduate or postgraduate) education reached, or on the type of career aspired to, mentoring relationships focus on other goals. Mentoring programs for medical students have been established in the English-speaking countries since the 1990s [7]. There followed postgraduate mentoring programs especially for female physicians, for younger faculty members, for members of minorites, or for female or male physicians wishing to specialize in a field with a shortage of "new blood". [16].

Since mentoring focuses on different aspects depending on the stage of education – undergraduate or postgraduate – of the mentee, it makes absolute sense to have different mentors over the course of one's studies and in one's subsequent professional career. It has been shown that people who have a positive experience of mentoring during their undergraduate degree also actively look for a mentor or decide to participate in a mentoring program of their own accord once they have entered the postgraduate stage of their training.

Since the 1990s, more women than men in western Europe study medicine and successfully complete their degree and postgraduate training. Despite this fact, the majority of leading positions in medicine are still held by men. The upshot of this is that the requirements for an academic or other prestigious career in medicine are still geared to the masculine CV. Women's interest in an academic career or in assuming a leadership role is accordingly low [17-22]. **This is why female mentors are especially important as role models for female junior research academics.** [3]. In particular, issues concerning the compatibility of career and family can be discussed honestly with them. Male mentors and superiors frequently lack the necessary sensitivity and personal experience in these matters.

3.2 Mentoring for Medical Students

A PubMed Literature Search for the years 2000-2011 with the keywords “mentoring, mentoring program, medical student, mentor, mentee, mentorship” returned 255 publications. Despite this, only 27 papers fulfilled the following inclusion criteria [7, 23]: (1) Evaluation of structured mentoring programs for medical students; (2) Reviews of publications on mentoring of medical students, or (3) papers dealing generally with the importance of mentoring for medical students. The vast majority of publications on this topic stem from the USA. This does not mean that there are no mentoring programs for medical students in Europe and in other countries, but rather that they have not been researched much to date. Many papers turned up by the literature search report on curricular aspects of medical studies, on tutorages, or on learning strategies in general, rather than on mentoring according to the definition given at the start of this report.

The mentoring programs for medical students described in the literature pursue different aims: (1) general career counseling [24-29], (2) Encouraging interest in an academic career [24, 30, 31], (3) Enhancing and consolidating interest in a specialty that is short of “new blood”, such as general medicine, emergency medicine or psychiatry [23, 32, 33], (4) Encouraging the development of professionalism and personality [34-37], and (5) supporting women or students from minorities [27].

In summary, mentoring programs for medical students aim on the one hand to accompany mentees successfully through their studies, thereby providing them with a greater degree of satisfaction with their academic experience. On the other hand, however, mentoring programs also pursue specific goals, e.g. that of interesting more students in an academic research career or in specialties needing an infusion of “new blood”. In the latter case, it is important to gauge to what extent the personal inclinations, aptitudes and interests of the students are considered in the counseling provided. There is a certain risk that the young mentees will allow themselves to be influenced unduly by the example and charisma of the mentor, rather than reflecting on which path is the right one for them.

3.3 Mentoring for Postgraduates in Medicine

Over the last 20 years, mentoring has increasingly found acceptance as an important junior-staff support instrument in medicine too. Many of the above-mentioned studies on mentoring programs for medical students also report on mentoring programs for postgraduates (physicians in post-degree training and continuing education). The term “postgraduates” will be used hereinafter to refer to individuals with degrees in medicine, i.e. those possessing a license to practice medicine. Their careers can develop in different specialist directions, being geared to a job in a medical practice, or to a clinical or academic research position.

Depending upon career level and goals, mentoring in postgraduate training and professional development sets other priorities. If a mentee aspires to a job in a medical practice, he will tend to look for a mentor who can give him advice e.g. for the location, structure and organization of a practice. Various mentoring programs in the USA and Canada are primarily geared to future general practitioners [38-41]. Other mentoring programs aim to attract new blood for a given specialty or subspecialty [42].

The more highly professionally qualified a mentee is, especially if he is pursuing a clinical and research career, the more demanding mentoring is. In many western countries there is a shortage of new blood in academic medicine. Most publications report on mentoring in the academic context. In American medical faculties in particular, mentoring programs for faculty members at all levels – especially for junior faculty members – are very widespread [8, 12, 13, 43]. In some places, up to 50% of faculty members report having a mentor [4, 5, 44]. Owing to the difficulty of combining clinical work with patients with a demanding research job, mentoring programs for junior clinical researchers are particularly essential [15].

As already mentioned, it may make absolute sense either to have several mentors in succession, or to consult various mentors for different aspects of career support [11-13]. In terms of the number of mentees that a mentor can advise simultaneously, there are studies that show that a mentor should not have more than six mentees at any one time [45].

3.4 Mentoring for Female Physicians

Among other things, mentoring as an instrument of junior-staff development aims in particular to support women in their academic careers. Although since the mid-1990s more women than men in western Europe have completed medical degrees, women are still underrepresented in senior positions, especially in senior academic positions. Mentoring is meant to ease women's access to the scientific community [8, 9], with better networking being an important aim in this context [46, 47]. With regard to the prevalence of mentorships, some studies found no difference between the sexes in terms of the frequency of mentoring relationships [13], while other authors demonstrated that women had mentors less often than men did [3, 4]. Women tend to want a woman as a mentor, but since not enough women are represented in higher positions, women are more frequently mentored by men [3, 13]. This has no influence on the mentee's satisfaction with the mentoring or on career success, however [13]. Certainly it would be desirable for more women to be available as mentors, since they could serve as important role models for junior female scientists.

The need for gender-differentiated junior-staff development in medicine was also recognized in Switzerland by the Swiss University Conference, which ran a Federal Equal Opportunities Program from 2000-2011 in which specific mentoring measures for female medical students and postgraduates were supported. As the evaluation reports [48-50] show, the support measures succeeded in raising the percentage of female full professors in medicine. In addition, the various mentoring instruments increased the pool of qualified female junior researchers. A special focus was placed on ensuring that women did not abandon the academic path due to receiving too little support in the scientific community.

3.5 Mentoring and Career Success

A number of publications describe how mentoring is an essential factor for career success [3, 9, 43, 51-54]. Here, it is important to distinguish between two facets of career success. Objective career success refers to the assessment of external, objective criteria such as position, publications, awards, scholarships and research credits, as well as salary. The second facet, which is more difficult to quantify, is the assessment of subjective career success, and hence also of satisfaction with one's career progress. Various studies show that mentoring is also an important predictor for these aspects [3, 55]. Mentoring contributes to the purposeful pursuit of the originally aspired-to career goals, and to junior researchers remaining in their institutions [56]. Moreover, mentored junior researchers rate their self-efficacy higher than those without a mentor [12]. People whose self-awareness is reinforced are then also more likely to take the initiative in approaching established academics for mentoring, which in turn increases their chances of a successful career.

3.6 Evaluation of Mentoring

As already described in various reviews [16, 43, 54, 57], a systematic evaluation is missing from many reports on mentoring programs. One difficulty here is that there is too little consensus as to which outcome criteria should be measured. Pololi et al. [58] and Jackson et al. [59] identify four main features in the evaluation of mentoring programs: development of a trusting personal relationship; structured career planning; concrete support in career progress; and guidance in acquiring technical skills and qualifications. Rogers et al. [60] developed an evaluation instrument on the basis of these studies.

In a qualitative study, Straus et al. [61] report on several pivotal evaluation results of a faculty mentoring program. Stenfors-Hayes et al. [62] investigated the effects of mentoring on the mentor.

The mentee's experiences within the mentoring relationship [61]: These were for the most part positive, and contributed substantially to career success. Even so, approx. one-third of the mentees had the experience of the mentor adopting their research ideas, or of a certain competitiveness arising between their mentors and them. Female mentees complained that they had received too little support and advice from their mentors with regard to planning a suitable time to start a family, maternity leave, and return to work. In some cases, mentoring rela-

tionships established by program directors were categorized as “forced” and more superficial than self-selected mentoring relationships. Nevertheless, some mentees had difficulties finding a suitable mentor. The suggestion was made that a list of potential mentors from the faculty or the program directors be made available to the interested junior researchers.

Role of the mentor in the mentoring relationship [61]: The mentees most often stated that their mentor had supported them in drafting research proposals, networking with other researchers, writing papers, or presenting talks. The fact that the mentor occasionally “pushed” the mentee rather than just confirming that he was doing all right was also mentioned as important.

Characteristics of a good mentoring relationship [61]: Mutual respect and confidentiality were mentioned as basic requirements for a good mentor-mentee relationship. It was repeatedly stressed that the mentor should not work in the same department/institute/clinic as the mentee, as otherwise no open communication with regard to research projects or even personal criticism would be possible. Both the mentor and mentee should formulate clear expectations regarding the mentoring relationship.

Effects of the mentoring on the mentor [62]: To date, there have been only a few studies investigating the effects of mentoring on the mentor. Most mentors experienced the mentoring of students and young colleagues as a rewarding and satisfying task, and were happy to pass on their knowledge and serve as role models. The questions of the mentees caused them to reflect on their own values, develop a better understanding of the concerns of the younger generation, and perceive a widening of their own horizons. All in all, however, it was difficult for the mentors to put the benefit from mentoring into words. This has to do with the fact that most mentors are of the opinion that they are doing something for their younger colleagues rather than for themselves.

3.7 „Good mentoring practice“

Here, the features of successful mentoring described in the preceding chapters are summarized under the heading of “Good mentoring practice” and listed in Table 3.1. Features of successful mentoring are described in a number of publications [2, 7, 57, 63-68].

Tabelle 3.1: „Good mentoring practice“

Features of successful mentoring
Mentor
- Respect and goodwill towards the mentee; interest in his personal and professional development - Taking account of cultural and gender aspects in the mentoring relationship - Responsibility for several younger colleagues - Temporal availability and reliability - Geared to the interests of the mentee rather than to his own interests - Networking in the scientific community - Asking questions and giving advice that allows the mentee the freedom to discover and pursue his own path - Balance between supporting and challenging the mentee with respect to his career; Development of a vision for his career - Keeping track of the mentee’s career progress - Confidence in the mentee and confidentiality of the mentoring subject-matter - Recognizing the personal boundaries of the mentoring relationship - Conveying the basic ethical principles of being a doctor and of research
Mentee
- Mentee introduces himself to the mentor with his resumé and formulates his medium- and longer-term professional and personal goals - Respect and recognition of the junior-senior relationship without subservience - Responsibility for maintaining the mentoring relationship - Timely planning of mentoring meetings bearing in mind the mentor’s temporal resources - Drawing up an agenda for the agreed mentoring meeting - Proactive attitude in shaping the mentoring relationship - Confidence in the mentor and confidentiality of the mentoring subject-matter - Recognizing the personal boundaries of the mentoring relationship - Recognition of own responsibility for one’s own career
Development of the mentoring relationship
- Getting to know the professional environment of the mentee - Written agreement on the professional and personal goals aspired to by the mentee, which are to be achieved over the course of a year; Staggering of the mentoring process - Regular meetings; if possible, no ad hoc mentoring sessions except in emergencies
Institutional responsibilities
- Commitment to the concept that mentoring is an important component of human-resources development and junior-staff development in a clinic or institute - Appointing program directors - Provision of temporal, spatial and financial resources for the mentoring program - Workshops for new mentors in which experienced mentors convey the basic principles of mentoring - Forum where the mentors can share their experience - Recognition of the mentors’ commitment towards their mentees in addition to their other responsibilities - Recognition of mentoring activities as a promotion criterion for the mentor - Regular evaluation of the effectiveness of mentoring programs

A **mentor** should approach the mentee with respect and goodwill, bearing cultural, religious, ethnic and gender aspects in mind. The number of mentees should be limited to just a few – otherwise, a personal relationship between mentor and mentee is not possible. A mentor should be guided by the needs of the mentee rather than pursuing his own interests first and foremost. The most important task is helping the mentee with networking in the scientific community, e.g. at conferences, meetings, or other social and professional occasions. Advice on career planning and career steps should be formulated in such a way that the mentee feels free to make other decisions without worrying about disappointing the mentor. A mentor should also be sensitive to signs of stress in the mentee, and take supportive action where these are perceived.

Blixen et al. [15] define two types of support that a mentor brings to a mentoring relationship: **Instrumental support**, i.e. encouraging the mentee in his professional development; and **psychosocial support**, i.e. being a role model, cultivating empathy for the mentee, giving advice, and providing support during difficult times when there are challenges, setbacks and obstacles.

Some authors emphasize that mentors should be prepared and trained for their mentoring role [57, 63, 69-71]. Not every experienced colleague is per se already a good mentor. In many cases, program directors only focus on matching mentors with mentees, without subsequently monitoring the mentors. It has been postulated that mentors should cultivate an institutionalized form of knowledge exchange, and should be supervised by mentoring experts.

The **mentee** too must respect a number of ground rules in order to be able to establish a successful mentoring relationship [68]. **Responsibility for the continuity of the mentoring relationship lies with the mentee**, who should organize the dates for the joint meetings and draw up an agenda for the session, i.e. consider the topics and issues that should be discussed during the session. Even though a mentor can decisively support his mentee's career, the mentee bears the responsibility for taking his career in the direction in which he wants it to go. The more proactive a mentee is, the more he will benefit from the mentoring relationship.

Mutual trust on the part of both the mentor and mentee as well as the **confidentiality** of all personal and professional matters discussed within the relationship is paramount to **mentoring**. However, it is also important that both parties recognize and respect the boundaries of a mentoring relationship. The mentor is neither father/mother or (substitute) partner, nor the mentee's psychotherapist. Where a mentee is involved in a personal crisis, professional help is needed. In such cases, the mentor's job is to encourage the mentee to seek and accept help from the appropriate professionals.

There are also **institutional responsibilities** for conducting successful mentoring programs [72]. Mentoring should be seen by a faculty, institute or clinic as an essential component of its corporate strategy, as a criterion of human-resources development and quality management, as well as a junior-staff support instrument [73]. In addition to the moral commitment, this includes the provision of resources such as rooms for meetings, funding for program management, associated workshops, and not least of all the opportunity for making the mentoring projects known both inside and outside the institution. Faculty members as well as institute and clinic directors are also responsible for the success of mentoring activities. Only when they become involved in the process can the aim of a mentoring program – providing the best possible support to young colleagues in their professional and personal development – be achieved.

Mentors carry out their mentoring role free of charge. They regard this role as an honorable duty and obligation towards the younger generation of colleagues. It is worth bearing in mind, however, that mentors receive far too little institutional recognition, and that their commitment is not acknowledged in the evaluation of their own personal academic achievements [43, 61, 63]. Without a doubt, there is potential for improvement in this regard.

4 Development of Mentoring Programs at the University Hospital and in the Medical Faculty of the University of Zurich

4.1 Impulses and Initiatives for the Development of the Mentoring Programs

There were various impetuses for developing the mentoring programs. On the one hand, personal experiences in the author's own academic career played a role; on the other, she was motivated by female colleagues who told her that they felt discriminated against in terms of career support compared to their male colleagues. Since 2000, a further impetus has come from her research activity on determinants of career trends for young female and male physicians (see Chapter 7). At the same time, support measures for implementing equal opportunities for women and men in universities were introduced at a federal level. In parallel to this, gender research began to take root in Swiss universities around the turn of the millennium.

4.1.1 Personal Experiences

When I returned to my job at the Child and Adolescent Psychiatric Clinic at the University of Zurich after the birth of my first child in 1977, my then-boss Prof. Robert Corboz asked me if I wanted to do an *Habilitation* – a postdoctoral thesis which would allow me to teach at university level and pursue academic research. This question, which caught me off-guard, was not associated with any sort of counseling as to how an academic career must be planned and structured. I was unable to imagine what demands an academic career would entail. In addition to my half-time job as a clinical senior consultant, I was involved in postgraduate teaching. I also devoted my time to conceptual couple- and family-therapy issues, as well as to the treatment of female patients with eating disorders. This work led to the publication of my first papers in professional journals. Although these activities were derived from my clinical work, they were not particularly goal-oriented in terms of an academic career. Last but not least, I needed to become familiar with my new role as a mother.

Through active participation in congresses and workshops where I presented therapy concepts for the treatment of (female) anorexia patients, I came into contact with a scientific network. These contacts resulted in the development of the relationship with my first mentor, Prof. Walter Vandereycken from the University of Leuven in Belgium, an expert in the field of eating disorders, who encouraged me and led me to underpin my clinical experience empirically. He invited me to lectures and reviewed my publications. These were important milestones in the first few years of my academic activity.

In the years that followed, Prof. Dieter Bürgin, Director of the University of Basel's Child and Adolescent Psychiatric Clinic, and Prof. Claus Buddeberg, Head of the Department of Psychosocial Medicine of the University Hospital Zurich, took over the role of mentor to me. They advised me in the drafting of a project proposal for the Swiss National Science Foundation on epidemiology and early recognition of eating disorders. Both also continued to support my academic career in an altruistic manner. By this time, the management of the University of Zurich's Child and Adolescent Psychiatry Department had changed. The new boss was putting obstacles in the way of the further advancement of my academic career, the overcoming of which demanded high frustration tolerance and a major effort.

Another important mentor of mine was Prof. Howard Leventhal, a highly regarded social and health psychologist at Rutgers University in New Jersey, USA. During a sabbatical I was able to shadow him and benefit from his know-how in the management of large projects. Another aspect was important for my husband (who had already achieved a leading position in his academic career) and myself in our relationship with Howard Leventhal and his likewise academically active wife Elaine: for us, they were role models for a dual-career couple.

It was only thanks to my mentors that I was able to continue my academic career despite the lack of support from the representative of my discipline at the University of Zurich. In 1998 I gained my postdoctoral thesis qualification (*Habilitation)* in Child and Adolescent Psychiatry and Psychotherapy at the University of Basel, requalified in 2000 as a *Privatdozentin* of Psychosocial Medicine at the University of Zurich, and in 2004 I was appointed a *Titularprofessor* of the University of Zurich.

The positive and negative experiences of my own career made it clear to me that various approaches for supporting junior staff are essential – first and foremost, early career counseling by one's boss which takes account of the life context of a young female or male colleague. Here, of course, an important role is often played by aspects of sympathy, antipathy or tactical institutional points of view. In addition, mentors from outside the institution in question are needed to give altruistic career advice to younger colleagues. For women in particular, female/male mentor role models or dual-career couples as role models are very important.

4.1.2 Experiences of Female Colleagues

In conversation with female colleagues, I have repeatedly been told of experiences where male colleagues receive more support for an academic career, that said male colleagues are the beneficiaries of so-called "old-boy networks", and that women are even actively obstructed and blocked on their path to an academic career if a male boss feels challenged by the academic qualifications of a female colleague. Such colleagues are less in need of a a mentor from their field than a mentor – male or female – from a related discipline who can advise them in terms of strategy.

As already described in the chapter on "good mentoring practice", it makes sense to have different mentors in the individual phases of one's career. Sometimes one needs more support from one's professional network; at other times, strategic aspects take priority. In the latter case, the mentor should be well versed in both the official rules and the "unwritten laws" of the career ladder in the academic institution in question.

4.1.3 Research Project on the Career Development of Female and Male Physicians at the University of Zurich

My personal career experiences, the growing number of female medical students since the mid-1990s, and the highlighting of gender aspects in discussions on career opportunities at the turn of the millennium were my impetus for planning a longitudinal study on determinants of career trends for young female and male physicians. Entitled the *SwissMedCareer Study* [22], this project was supported by the Swiss National Science Foundation and Federal Office of Public Health from 2000 to 2011. Among others, one main issue of the research project was how gender aspects influenced career progress. As described in greater detail in Chapter 7, the choice of medical specialty and career path breaks down along gender lines [22, 74]: men prefer surgical and technical fields, while women choose specialties in keeping with gender stereotypes such as gynecology, pediatrics and psychiatry. Differences can also be seen in terms of the type of career aspired to: only a small percentage of women (about 2-3% of a graduate cohort) entertain the notion of an academic career, while for the men the figure is 12-14%. Furthermore, as the results show, women are definitely interested in surgical fields and in research careers, but the postgraduate training conditions in the majority of specialties are still too strongly geared to the male career track. Combining an academic career – especially in a surgical field – with a family seems to most young female colleagues to be difficult to achieve [21], which is why they do not even consider the option.

A further finding of the SwissMedCareer Study motivated me to set up a mentoring program in the Medical Faculty of the University of Zurich and at the University Hospital Zurich. For participants in the SwissMed Career Study, mentoring proved to be the most important predictor for career success [3]. It was striking that female physicians had a mentor in significantly fewer cases than their male colleagues [20].

4.1.4 Overview of the Literature on Mentoring Programs for Medical Students and Male/Female Physicians

As preparation for developing a mentoring program for physicians at the University Hospital and the University of Zurich, we conducted - within the framework of a medical dissertation (Ms. Katja-Daniela Herta) - a Medline-based overview of the literature (1966 – 2002) on mentoring programs for medical students and physicians [16] (cf. Appendix 12.1, from p. 83). Within this period, we only managed to identify 16 projects which met the formal criteria of a mentoring program. Twelve studies were from the USA, one each from Germany and the Netherlands, and two from Canada. These studies revealed that women in particular benefited from the mentoring programs.

4.1.5 Analysis of Junior Staff Development at the University Hospital Zurich

As mentioned above, since the mid-1990s more women than men have studied Medicine. They are just as successful as their male colleagues, and as with the latter a majority aspire to postgraduate specialist training. This

so-called “feminization of medicine” [75] sensitized the hospital management of the University Hospital Zurich to the issue of whether equal career opportunities existed for male and female physicians. A study of the equal-opportunities support provided to junior physicians of both sexes at the University Hospital Zurich carried out in 2000 by Jacquemart and Boos (University of Zurich Institute for Business Management Research, Prof. Margit Osterloh) found significant differences to the detriment of the the female medics [76]: as the hierarchy level increased, the proportion of women dropped off significantly. Whereas 40% of residents were women, their percentage at senior consultant (Oberärzt/in) level shrunk to 30%; for chief consultant (Leitende Ärzt/in) the figure dropped to just 8%, and in 2000 there were no women clinic directors at all. Furthermore, the following results were found: Career support was not institutionalized, and consequently was not very transparent. Women rated the career support from their superiors lower and received fewer career offers than their male colleagues. Female residents and attending physicians rated the clinic’s organizational structure as more authoritarian; and women physicians spent more time on patient care than their male colleagues did. The motto “Women free up men for research” was vindicated in practice. Clinical work counted for comparatively little on the career path upwards.

The intention was to actively address this situation which was so disadvantageous for women physicians. In 2001, the Hospital Management adopted a package of measures for improving career opportunities for female doctors. A project group was assigned the task of developing a mentoring program, devising suggestions for new working-hours models, extending the range of early-years childcare on offer, and institutionalizing equality controlling. Human, financial and spatial resources were made available for these aims.

4.1.6 Federal Equal Opportunities Program

It was also recognized on a national level that special support measures would be needed to raise the percentage of women in leadership roles and with full professorships. The year 2000 saw the launch by the Swiss University Conference (SUK) of the federal program *Equal Opportunities for Women and Men at the Universities* [77] (www.crus.ch/information-programme/chancengleichheit; Chancen_E_WEB.pdf). Designed for the whole of Switzerland, this federal program aims for the sustainable promotion of equal opportunities at university level. The program has been divided into stages (2000-03, 2004-07, 2008-11) and contains three coordinated measure modules with overlapping objectives [50, 78, 79].

Module 1’s measures include a financial **incentive system for the appointment of female full professors** at the universities. The aim was to double the figure of 7% women full professors from 1999 to 2006, which was achieved, and to raise the figure to 25% by 2012. A certain amount is available each year as a subsidy, distributed according to the number of newly appointed female full professors at the universities during an academic year – in other words, the size of the incentive bonus per appointment varies from year to year. The universities are free to use the funds as they wish – it is merely recommended that they be used to promote equal opportunities. Discussion of appointment processes, the active invitation of women and, in general, measures for improving women’s chances in appointment processes are the expected outputs here. Taken together, these are meant to result in a gender-sensitive appointment policy (outcome).

Module 2 comprises various **junior-staff development projects**: professional- and target-group-specific one-to-one mentoring, peer mentoring, and special mentoring programs in medicine as well as courses and lecture series on gender-sensitive career topics. Particular importance is placed on developing support- and networking systems in the interests of the mentoring relationship. The projects are primarily geared to female PhD and post-doctoral students, but to a lesser extent to undergraduates. Their medium- to longer-term aim is for more women to remain in research and to acquire the wherewithal to successfully handle an academic career.

The aim of **Module 3**’s measures is to create favorable framework conditions for the **compatibility of family, relationship and academic career**. Here, in the first two phases of the program, the focus was primarily on the support of university **childcare facilities;** in the third phase of the program, the **support of dual-career couples** takes center-stage.

With the measures of the three modules, the program is intended to work towards improving equality of opportunity between women and men at Swiss universities. Quantitatively, only one aim is defined: increasing the proportion of women among the full professors to 25% in 2012. In a broad sense, however, the program aspires to ensuring **the appropriate representation of women at all levels in academic life**. Moreover, it is meant to motivate increasing numbers of women to take up specialist fields of study in which men currently predominate.

The projects are financed according to the "matching funds" principle, i.e. the universities and university hospitals must in each case finance a certain percentage of the overall project costs from their own funds. With a new project the percentage is 50%, while follow-up projects from previous periods are financed degressively in order to expedite their implementation.

For strategic reasons, the program has been affiliated on the operative level with the Rectors' Conference of the Swiss Universities (CRUS) (www.crus.ch/information-program/chancengleichheit.html) since 2008.

4.1.7 Mentoring Programs at the University of Zurich

With the increasing numbers of women students in all disciplines in the 1990s, academic governing bodies were sensitized to equal-opportunities issues. "The University of Zurich promotes the de facto equal treatment of men and women", it says in the 1998 University Statutes. To date, implementing equal treatment of the sexes at the University of Zurich has been the primary task of the *Department for Gender Equality*, created in 1996 and headed by Dr. phil. Elisabeth Maurer.

During this period, it was not only equality of opportunity that became an issue, but the academic debate of gender issues in the form of so-called *Gender Studies*. In 1998 the University of Zurich set up the *Gender Studies Competence Center (KGS)*, which coordinated existing activities in the Gender Studies field. The aim of the KGS was to institutionalize Gender Studies in research and education at the University of Zurich. With the establishment of the subsidiary-subject master's program in Gender Studies in the Philosophical Faculty of the University of Zurich in the autumn semester 2008 and the setting up of a chair in Gender Studies in the spring semester 2009, the tasks of the KGS passed to the Professor of Gender Studies.

Equality of opportunity between women and men is an important concern for the University of Zurich. On August 11, 2005 the *Gender Policy Code of Conduct*, which sends a signal for a lived equal-opportunity culture in seven principles [80], was enacted by the University's governing body. Also enshrined in these principles are the concepts that particular attention is to be paid to the active development of female junior academic staff, that an individual's gender must not have any negative consequences for him or her, and that forms of employment supporting the compatibility of career, study and family are to be promoted, *inter alia* through the provision of childcare places for the children of faculty members.

In this sociocultural environment, from the year 2000 onwards, concrete support measures for women were established both on an national level and at the individual universities. With the support of the Federal Equal Opportunities Program (cf. Chap. 4.1.6), innovative forms of mentoring/junior-staff development in terms of gender equality were developed and implemented at the University of Zurich as part of Module 2. The Department for Gender Equality of the University of Zurich played a key role in this context. The communication of career-relevant knowledge and generic skills as well as the promotion of networking in the national and international research community were core aims of these activities. The participation of the Faculties and the entitlement criteria for interested junior staff varied for the different projects. The Mathematical-Scientific Faculty and the Philosophical Faculty were very open-minded towards the Mentoring services offered, and supported their female junior academics in their applications for participation. The Human Medicine Faculty, and from 2009 the VetSuisse Faculty, developed their own mentoring programs. As the programs became better known, the interest and participation of male junior staff also grew, so that subsequently men too were able to benefit from these support measures. It became clear that the participation of male junior staff had a positive effect on the gender-equality processes and the structural and cultural change at the universities that was necessary for this. Over the past few years, various support instruments have proven their worth.

The so-called *Mentoring Workshop* [81] offered PhD and postdoctoral students the opportunity of discussing and reflecting critically on their work in a group of on average 8-15 colleagues (peers) from similar professional and research areas. This platform proved to be an important instrument for breaking free of the isolation of one's own research project and becoming better networked in the scientific community. An advisory body was available to the peer-mentoring group in question, composed of experienced academics prepared to serve as mentors. Readvertised every two years, the Mentoring Workshop was initially made use of almost exclusively by women from the Philosophical Faculty. In the years that followed, junior researchers from the Mathematical-Scientific, Theological and Law faculties also took part in the Peer-Mentoring Program. Moreover, mixed-sex peer groups were

forming more and more frequently [82]. Supporting the peers in their own academic organization and in their networking in the scientific community were key aims of the Mentoring Workshop [10].

In addition to the Mentoring Workshop, two further junior research staff-development projects at the University of Zurich were funded by the Federal Equal Opportunities Program. *ProWiss* (2001 – 2008) was a project at the Center for University Teaching and Learning offering both continuing-education courses such as Project Management, Self-Management, Leadership and Business-Administration Know-How, as well as a web-based information platform with details on the structure and stages of an academic career. ProWiss was superseded by the *FokusLaufbahn* ("Career Focus") project (2008 – 2011) at the Center for Further Education, which offers workshops on generic skills that are important for an academic career, as well as individual coaching (www.fokuslaufbahn.uzh.ch).

Over the past few years, the Department for Gender Equality of the University of Zurich has developed additional support instruments specially geared to academics in the postdoctoral phase, e.g. *Protected Research Time*, *Postdoc-Programs* and *Short Mentorships Abroad* (details at www.gleichstellung.uzh.ch). Researchers can apply for these support programs by filling in an application form. The aim is to release postdoctoral students from service and teaching commitments in order to allow them more time for their own research. These junior-staff development programs are now financed by university research funds. The various programs went down well with scientists from all faculties, and can be run for the second time in 2012.

The aforementioned support measures had had a positive effect on the percentage of women full professors at the University of Zurich, but there is still a need for action – particularly in medicine – as also shown by the 2010 Equality Monitoring Report [83].

4.2 Setup Phases of Zurich Mentoring Programs in Medicine

As already explained in Chapter 3, the framework conditions for mentoring programs in medicine differ from those in other disciplines. Most junior researchers in medicine are under pressure to reconcile their research activity with the requirements of time-consuming postgraduate clinical training. Postgraduate clinical training often requires repeated job changes as well as a change of location. This makes it difficult to pursue continuous research activity in a group. The frequent changes also make it harder to cultivate relationships with one's professional colleagues. Unlike the research environment in the Philosophical, Law or Theological faculties, medical research takes place in fairly large groups which are also usually interdisciplinary in their composition. What's more, medical research is expensive, i.e. third-party funds must be acquired in the first instance for the research. Mentoring in medicine can support junior researchers in planning their careers in good time and in a goal-oriented fashion, as well as in building and maintaining contacts in the appropriate professional circles. In this way, mentoring makes an important contribution to helping both female and male physicians shape their career paths according to their personal abilities.

The mentoring programs at the University Hospital Zurich and at the Medical Faculty of the University of Zurich have passed through various phases and focused on different target groups.

2002: Pilot phase of the mentoring program at the University Hospital Zurich: The target group was residents of both sexes currently engaged in postgraduate specialist medical training at four clinics in the University Hospital Zurich, who aspire to an academic or clinical career. They were mentored by male or female senior consultants or chief consultants at their institute/clinic. Mentoring was conducted primarily in groups.

2003-07: Establishment of the mentoring program as an integral part of junior-staff development at the University Hospital: Extending the entitlement to participate in the mentoring program to interested physicians of both sexes from all of the University Hospital institutes and clinics. Both group mentoring and one-to-one mentoring were offered.

2008-11: Mentoring for advanced junior academic staff in the Medical Faculty of the University and of the University Hospital Zurich: Mentoring, predominantly in a one-to-one setting, was offered specifically to male and female doctors who had already made significant progress in their academic careers and were on their way

to an *Habilitation*. The offer was aimed at institute and clinical staff of the entire Medical Faculty, and not just those at the University Hospital.

2009-11: Mentoring for medical students at the University of Zurich: Development and setup of a mentoring program for third-year medical students at the University of Zurich. Mentees were mentored one-to-one by senior colleagues at all levels of the hierarchy.

In the coming years, the mentoring programs for both junior academic staff and medical students are to be continued. In January 2012, Prof. Beatrice Beck Schimmer will take over from Prof. Barbara Buddeberg-Fischer as Program Director.

4.3 Financial and Human Resources

Until mid-2004, the program was financed exclusively by the hospital management of the University Hospital Zurich; from May 2004 until the end of 2007, funds were supplemented by a subsidy from the Federal Equal Opportunities Program, Junior-staff development module 2. Since 2008, as part of the expansion of the mentoring program to include junior academic staff, the Dean's Office of the Medical Faculty of the University of Zurich and the University Hospital Management contribute equally to project costs. The subsidy provided by the Federal Equal Opportunities Program currently covers 30% of the mentoring program's budget.

From 2002-2011, Prof. Barbara Buddeberg-Fischer, a Chief Research Consultant in the Department of Psychosocial Medicine at the University Hospital Zurich, served as Program Director. Her expertise in human and social sciences in combination with her own research into the career development of young female and male physicians was the ideal qualification for developing the mentoring programs in Medicine. Prof. Buddeberg-Fischer was supported by a research assistant, Dr. phil. Martina Stamm, in the organization of the program and the evaluation of the various program phases. Since the project-financed employment percentages were tight, the program was supported by other human resources as well as by conceptual and methodological counseling of staff of the Department of Psychosocial Medicine (headed by Prof. Claus Buddeberg).

Since 2010, the Mentoring Program has been associated with the Department of Research and Education of the University Hospital Zurich (USZ) as the *Career Development Research Center*. The USZ's Director of Research and Education, Prof. Gregor Zünd, has supported the program and its directors for many years now, for which we are very grateful. Over the last few years, the Dean of the Medical Faculty, Prof. Dr. med. Dr. med. dent. Klaus Grätz, has also lent a great deal of support to the program, for which we extend our sincere thanks.

5 Mentoring Programs for Female and Male Physicians at the University Hospital and the Medical Faculty of the University of Zurich

Below, three phases of the Mentoring Program are described. First, we outline the pilot phase, in which the program structures were designed. Participants in the first round were male and female residents doing their specialist training at four institutes/clinics of the University Hospital Zurich (USZ), who were being mentored by senior and chief consultants at the USZ. In the second phase, the program was extended to physicians at all institutions of the USZ. In the third phase, mentoring as an efficient instrument of junior academic staff development was primarily offered to physicians who were working towards their habilitation.

5.1 Pilot Phase of the University Hospital Zurich's Mentoring Program (2002)

5.1.1 Initial Situation

Based on the findings of the study *Gleichberechtigte Nachwuchsförderung von Ärztinnen und Ärzten* ("Equal entitlement of female and male physicians to junior-staff development") [76], the Management of the University Hospital identified a need to take measures in the area of junior-staff support, particularly to enable qualified female physicians (with family) to gain promotion to leading positions. A working group headed by Barbara Buddeberg-Fischer (BBF) developed ideas and suggestions for the creation and implementation of mentoring programs. Advising residents of both sexes at the start of their postgraduate training with respect to their professional career, further job planning, specialist interests and career goals while bearing in mind their personal life plan was defined as the objective of the programs. Women plan their professional careers in a less goal-oriented manner than men. Timely information on possible career paths and different access paths to career goals aspired to should provide more favorable conditions for the achievement of these objectives.

5.1.2 Pilot Project Structures

Since career counseling for physicians of both sexes should begin shortly after they enter the profession, group mentoring (maximum 5 mentees) appeared to make sense, both in terms of content as well as bearing in mind the number of available mentors. The mentees' peer group was to be composed of residents from the same or similar specialties. Senior or chief consultants who were not the immediate superiors of the mentees acted as mentors. In this early career stage, both general career issues and those specific to the chosen specialty are key concerns, and these can be discussed in a group without problems of confidentiality. From experience, we have seen that mutual motivation, the exchange of ideas, and opportunities for cooperation on research projects are all advanced by the group process. Since the pilot program represented a new support measure at the University Hospital, it was important to include the institute and clinic directors in the developmental process. Initially, they were highly suspicious that their responsibility for a core task of supporting the up-and-coming generation of physicians was being contested. It took some work to convince the directors of the institutes and clinics that mentoring could serve as a useful addition to the career advice provided by them.

In order to encourage networking, the pilot project for residents in postgraduate training was incorporated into the relevant specialty and institution. The degree of familiarity and matching between mentee group and mentor was generally dictated by the size of the institute or clinic. Since the mentors were generally new to their mentoring role and unsure of how to perform it, the groups were also monitored and supervised by the Program Director (BBF) or a colleague experienced in group processes, Dr. med. Guido Mattanza (GM). The senior and chief consultants acted as "subject mentors", while BBF and GM performed a double role, serving as program directors and supporting group members with advice on personal issues. Another of their roles was to instruct the mentors in mentoring. This triple role ought not to be the rule, but was unavoidable in the pilot phase of the program.

5.1.3 Progress of the Pilot Project

Four institutes or clinics of the University Hospital took part in the pilot phase: the Institute for Anesthesiology, the Institute for Diagnostic Radiology, the Clinic for Gynecology and Obstetrics, and the Clinic for Ear, Nose, Throat and Facial Surgery. The directors of the institutes/clinics were informed about the project and asked to agree to participate. Afterwards, the Program Director presented the project at an institute/clinic conference. Interested residents seized the initiative, formed peer groups (maximum 5 participants) and asked a (male or female) senior or chief consultant of their choice to assume the mentoring role. He or she then advised the mentees on the professional level. As described above, BBF or GM were available to the mentees to assist with personal issues. This was important because the mentors belonged to the same institution as the mentees, with the result that more personal issues could not be discussed with the same degree of openness. This yielded the following setting: The peer group met once a month with BBF or GM and without the presence of the professional mentor. Every two months, both the professional mentor and BBF or GM were present at the group sessions. A necessity for the pilot phase, this arrangement with the program directors' overlapping roles initiated a process of development: the program directors gathered experience on how the program required adaptation to the respective needs of the mentees and mentors, the mentors were familiarized with their mentoring role, and the mentees recognized the opportunities and limitations of the mentoring relationship, as well as realizing that they would only benefit from mentoring through the exercise of their own initiative.

The mentoring meetings were held during the lunch break or in the evening in a room outside of the "home" institution, and lasted about 90-120 minutes.

5.1.4 Participants

Forty residents (17 women and 23 men) split into eight peer groups of 3-6 members each took part in the pilot phase. Four women and four men (senior or chief consultants) assumed mentoring roles. The Director of the Institute for Radiology recommended that all his residents take part in the program. The ratio of male to female residents – 15 to 8 – was particularly high in this clinic. In the other three clinics, a higher percentage of women took part in the program, with the gender ratio in the groups being four women to every man. The groups met eight times on average (range 7 – 12) during the one-year term of the project. The peers pursuing research interests and aspiring to an academic career chose mentors who were likewise active in research and academically successful. The more clinically oriented mentees chose clinicians as mentors.

5.1.5 Expectations and Experiences

Before the start of work in groups, each mentee responded to a questionnaire item asking what his/her expectations of the mentoring program were. Although achieving one's personal career goals ranked in first place, exchanging ideas among one's peer group was also mentioned as an important expectation. Further aspects were a general interest in the program, more information on various career paths, and advice on combining a career and family.

In addition, the mentees named specific professional goals they hoped to work towards over the next 12 months. Two-thirds of the mentees mentioned the rapid conclusion of their postgraduate specialist training as a goal, while a further third focused on a promotion-oriented (academic) career.

Phases in the Group Process

Various phases could be observed in the group process [6, 84, 85]. In the *initial or orientation phase ("forming")*, there was a degree of uncertainty in terms of the objectives of the group work, as well as a fear of exposing oneself by revealing one's career fantasies and plans. Owing to the fear of rivalry or of being labeled a "careerist", it went against the grain for mentees to reveal their personal career aspirations to colleagues from the same clinic. The subsequent *dispute phase ("storming")*, in which the individual members sought their place in the group's relationship structure, passed off differently in the various groups. In some groups, a "spokesperson" for the mentees assumed the role of organizing the group, or of seeking a dialogue with the director of the clinic where there was a desire for institutional changes. In other groups, a flat, collegial group hierarchy was the norm. At first, there was uncertainty in all groups as to the role of the professional mentor. In the initial sessions in particular, the mentors were confronted with the expectation that they would clear up certain institutional difficul-

ties or initiate specific career steps for the mentees. It was essential to clarify that the mentor was there to offer professional advice, but that it was the responsibility of the individual mentees to use their initiative and commitment in implementing the actual steps to further their careers. After about three sessions, most groups reached the *bonding and familiarity ("norming") phase.* A code of conduct was developed, including *inter alia* the obligation to participate on a regular basis and to maintain confidentiality. This allowed an "us" feeling to take shape. The ensuing foundation of trust enabled the mentees to openly discuss their individual career aspirations, plans and goals. Many residents stated that concrete career planning and support was helpful from around the second year of postgraduate training, i.e. at the time when the initial difficulties experienced in one's chosen specialty have been overcome.

In the *differentiation phase ("performing")*, occurring after about four or five sessions, an individual career curriculum for a one-to-two-year period is created for all mentees. Counseling is geared towards concrete career steps, such as drawing up project blueprints, applying for funding, implementing circumscribed research projects, writing papers, and organizing additional specialist qualifications or research fellowships abroad. In the ensuing sessions, participants are questioned on the practical implementation and progress of the planned career steps. In groups where trust had developed between the participants and where mentees were actively supported in their career plans by their mentor and clinic director, an atmosphere of creative competition spread as the mentoring work progressed. Some only became aware of their own career aspirations by sharing experiences with their colleagues, and in some cases the process sparked interest in a research job. After about six months of joint group work, the peers began mentoring one another and became less dependent upon the mentor's support, i.e. they took charge of implementing their career-advancement plan purposefully and on their own initiative. A constructive working atmosphere was to be found in most groups during the "performing" phase. At the same time, the personal bonds between the mentees, mentor and program director also became stronger.

The *concluding phase ("finalizing")* took different forms in the individual groups. In one group, all of the mentees had initiated the aspired-to career steps, were in the implementation phase, and had established their professional network to the extent that they were able to press ahead with their career development on their own initiative. Consequently, this group ended its formal group work after a year. The relationships formed over the course of the pilot projects had no further need of an institutionalized framework. Four other groups also ended their group work. A number of residents arranged for a one-to-one mentoring relationship with an experienced colleague in the same specialty. Other participants asked their former program director (GM) to moderate the sessions held by the residents of their clinic, who had organized themselves as one big peer group, so to speak. A further three groups revisited the "performing" phase by absorbing new members into their group and continuing their formal and institutionalized mentoring work.

Minutes of the Meetings

The minutes of the group meetings were taken by the program directors BBF and GM according to the following agenda: group atmosphere, content-related aspects, goal-orientedness, implementation steps, and satisfaction with the institutional framework conditions [6].

Atmosphere: In the four groups of the institute where all residents had been invited to take part in the mentoring program, there was a certain mistrust between mentees and mentors throughout the entire pilot phase. The mentees were never sure what information from the group discussions would be passed on to the head of the department by their mentors. The principle of confidentiality in mentoring was never successfully achieved. In the other four groups which had formed on their members' own initiative, an atmosphere of mutual trust arose relatively quickly.

Content-related aspects: The group discussions mainly dealt with career opportunities, obstacles, hopes and goals. As group work continued, career plans were developed for the individual mentees and implementation steps and career successes were reported.

Goal-orientedness: Over the course of the group work, the female mentees in particular developed concrete career plans. Most of the women aspired to a clinical career, in which case the next step was a job as a senior consultant. A few women aspired to an academic career. The mentoring process had encouraged them to take their own career ambitions seriously and to pursue them more purposefully.

Implementation steps: The mentees who had developed clear-cut career goals benefited the most from mentoring. The mentors used their network to recommend the mentees, whether for senior consultant posts, further training in a subspecialty, involvement in research groups, or in the planning and organization of a research stay abroad. The mentors also advised the mentees in applying for fellowships or grants for study or research abroad.

Satisfaction with the institutional framework conditions: The group discussions made the mentees aware of the institutional framework conditions that hinder career progress. The main problems lay in the poor planning within the individual clinics of the job rotations required for postgraduate training. In addition, residents interested in research received too little advice in the planning of smaller projects, and residents already engaged in research were not granted enough time for their research activity. In other clinics, the mentees realized that their boss was receptive to their concerns when they wished to discuss their next career steps with him, or to suggest improvements to the institutional framework conditions.

Experiences of the pilot phase from both the mentees' and mentors' point of view

In the *overall assessment of the pilot project*, the aspects most frequently mentioned by the mentees were the consolidation of their own career goals as well as the encouragement of initiative and purposefulness [6]. In addition, the sharing of experiences with their peers was perceived as an important and stimulating experience. A few also mentioned the reinforcement of their self-confidence. In the *evaluation of the group discussions*, collegiality, solidarity, and above all, mutual mentoring were described as the three most influential factors. Some groups saw the trust and openness as positive, while in others, fear of being left out of the group's charmed circle was also expressed. As far as *experience with the mentors* was concerned, the support of concrete career steps was the most important factor, followed by the mentor's function as a role model. The commitment of the mentors earned different ratings. Some would have preferred a stronger commitment; the mentors who were themselves engaged in research were rated as particularly commited. In the *assessment of the program director*, counseling in terms of concrete career steps and the structuring of the group discussions were named as the most important elements, followed by motivation and creation of an atmosphere of trust. The challenge to one's personal initiative was also appreciated, with some wishing that even more emphasis had been placed on this.

The following case vignette of a mentee also points out difficulties or misconceptions that can sometimes lead to the failure of mentoring relationships.

Vignette – Lack of Initiative on the Part of Mentees

A 32-year-old female resident in a surgical specialty asked for mentoring, since she felt that as a woman in the surgical clinic she was being "palmed off" with unattractive departments or wards, and was not getting a chance to operate. Being interested in research, she had begun smaller projects together with a female senior consultant. After the latter's not-entirely-voluntary departure from the clinic, the young resident was left fairly isolated. There was a so-called "Postdoc club" in the clinic, but it was all-male and she was therefore excluded from it. Until this point, however, she had never sought a face-to-face talk with her (male) senior consultant,or with the (male) clinic director.

The (female) mentor assessed her colleague's situation in the clinic as quite unfavorable, and tried to discuss alternative future career paths with her, e.g. switching to another university clinic or a large cantonal hospital, or perhaps spending some time abroad. The mentee responded to all the suggestions with an "it won't work". She was afraid, she said, of doing herself even more damage by switching to another institution, and of then not even managing to finish her postgraduate specialist training. She also rejected the option of speaking about her difficult position in the clinic with the clinic director. During her talk with the mentee, the mentor noticed feelings of helplessness and aggression in herself, such as those that had probably arisen in her colleague in the latter's professional environment. Various suggestions as to how she might come out of this situation of paralysis by taking active steps on her own were not taken on board by the mentee.

In the second mentoring discussion, the mentee expressed her disappointment over the first session. She had hoped for concrete instructions, but failed to see that she would have to take personal responsibility for their implementation. She did not get in touch for further mentoring discussions.

This example shows that some young mentees have the idea that their mentor is supposed to solve a difficult situation for them. They do not realize that mentoring can only give suggestions for decisions and actions of their own. In difficult situations, the mentee in question played the “wait and see” game, and held back instead of actively searching for a way around the deadlock. In this way, she risked becoming a pawn of the medical team.

To a large extent, the **mentors** rated the pilot phase of the mentoring program positively. The were sensitized to the career concerns of their residents and benefited from the exchange among fellow mentors as to how younger colleagues could be supported. Some were motivated to reflect on their own career plans and goals. The mentors also appreciated that they were primarily responsible for the professional counseling of the mentees, while the program directors were in charge of structuring the group discussions and helping the mentees with personal issues.

The **directors of the institutes and clinics** rated the project consistently positively. Owing to the activities of the mentoring groups, the topic of career support was discussed more intensively in the clinics. The mentees sought a dialog with the clinic director at an earlier stage in their careers. More than anything, they wanted early information on their career opportunities after acquiring their specialist qualification, and asked for advice and support in terms of further career steps. The clinic directors saw this forward-thinking and active professional involvement as also being helpful for medium-term job planning in their clinic.

A further vignette shows how important the institutional anchoring and support of a mentoring program is for the acceptance and success of such a support program.

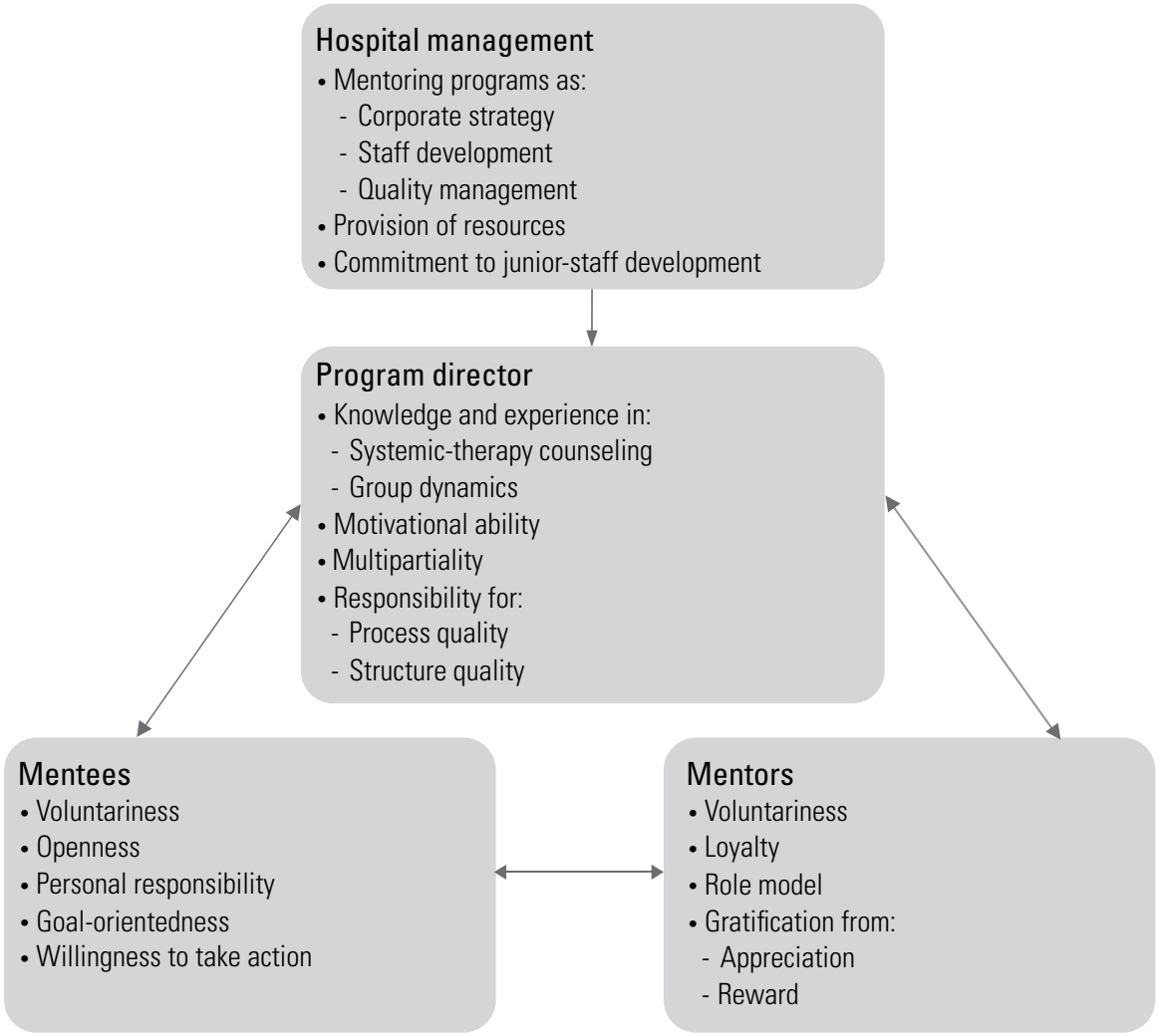
Vignette – The committed clinic director

In 2001, both the Medical Director of the University Hospital Zurich (USZ), Prof. Thomas Pasch, and the Hospital Director, Dr Christiane Roth, were in charge of launching the mentoring program on the basis of the recommendations for measures for the equal entitlement of female and male physicians to junior staff development at the USZ. Prof. Pasch was Director of the Institute for Anesthesiology with about 100 residents, and realized that mentoring represented an important addition to career counseling from one’s superiors. At his suggestion, four institute/clinic directors were asked whether the pilot project could be implemented in their institutions. His unequivocally positive attitude facilitated the introduction of the program. Combined with the “bottom-up” motivation and initiative of the mentees, this acceptance from the top management level was crucial for a successful start.

5.1.6 Conclusions from the Pilot Phase for the Subsequent Programs

The experiences of the pilot phase of the mentoring program led to the following insights [6] (Fig. 5.1):

Figure 5.1: Favorable prerequisites and framework conditions for mentoring programs [6]



An important prerequisite for the *institutional framework conditions* is "commitment", i.e. that the hospital management recognizes mentoring as an essential part of its corporate strategy and regards it as a criterion for staff development and quality management. This includes the provision of resources such as rooms for the group meetings, funding for program management, and not least of all the opportunity to make such projects known both within the clinic and outside its doors. The *clinic directors* are also responsible for the success of mentoring activities. Only when they overcome their own prejudices and fears and allow themselves to become involved in the process can the goal of a mentoring program – the optimal support of young colleagues in their professional and personal careers – be achieved.

The *program directors* will ideally have experience in systems theory, as well as of running groups along systemic therapy lines. They should recognize and guide group processes, evaluate the effects of group work on the various levels of the clinical system, pay attention to positive and negative feedback processes, and be able to behave with multipartiality towards the various subsystems. Furthermore, They should have the ability to remotivate those involved in the mentoring process time after time. Knowledge of the formal framework conditions and the informal rules for a career in medicine are also important. Whereas the mentor advises the mentees in

professional matters, the program directors observe the group process and the systemic aspects of the project, i.e. they take responsibility for the process quality and structural quality of the mentoring.

An important requirement of a mentoring program is also its "voluntariness", i.e. participation for both mentors and mentees should be by choice. In addition, mentees should be able to choose their mentor freely, but mentors should also feel free to accept or turn down a mentorship.

The *mentors*, who should not be the the mentees' superiors at work, should demonstrate loyalty to the mentees and observe confidentiality vis-à-vis the directors of the clinics where the mentees work. Owing to their professional knowledge, their position within the clinic, and their personal integrity, they can contribute to the institutional anchoring of career support. Their ideas are sought after and their expert advice is essential in implementing the individual career steps. What's more, they support their younger colleagues in establishing contacts in the scientific community. Remotivating the mentees anew whenever there are setbacks or difficulties in implementing their career plans is also the duty of the mentors. Last but not least, the personal example set by the mentor plays an important role.

The mentors should receive *recognition* – i.e. individual and institutional appreciation and acknowledgement of their mentoring activities – and *reward* – i.e. recompense for their own career – from their superiors as well as from the hospital management. For example, the time and commitment they devote to mentoring could count as proof of performance, to the same extent a publication would.

The *mentees* should bring a willingness to be open, personal responsibility, goal-orientedness and a readiness for action to the table. Personal development is also an important element of the mentoring process.

The longer-term success of mentoring requires a broad-based acceptance of these sorts of support programs in the medical institutions [86]. In our opinion, it doesn't make sense in medicine to form sexually segregated support groups at resident level, as gender segregation poses the risk of reinforcing mutual prejudices and stirring up feelings of rivalry which in turn indirectly elicit exclusion mechanisms. Instead, talented and commited junior staff should be trained in mixed-gender groups to allow them to support one another and develop joint strategies for buiding up professional careers.

Key Messages

Favorable framework conditions for mentoring programs

- "Commitment" of the hospital management: Mentoring as part of the corporate strategy
- "Voluntariness": Voluntary participation of both mentees and mentors
- "Recognition": Mentors receive individual and institutional recognition for their mentoring activity
- "Reward": For mentors, mentoring is acknowledged as proof of performance for their own careers
- Transparency of the mentoring programs for the clinic directors
- Self-motivation of the mentees

Prejudices and resistance of institute and clinic directors towards mentoring programs

- "Do it myself" mentality
- "Fantasies of omnipotence"
- "Young colleagues shouldn't have it any better than I did"
- Fears of loss of power
- Fears of being criticized by mentees and program directors

5.2 Setting up the Mentoring Program at the University Hospital Zurich (2003 – 2007)

5.2.1 Initial Situation

Owing to the positive experiences and the evaluation results of the pilot project [6], the mentoring program was extended as a resident-support program to all the institutes and clinics of the University Hospital (USZ) from 2003. The directors of the institutes and clinics were informed about the mentoring program at a hospital conference, and invited to explain this type of junior-staff development to their residents and research assistants, and motivate them to take part. In addition, all physicians new to the USZ received an information flyer on the mentoring program (cf. Appendix 12.2, from p. 83). Notices and brief information on the mentoring program were also displayed on the USZ's internal information system. The information on offer was rounded out by annual events for interested mentees, at which both mentees and mentors reported on their experiences of the program.

5.2.2 Structures of the Expanded Mentoring Program

While mentoring was primarily offered in the group setting during the pilot phase, a wider range of alternatives were made available over the course of the five-year setup phase of the program. For organizational reasons, a group size of three mentees at most proved to be favorable. As the program became better known, more physicians who were already far along in their careers came forward. These colleagues were looking for mentoring in a one-to-one setting. For reasons of confidentiality, the mentor was meant to be associated with a different clinic or institute than the mentee.

The proposal for establishing new mentorships was conceived as an open process, i.e. neither an official start nor a limited duration were prescribed. This resulted in mentoring relationships that differed in terms of frequency of contact and length. Quite a few mentees from the pilot phase continued their mentoring in settings which in some cases had changed.

5.2.3 Evaluation

In 2007, after a five-year running period (2003-2007), an evaluation was conducted among those mentees who were currently in an active mentoring relationship. Among these were a few who had taken part as early as the pilot phase of the program. Table 5.1 sets out the characteristic parameters of the mentoring, as well as the career steps taken over the course of the mentoring, and satisfaction with it.

Table 5.1: Characteristic parameters of mentoring and evaluation of the mentoring program at the University Hospital (2003-2007)

Characteristic Parameters of Mentoring	**No. n (%)**	
Mentees	134	85 women (63%); 49 men (37%)
Mentees' specialties	7	Anesthesiology, Dermatology, Gynecology and Obstetrics, Internal Medicine, Ophthalmology, Pharmacology, Surgery
Mentors	14	8 women (57%); 6 men (43%)
Group mentoring	100 mentees	23 groups
One-to-one mentoring	40 mentees	
Group/One-to-one mentoring	6 mentees	
Length of mentoring relationship	6 – 48 mentees	
Average no. of meetings	10	
Career Steps	**No. of Mentees n (%)**	
Senior Consultant post	30 (22%)	
Research projects and publications	67 (50%)	
Research fellowship abroad	10 (7%)	
(On the path to) the Habilitation	13 (10%)	
Chief Consultant post	3 (2%)	
Ad personam chair	1 (1%)	
Head of Department post	1 (1%)	
Satisfaction with Mentoring	**No. of Mentees n (%)**	
(Very) satisfied	115 (86%)	
(Very) helpful for career	67 (50%)	
Recommend participation	134 (100%)	

The program director and individual mentors assumed a mentoring role for several groups. In addition, the program director counselled many mentees in a one-to-one setting over the course of the setup phase. She also remained available to the mentees as a contact partner when they left the USZ later on in their careers, which ensured continuity in the mentoring relationship. Female physicians wanted a female mentor whenever possible, which led to relatively large demands being placed on the available women mentors.

When analysing career steps as a success parameter, it should be borne in mind that at the time of the evaluation in 2007, the mentees had been in the postgraduate stage of their medical and research activity for different lengths of time.

The mentees rated their mentor's regard for them, as well as his/her cooperative behavior, encouragement of initiative, personal commitment, and empathy based on the latter's behavior. On a seven-level rating scale (1 = very low; 7 = very high), the values for these five areas lay between 5.32 and 5.78.

In addition, mentees rated their expectations of as well as the experienced support from the mentoring program. They were questioned as to their three most important expectations of the program, and their three most important experiences with respect to career support. Table 5.2 lists the seven areas most frequently cited by the mentees.

Table 5.2: Seven most important expectations of support/actually received support measures from the mentoring program (percentage distribution of the entries of 134 mentees)

Area	Expectations n (%)	Support n (%)
Reflecting on one's professional situation	11 (10.4)	14 (16.3)
Support in implementing career goals	11 (10.4)	9 (10.5)
Fleshing out career goals	9 (8.4)	6 (7.0)
Obtaining information on career paths	8 (7.5)	7 (8.1)
Familiarizing oneself with strategies to promote one's professional career	8 (7.5)	3 (3.4)
Sharing experiences with other residents	7 (6.6)	9 (10.5)
Goal-oriented work in terms of one's career	7 (6.6)	6 (7.0)
Other	45 (42.6)	32 (37.2)
Total entries	**106 (100.0)**	**86 (100.0)**

The following case vignette shows what importance a mentoring group's support can have in a career or personal crisis.

Vignette – the mentoring group as a support in difficult times

Together with three colleagues in her research group, a 30-year-old resident, Ms. A., seized the initiative and set up a mentoring group. They found themselves a female mentor who had no institutional or personal ties with their clinic. Ms. A. explained that her motive for establishing a mentoring relationship was the degree of isolation that she experienced in the clinic. Because she was a foreigner, she had little contact with her colleagues in the clinic. She felt exploited, unfairly treated and deprived of her authorship rights with respect to published papers by the head of her research group. When she fought back at him he bullied her. She lodged a complaint with the director of the clinic, but he did nothing to protect her and failed to honor agreements with regard to a postgraduate training position in the clinic which she had been promised earlier.

Discouraged, she was planning to give up her job at the University Hospital and her research activity. The confidential discussions in the mentoring group helped her analyze current career obstacles critically and initiate deliberate steps to find a way out of the deadlock, rather than capitulating prematurely. Although the intimidation manoeuvres of both the head of the research group and the clinic director resulted temporarily in her fearful retreat, thanks to the outsider perspectives of both the group members and the mentor she felt that she was being taken seriously and emotionally supported. On an objective level, she clarified her rights with respect to her research data, and was able to complete the publications despite the bullying of her superiors. After this, she successfully carried on with her clinical postgraduate training at another clinic.

The mentoring helped the mentee to find a balance between her clinical work and her research activity. Before, she often had only one or the other career emphasis in focus.

The mentoring group ran over a four-year period, and met regularly every month to two months over this time.

By now, Ms. A. has gained her *Habilitation* at another university. She has succeeded in achieving her career goal of a synthesis of clinical and research activity. Looking back, she notes that without the support of the group and the objective outsider's perspective of the mentor, she would not have pursued her original career plan.

5.2.4 Digression: Personal Statements of Mentees and Mentors on their Mentoring Experiences

In the evaluation, we asked mentees and mentors to describe in their own words several key experiences in the mentoring relationship.

First of all, we reproduce the response of a mentoring group with five peers.

Difficulties in establishing a group mentoring scheme and experiences with the designated mentor

"Unfortunately, we're late with our response to your evaluation questions. Getting in the reactions of all the group members is always quite a long, drawn-out process.

Re our experiences with our mentor: Several months ago we had a very pleasant, lengthy group discussion with him. He explained to us that he had been mentoring for decades, although not within a formal framework. The mentor suggested to each of us in the group that we approach him in the event of any specific questions and problems. We didn't discuss any arrangements or short- or medium-term goals, let alone individual group member's goals.

From the way the mentoring has gone so far, one is hardly likely to deduce a willingness on the part of either our designated mentor or even us group members to get together at regular intervals in order to discuss our careers."

As this example shows, group processes occasionally develop in a cumbersome manner. If the individual members do not recognize the personal benefit of the group setting for themselves, they will often not be sufficiently flexible in terms of arranging dates for meetings. The description of the mentor illustrates typical misconceptions on the part of institute and clinic directors, who view the one-off taking stock of one's situation or counseling for a current problem as mentoring. That is why they also think that they have been mentoring for years. As described repeatedly above, mentoring involves a longer-term interest in and commitment to the professional and personal development of a mentee. Ad hoc counseling sessions are not mentoring.

The majority of mentees and mentors report **positive and successful mentoring experiences**, however. Below, we have listed some of the relevant quotations.

Mentees' experiences

- "The questionnaire survey conducted when we entered the mentoring group encouraged us to think concretely about our short, medium and long-term career goals and to record these in writing. For me, this was an important first step in my career planning."
- "I experienced the group's solidarity as positive: we motivated one another and together developed strategies for the career paths of the individual group members on the basis of our different experiences. The confidentiality of our conversations was very important – no information from the group passed to the outside world."
- "I found the presence of the [female] program director helpful. She structured our meetings and was able to advise us mentees from a neutral viewpoint, uninfluenced by the respective situation in the clinic."
- "For me, it's the first time that I could speak in confidence with someone about my career, and that I was given concrete recommendations in return. Until now, I've only been advised by superiors who also wanted my research activity to benefit their own careers."
- "I particularly liked the fact that the program director is a woman, and that she has already successfully negotiated a remarkable career path. I think it's important for a person to be advised by someone who's familiar with the system of a university institution. It's often hard to make decisions if you are standing too close to a problem – you no longer see the situation objectively enough. The independent perspective and evaluation from the outside have helped me a great deal."
- "I find scant consolation in the fact that many residents encounter similar difficulties in their careers. It makes me combative, since I'm not happy accepting that. I think that a lot of things in the university system still need to change."

Mentors' experiences

- "I take being chosen as a mentor by younger colleagues as a vote of confidence. It's also feedback as to how I'm perceived in the clinical team."
- "Mentoring is a new experience for me in my dealings with residents. As a chief consultant, the "top-down" relationship is much more familiar to me than the "bottom-up" in supporting and advising younger col-leagues."
- "It surprises me how little concrete thought is given by residents to their professional future. Sometimes I feel like I'm doing all the work, especially when it comes to stimulating and maintaining enthusiasm for research."
- "As a senior consultant, when you're on call you have the opportunity to advise younger colleagues both personally and professionally. However, it's difficult to gauge just how far you're allowed to venture into the personal sphere. The structured framework of a mentoring program creates a certain distance for giving personal advice too. The joint leadership of the group by the subject mentor and the program director ensures a certain objectivity in the advice provided, and cancels out subjective feelings of sympathy and antipathy towards individual people."
- "Through advising younger colleagues, I'm repeatedly encouraged to reflect on my own career too."
- "The mentoring program gives the mentors (as members of the senior leadership hierarchy) the opportunity to generate momentum towards a modern leadership culture (flatter hierarchies, more transparent communication and staff assessments)."

5.2.5 Summary of the Experiences of the Program Phase (2003-2007)

Below, we discuss in brief our experiences during the setup phase of the mentoring program, as well as a few evaluation results.

The *objective* of the described mentoring program was to *make young physicians aware* at an early stage of their postgraduate training of the *necessity of planning their careers,* and to *support them in implementing their career steps*. This focus implied that not only those aspiring to an academic career came forward to take part in the mentoring program, but also those aspiring to a clinical career, or a career in a specialist medical practice. As shown by the quantitative and qualitative evaluation, this aim within the framework of the mentoring program was recognized as important and in most cases actually achieved by the mentees, the majority of whom were still in postgraduate training. Taking stock of one's status quo and critical reflection on one's own professional and personal situation by completing a questionnaire both at the beginning of a mentoring program and once it had been running for a certain length of time was perceived as helpful. Young female physicians in particular benefited from mentoring. They were encouraged to think about their medium-term career plans early on, to proactively discuss how to achieve these with their bosses, and to not let themselves be discouraged by superficial barriers. Female mentors played an important part as role models for the female physicians.

The mentoring program was initiated and promoted by the management of the University Hospital Zurich between 2003 – 2007 as part of the measures supporting equal opportunities in junior-staff development for female and male junior physicians. Joint sponsorship by the University Hospital and the Medical Faculty as well as an advisory body composed of faculty members would have been advantageous for wider implementation and acceptance of the program. Mentoring in medicine is only effective when institute and clinic directors recognize it as an important supplementary element of their own in-house junior-staff development. In this respect, there were significant differences: some institute/clinic directors supported the program, while others considered it unimportant, since they themselves wanted to take responsibility for junior-staff development – but then frequently could not spend sufficient time on it.

In traditional junior-staff development, a boss decides which of his younger colleagues are worthy of support. Here, female physicians are not infrequently "forgotten", since they communicate their career intentions less

clearly than their male counterparts. Mentoring experience encourages even self-effacing individuals to plan their careers proactively and ask their bosses for “bottom-up” support.

We discovered that the mentoring program was especially valued in large clinics and institutes. In these institutions, contact between residents and their superiors is more distant and less personal. Through contact with mentors and in discussions in their peer mentoring group, residents can prepare their career questions and during the course of this process become clearer as to their own career goals. Afterwards, career discussions with the head of the clinic/institute should take place in which the young physicians can formulate their career plans in a more concrete and goal-oriented fashion.

In clinics where there is competitiveness and rivalry but very little team spirit among the junior staff, mentoring proved to be an important instrument for discussing personal career questions in a confidential relationship. In some cases, mentees also required advice on how to behave towards a lack of scientific integrity in superiors, or a failure to keep to agreements.

Whereas group mentoring proved its worth for younger residents, researchers further along in their careers tended to seek one-to-one counseling from a mentor. Above all, they wanted advice on stays abroad and applying for research grants. More intensive one-to-one mentoring was used chiefly by physicians in the run-up to their habilitation, or by colleagues applying for an academic or departmental head position.

Not only were there different settings in the form of group- or one-to-one mentoring; the type of mentoring relationship also differed. In addition to having access to the program directors, younger residents depended upon a subject mentor being available to advise them in their particular specialty. Researchers further along in their careers usually already had access to a specialist network, and therefore tended instead to seek advice on career strategy. As well as monitoring group-mentoring processes with a subject mentor, the program director also served as a mentor for several groups or individuals.

The length of the mentoring relationships varied, with the majority lasting for two to three years. Group members met initially at shorter intervals, then later with longer gaps between sessions. Some mentees still continue to cultivate the relationship with their mentors to this day; in situations where they have had a difficult decision to make, many former mentees have taken advantage of the opportunity to consult the program director for advice.

Most of the mentees were in their early-to-mid thirties, i.e. approaching the end of their postgraduate medical training and hence approaching an important crossroads in their career. For a number of female physicians, it was also important in the mentoring discussions to talk about how they could combine job/career and family.

Since each of the mentees had chosen their own mentor, it is hardly surprising that the mentees’ rating of the mentors’ behavior was generally positive, that the mentees judged the benefit of the mentoring for their own careers as significant, and that they would recommend participation in a mentoring program to younger colleagues. Time and again it was stressed how important the confidentiality and objectivity of the mentoring discussions were.

Not only the mentees rated the mentoring program positively. The mentors also benefited from the experience, and became more sensitive to the need for active junior-staff development in their respective institutions. They managed to spark an interest in research activity in younger residents. In some cases, they succeeded in creating better conditions for the compatibility of research and clinical activity. In a number of clinics, the so-called ‘protected research time’ for residents active in reseach was introduced; this means that with a full-time position, 20% of the time can be devoted to research activity. This enhances both the quality of the research and the quality of life of the young researchers. Research activity can no longer be carried out primarily in the evenings and at weekends, as it once was.

Key Messages

- Both female and male physicians who are far along in their careers benefit from one-to-one mentoring with a mentor from another institute or clinic.
- Mentoring talks are often preparation for career talks with the mentee’s superior.
- Mentors are role models for their younger colleagues both in the professional and personal sphere.
- Mentoring improves the working atmosphere in an institute or clinic.

5.3 Mentoring for Junior Academic Staff of the University Medical Faculty and of the University Hospital Zurich – Faculty Mentoring Program (2008 – 2011)

5.3.1 Initial Situation

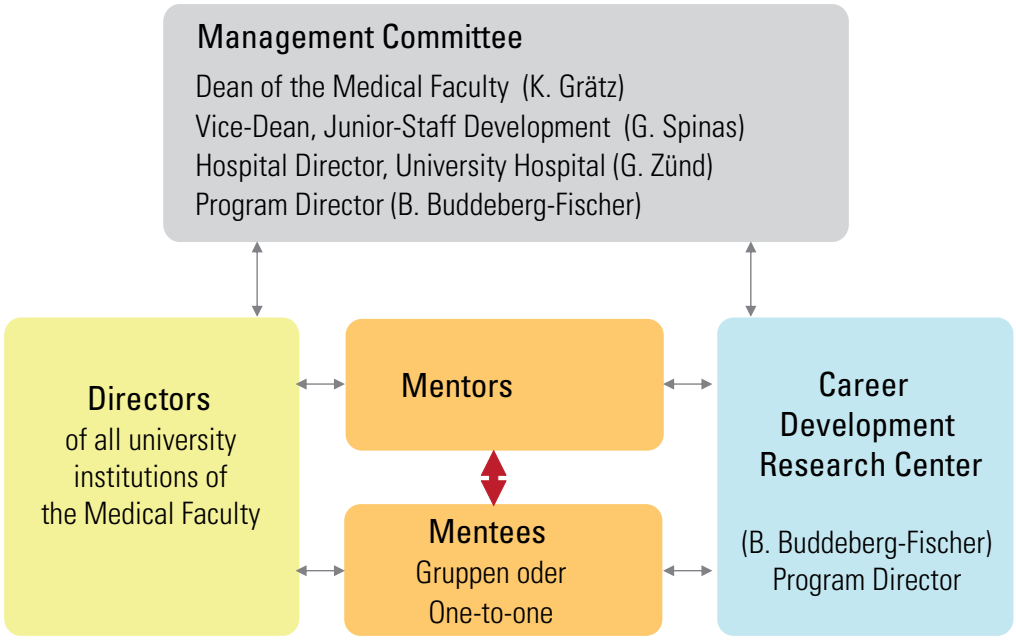
As the experiences of the 2002 – 2007 mentoring program showed, the mentees who pursued a research career were the ones who gained the greatest longer-term benefit from mentoring. These female and male physicians kept up regular contact over several years with their mentors. Especially gratifying was the fact that several women also managed to successfully pursue an academic career.

Meanwhile, mentoring was recognized by the university bodies as an efficient instrument for junior academic staff development. As a result, the Dean's Office of the Medical Faculty was more willing to take part in promoting the mentoring program of the University Hospital. This meant that we were able to admit junior academic staff from other university clinics and institutes to the mentoring program. Within the framework of the third funding period of the Federal Equal Opportunities Program (2008 – 2011), 30% of the program budget was awarded to the faculty mentoring program. The entire four-year funding period was subdivided into two two-year project phases (2008-09 and 2010-11). For each of these project phases, a proposal had to be formulated and a financial and content report delivered.

5.3.2 Structures of the Faculty Mentoring Program (FMP)

The broader anchoring of the mentoring program from 2008 onwards also changed the structure (Fig. 5.2).

Figure 5.2: Structure of the Faculty Mentoring Program of the University Hospital and of the Medical Faculty of the University of Zurich for the academic support of junior physicians from 2008 onwards



A management committee composed of the Dean and the Vice-Dean for Junior Staff Development of the Medical Faculty as well as the Director of Research and Education of the University Hospital prepared and supported the program director – a fact which promoted acceptance of the mentoring program among the institute and clinic directors. The program was publicized on the homepages of the Office of the Dean of Medicine and the University Hospitals (cf. Appendix 12.3, from p. 83). At the beginning of each project phase (2008 and 2010), all faculty members were informed about the faculty mentoring program in an email and asked to list junior academic staff from their institutes/clinics/departments. The individuals listed by their seniors were contacted by the program director in writing, informed about the FMP, and questioned as to their motivation and thoughts in terms of participating in the mentoring program. About half of the people listed and contacted in each case indicated an interest, and took part in an information event.

5.3.3 Evaluation

After it had run for four years (2008-2011), the Faculty Mentoring Program was evaluated. The mentoring relationships were of different durations, since the start was staggered over a period of 12 to 36 months. Table 5.3 outlines the characteristic parameters of the mentoring program.

Table 5.3: Characteristic Parameters of the Mentoring of the Faculty Mentoring Program (2008-2011)

Characteristic Parameters of the Mentoring	Number n	
Mentees	55	28 women (51%); 27 men (49%)
Institutions and disciplines of the mentees	18	USZ (University Hospital Zurich): Anesthesiology, Clinical Pharmacology and Toxicology, Dermatology, Internal Medicine, Maxillofacial Surgery, Neonatology, Neurosurgery, Pathology, Physical Medicine, Psychiatry, Radiology, Urology University Institutes/Clinics: Brain Research, Paraplegiology, Pediatrics, Physiology, Psychiatry, Social and Preventive Medicine
Mentors	34	8 women (24%); 26 men (76%)
Institutions and disciplines of the mentors	26	USZ: Anesthesiology, Center for Clinical Research, Clinical Pharmacology and Toxicology, Ear, Nose, Throat and Facial Surgery, Hematology, Hospital Hygiene, Immunology, Internal Medicine, Neonatology, Neurosurgery, Oncology, Pathology, Pneumology, Psychosocial Medicine, Rheumatology, Surgery UZH (=Univ. of Zurich) University Institutes/Clinics: History of Medicine, Orthopedics, Pediatrics, Physiology, (Child and Teenage) Psychiatry; Swiss Institute of Allergy and Asthma Research (SIAF) University of Bern Island Hospital: Cardiology Lucerne Cantonal Hospital: Medical Oncology University of Basel: University Psychiatric Clinic
Group mentoring	12	6 women and 6 men
One-to-one mentoring	43	22 women (51%); 21 men (49%)
Length of mentoring relationship	12 – 36 months	
Average number of meetings	10	

The majority of the mentees drew up an **agreement on aims** with their mentor which set out the career steps they hoped to achieve over the course of a year. Three-quarters of the mentees achieved more than 50% of their aspired-to objectives. The **agreements on aims** were rated as helpful. They were also an expression of a commitment to the mentoring relationship.

Feedback was for the most part positive in the **mentees' overall evaluation of the mentoring experience.** Several quotes from the evaluation give a good idea of which experiences were important for the participants in their relationship with their mentor:

Mentees' overall evaluation

- "We've already met up quite often, and email and telephone one another on a regular basis. I can turn to my mentor at any time with questions and problems. But I also report back to him when something which we've discussed works out well. Above all, I value the personal, dedicated support that my mentor provides."
- "We meet up regularly, once or twice a month. As far as the implementation of objectives is concerned, counseling on planning and writing papers as a lead author is the top priority. The counseling session about organizing work more efficiently with appropriate working hours was very helpful. I was also given impor-tant tips on which tasks I can delegate in order to create opportunities for planning research projects and writing research proposals. The [male] mentor is also advising and supporting me in setting up a research group of my own."
- "My [female] mentor gave me helpful suggestions, e.g. which journals I can submit manuscripts to on what issues, which research groups I could establish research partnerships with, which foundations I can submit a proposal to for the financing of research projects."
- "Each of us group members felt very supported by our mentor. He has a excellent knowledge of human nature and can empathize properly with the various professional and personal situations of each individual mentee. He's constructive in his criticism and also doesn't hesitate to say when one of us has gone off in the wrong direction."

There were also **problems in setting up mentoring relationships**. With group mentoring, the mentees sometimes had difficulties agreeing on a mentor. Occasionally, agreeing on a date for mentoring meetings could also be a protracted process. The commitment of some individual mentors fell off after a first meeting, mainly because of the large effort involved in having several mentees. Moreover, some established researchers who had made themselves available as mentors were not aware of the difference between mentoring (the continuous support of a junior academic in the latter's professional and personal development) and sporadic career counseling. With several mentees, the primary focus was their work on their habilitation thesis, with the result that in some cases they did not maintain contact with the mentor after a first meeting.

In addition, the mentees evaluated the **availability, commitment and behaviour of the mentors** in the mentoring relationship (Table 5.4).

Table 5.4: Rating of the mentors by the mentees (N = 55) (Seven-level rating scale: 1 = very low, 7 = very high)

Rating of the Mentors by the Mentees	Mean
Mentor's availability	6.22
Mentor's commitment to the professional development of the mentee	6.11
Mentor's commitment to the personal development of the mentee	5.59
Behavior of mentor towards mentee with respect to:	
- Esteem	5.55
- Relationship based on partnership	5.26
- Ability to empathize	5.16
- Encouraging personal initiative	5.21

The mentees' ratings show that the researchers who make themselves available as mentors do a great deal for their mentees, and take their mentoring role seriously.

The mentees also listed the **career steps** that they had implemented since joining the mentoring program. It must be said in qualification, however, that these success parameters are not wholly attributable to the mentoring. It is not possible to distinguish between the effects of the various influencing factors. Table 5.5 lists the parameters surveyed.

Table 5.5: Career steps taken by women and men (mean or percentage of the mentees who have taken the career step in question)

Career Steps	Women (n = 28) n (%)	Men (n = 27) n (%)
Number of publications	Mittelwert 4.0	Mittelwert 6.9
Third-party funding obtained	8 (28.6)	15 (53.3)
Research group established	5 (19.0)	8 (28.6)
Research prize awarded	4 (14.3)	10 (37.5)
Research stay abroad organized	1 (4.8)	2 (7.1)
Promotion to a higher position	9 (33.3)	7 (25.0)
Habilitation thesis completed	3 (10.0)	5 (18.8)

It was found that in percentage terms, more women had been promoted to higher positions – generally to senior consultant posts – but that male mentees were significantly more successful in all research parameters.

In a further step, the mentees described **what benefit they had gained from the mentoring**. Mentoring had a positive effect on target-oriented activities with respect to research career, professional confidence, assertiveness and the ability to set boundaries in one's career, as well as on the mentees' time- and self-management. Furthermore, mentees rated mentors' feedback on their professional qualifications and academic career options as very helpful. Mentees likewise found that the mentoring helped to shape their career goals more durably. In terms of networking in the scientific community and more concrete support in research matters, mentoring yielded a smaller gain for the women than for the men.

Also evaluated was the extent to which the **mentees' expectations of the mentoring program were met**. The responses are outlined in Table 5.6.

Table 5.6: Expectations of the mentoring program (N = 55) (Seven-level rating scale: 1 = very low, 7 = very high)

Expectations of the Mentoring Program	mean
To what extent were your expectations of the mentoring program met?	5.76
How helpful was the mentoring relationship for your professional career?	5.66
To what extent did you feel supported by the program directors in the establishment of the mentoring relationship?	5.89

The results indicate that the preliminary information on mentoring with respect to opportunities, limitations and responsibilities provided by the program directors helped ensure that expectations remained realistic, and were thus for the most part fulfilled.

The following case history shows what sort of contribution mentoring can make at different stages of one's career.

Vignette – Mentoring as the gateway to an academic career

A now 39-year-old physician reports on his mentoring experiences over a period of eight years: in the first two years (2002-2004) he was a member of a mentoring group.

He describes the importance of the peer group for him as follows:

In the discussions, group members together tried to determine which career path was right for the individual in question. Despite a certain competitiveness among colleagues, there was a high degree of trust in the group. Members also motivated and mentored one another.

An important factor for him was that others had similar problems to the ones he had himself. By his own admission, he was a brooder. He had extremely high expectations of himself, and was afraid of disappointments. Through the mentoring experiences and sharing with his colleagues, he learned to rate his own achievements more realistically.

During the course of the mentoring program, he was promoted to clinical senior consultant *(Klinischer Oberarzt)*. The discussions in the group and the support of his (female) mentor subsequently led him to embark on a research career. The group members had pointed out to him that he could always be a clinical senior consultant, but wouldn't be able to get into research later on. The impetus for an research stay abroad also came from the group. He saw himself as someone who needed outside motivation, and who had to be "pushed" a little.

Through the agency of his mentor, he went to the States for four years, where he did clinical as well as research work. During this period, he kept in touch with his mentor and sought her advice concerning his return to the University Hospital Zurich. By now, he is a chief consultant *(Leitender Arzt)* at his institute and *Privatdozent* at the Medical Faculty. Applying for a Head of Department position, he once again sought fairly intensive support from his mentor. For the application process and negotiations for this position, however, the mentor advised him to avail himself of professional support in the form of coaching, in addition to the mentoring.

This example illustrates how mentoring should be modified in both form and content in accordance with the stage a mentee has reached in his career and the career steps he has already taken. It also underscores how sustained mentoring extends over a fairly long period of time and is broader-based, while coaching is scheduled sporadically, focuses on job aspects, conveys management skills, and trains an individual in strategic negotiating techniques (cf. also Chap. 2.2).

The application and subsequent negotiations went successfully, with the result that this phase of the mentee's career concluded with his appointment as departmental head and director of an institute in a large cantonal hospital. Particularly in the first stage of running this large institute, both coaching and mentoring will serve as additional useful support options to help him grow into his new leadership role.

As a **supplement to the mentoring** in a group or one-to-one setting, the program directors organized two courses – one in *Biostatistics* and one in *Scientific Writing*. Participants rated the Biostatistics course as good, and the Scientific Writing course as excellent. In the latter course, they worked on individual papers of the participants. The (female) course instructor explained the basic guidelines of writing a scientific paper, as well as giving concrete feedback on the individual papers in progress, which the course participants could then implement. The participants expressed the wish for further courses to be offered as an addition to the mentoring program in e.g. the following subject areas: project management, attracting third-party funding, building leadership skills.

At its best, mentoring is a supplement to the junior-staff development provided by senior colleagues. **Career support by heads of institutes and clinics** addresses concrete framework conditions, e.g. by granting protected research time, providing financial and human resources for research, and gradually devolving management tasks to younger staff. On average, participating mentees rated this type of support received from their senior colleagues as 'good' (mean 5.08 on a scale of 1 = quite poor up to 7 = very good). There was a gender difference here, however, with women feeling less supported (mean 4.81) than their male colleagues (mean 5.41).

The evaluation also included the **mentors**, who were asked to answer six questions on their **mentoring experiences** in their own words. Below, we list the key aspects.

What additional support – besides that provided by their immediate superiors – were you able to give to your mentee?

- Providing an outside perspective free from institutional dependencies, strategic career counseling, and advice on better positioning in the institution in question
- Support in career planning and focusing on key career goals
- Counseling, bearing in mind the mentee's personal life situation – in particular work/family balance aspects – when planning his/her career
- Role model: similar professional and personal path, encouragement to overcome career obstacles
- Communication on the level of a partnership, unlike the hierarchical relationship between superior and employee
- Concrete help by passing on know-how in dealing with research data and publishing activity

Most answers stressed the cooperative relationship between mentor and mentee, the addition to career advice thanks to the outside perspective, and input from the mentor as a role model.

Rating the match between mentee and mentor

- "Gratifyingly available even at the first talk, honest discussion, very good professional match, the careers talk was well received"
- "Mentees felt that the "casual", non-vertical conversational style really spoke to them, animated discussions"

All of the mentors rated the match "very good" in both professional and personal terms.

What specific questions did the mentees approach you with at the mentoring meetings?

- Strategic questions on the acquisition of third-party funding for research, research partnerships and publishing activity
- Practical procedure with regard to the habilitation thesis
- Uncertainties in terms of the compatibility of research and clinical activity, and in terms of the timing of stays abroad
- Uncertainties in terms of the compatibility of research and clinical activity, and in terms of the timing of stays abroad
- Professional development potential and personal development targets
- Coordinating starting a family and career
- "What paths might be suitable for me in future, bearing in mind my previous professional experience, my position in the clinic, and my personal life situation? What must I specifically do in order to prepare myself for the next challenge?"

The questions of many of the mentees focused on highly concrete aspects of career planning.

In what ways did the mentee benefit professionally and personally from the mentoring?

- "Hearing the objective opinion of a senior colleague, feeling heard in the conversation, and feeling vindicated by the dialogue"
- "The discussions helped the mentee to make his own decisions"
- "The opportunity to think about his professional and personal prospects in a protected framework"
- "One mentee realized that he didn't want to do research at all; he's now concentrating on his clinical career"

The mentors' responses were wide-ranging. Mentoring was viewed as a help with decision-making, and not simply as a form of advice-giving to younger colleagues.

In what ways did the mentee benefit professionally and personally from the mentoring?

- "The mentoring relationship enabled the "satisfaction" of a mutual curiosity about important medical issues."
- "I became aware of how difficult it is to reconcile clinical and research activity with a family."
- "The pleasure and satisfaction of "discovering" highly talented young researchers and accompanying them on their way upwards."
- "I developed a greater understanding of the interactions between young colleagues and superiors, which also made me more sensitive to these issues in my own clinic."

Most mentors rated the mentoring experience as a personal gain. They found it very satisfying to pass on their own experience and knowledge, and to better their understanding of the situation of their younger colleagues. The directors of institutes and clinics also became more sensitive to junior-staff development in their own institution.

What negative experiences have you had as a mentor in the mentoring relationship?

- "Many mentees only contact the mentor when they have questions, but don't get back in touch to say what they decided. A better feedback culture would be desirable. It would also be nice to hear what's going well, and not just where there are problems. Some mentoring relationships fizzle out, while others persist over several years."
- "Unfortunately I almost always had to take the initiative in terms of arranging the mentoring meetings, although it was meant to be the mentee's job to keep in touch."
- "The difference in career status between me and my mentee was fairly slight, so I was uncertain just how much I could give him."

Whereas the majority of mentors stated that they had had no negative experiences, others expressed themselves somewhat more critically.

5.3.4 Summary of the Experiences of the Faculty Mentoring Program (2008 – 2011)

Mentoring is seen by junior academics as an important supplement to career support from their direct superiors. Mentees particularly value the individual career counseling, which is not led by the interests of the institute or clinic, and which also takes aspects of their personal lives into account. A **mentoring relationship** is a freely chosen relationship based on the personal and professional commitment of the mentor towards his mentee. The personal feedback on strengths and weaknesses and guidance on goal-oriented career planning reinforce the mentee's professional confidence. Mentors often serve as role models for the younger mentees, owing to the personal relationship established between them.

By contrast, a **superior-subordinate relationship** is not freely chosen, nor is it a supportive relationship per se. In this relationship constellation, the dependency relationship as well as sympathy and antipathy are involved. There are senior staff who are highly committed to supporting the careers of their young colleagues – but there are also bosses who offer no specific career guidance to their subordinates.

The concept of **contacting potential mentees** whose names have been put forward by their direct superiors has proven its worth. This also ensures that the bosses are informed about the mentoring program, and agree to the possible participation of their staff. Experiences in previous mentoring programs have shown that this sort of open information and communication allows clearer boundaries to be drawn between the roles of boss and mentor.

Mentors were contacted by the program director, who informed them about the vital aspects of a mentorship in a face-to-face meeting. Not all of the established academics were aware of the special aspects of a mentoring relationship as opposed to a superior-subordinate relationship.

The **matching of mentee and mentor** was performed by the program director primarily with a professional – above all, academic – "fit" in mind, but also sought a good personal match. Here, some of the mentees had too narrow an idea of which mentor would suit them. The FMP directors and several experienced mentors supported the program director in the selection of suitable mentors.

Experiences in the various phases of the mentoring program have shown that **group mentoring** is suitable when the junior researchers already know one another before the mentoring starts and where there is a certain group cohesion. In this case, neither the organization of the mentoring meetings nor the issue of confidentiality within the group poses a problem. The advantage of this setting consists in the personal and professional communication that takes place, as well as the mutual encouragement. A further upshot is that the solidarity experienced in the group mentoring sessions also has a positive effect on the working atmosphere in a clinic.

A **one-to-one mentorship** is suitable above all for mentees who are far along in their academic careers and who have nearly or already concluded their habilitation thesis. At this stage of the proceedings, objective career guidance is particularly helpful. Moreover, meetings can be arranged more spontaneously in a one-to-one mentoring.

A **successful mentoring relationship** not only requires initiative on the part of the mentee; the established academics that make themselves available as mentors should be aware of their responsibility towards the mentees and gauge beforehand whether they can and will muster the necessary time, emotional and intellectual resources for a sustained mentoring relationship. Some mentees have learnt the hard way that their mentors were only willing to hold one session per year. Mentoring is more than just a one-off stock-taking exercise in one's professional career, however.

Courses on multidisciplinary skills are an important supplement in a mentoring program. Having the ability to tailor our range of courses specifically to the needs of the participants has proven its worth. One difficulty was that some of the mentees were not released by the head of their institute/clinic for these courses, which took place during the working day. A great many more mentees could have benefited from these top-class courses.

A further important discovery from the program phases is that the **program director** should stay in regular contact with the mentees and mentors, in order to overcome in a timely manner any difficulties in establishing the mentoring relationship and to prevent the "fizzling out" of the mentoring meetings. In addition, taking part in a questionnaire evaluation of the program ought to be obligatory for all mentees.

Key Messages

- Long-term mentoring of junior academic staff demands the commitment of mentor and mentee over an extended period of time.
- Establishing a good feedback culture between mentor and mentee fosters commitment.
- Junior academic staff benefit from having several mentors over time.
- The mentee's current career phase and the professional and personal issues pertaining to this phase are borne in mind when matching mentor and mentee.
- Mentoring is an important addition to the career support provided by one's superiors.

5.4 Portraits of a (Female) Mentee and Mentor

5.4.1 Portrait 1: From Resident to Full Professor – Stages of a Successful Career

A female physician who was 41 years old in 2011 already boasted an impressive track record of achievement in 2005, when she was looking for a mentoring relationship. She was in the final stages of her postgraduate specialist training, had built up her own research group from third-party funds, and had worked exclusively in research for three years, two years of which had been spent at a renowned research laboratory abroad. In order to complete her clinical specialist training, she needed to work for one more year at a clinic outside of the University Hospital, and carry on performing her role as head of a research group. This required compromises on several levels.

As far as her personal situation was concerned, in 2005 she was just about to give birth to her first child. Her husband supported her career; although in a demanding job himself, he was very flexible in terms of his work.

In 2005 she had met the requirements for the *Habilitation* in her specialty according to the regulations. Despite this, the clinic director initially refused to support and advocate her postdoctoral thesis before the faculty. He imposed conditions that first had to be met, but which were in no way consistent with the Medical Faculty's *Habilitation* regulations. In this situation where her career was being obstructed, the young physician had the desire and hope of overcoming the obstacles set by the clinic director with the help of mentoring.

Discussions with her mentor essentially revolved around objectifying the conflict between her boss and herself. She confronted him with the university's *Habilitation* regulations, wrote a memo of each meeting with him which she emailed to him, and planned her future career abroad without informing him of this. Eventually, owing to the high quality of her academic achievements, he could no longer refuse to support her postdoctoral thesis. Had he done so, he would have risked coming under pressure from his colleagues. The young colleague had built up a good network in her subject field which she was able to activate in this situation.

After successfully completing her specialty training and postdoctoral qualification in 2007, the physician went to a renowned clinic abroad, where she not only acquired the necessary qualification for a subspecialty in a surgical discipline, but was also able to take advantage of outstanding research conditions. She set up her own third-party-funded research group with eight young scientists. During her four-year stay abroad, she kept in touch by email with her mentor as well as with influential people from her specialty.

Although she had the option of assuming a leadership role at her current workplace, she wished for family reasons, among others, to return to Switzerland. Applying for a chair in Switzerland, she managed to prevail against top-class competitors from home and abroad. She was offered a full professorship after the faculty had approved her *primo loco* placement on the appointment list with no dissenting votes. This was all the more remarkable as her former clinic director attempted to spread a negative image of her during the appointment procedure through interventions behind her back.

On the obstacle-strewn path towards her appointment, the physician was given advice and support by several people who had mentored her over the years. In the current phase of the appointment negotiations, however, she also needs a good coach who is familiar with the scenario at the university to which she is being appointed. Unlike mentoring (cf. also Chap. 2.2), coaching focuses on circumscribed professional goals, in her case on achieving the best possible offers concerning the conditions of her appointment as a professor, in order to negotiate favorable terms for her start at the clinic. For the first year of her job as a newly appointed chair she should continue to avail herself of coaching, since this phase is primarily about management tasks: she has to run a clinic, prove herself in the clinical and administrative sectors, and set up her own research group.

Her impressive professional career path also left room for her personal life plan. At the same time as she was appointed to the professorship at a Swiss university clinic, her second child was born.

Interview with the mentee on the contribution of mentoring to her career and on the individual and institutional framework conditions for a successful academic career.

What contribution have mentoring and the courses offered by ProWiss[5] made to your career path?

"I heard about the University of Zurich mentoring program and ProWiss courses [cf. Chapter 4.1.7] through a [female] colleague when I was at a turning point in my career. My relationship with my superior at the time was troubled; he wasn't supporting me in my career, which is why I was actively looking for other means of career support. The discussions with my [female] mentor, who wasn't in the same specialty, and the ProWiss courses influenced my decision to leave the University Hospital and go abroad, instead of pursuing the traditional path of a senior consultant at the university hospital. Both career-support instruments [mentoring and the ProWiss courses] helped me develop an understanding of what the requirements were for an academic career. I acquired lots of management know-how and skills from the ProWiss courses, such as efficient time and project management in both my research group and my private life, improved writing of applications for the funding of research projects, and making use of my ability to build up and extend my professional network, as well as long-term conflict resolution strategies through non-aggressive communication [87]."

What role did the various mentors you had play for your professional career?

"I always had different mentors at the various stages of my career. When I first started out as a resident at the University Hospital I was mentored by a [male] chief consultant (*Leitender Arzt*) with whom I still maintain a collegial relationship. The then-director of the clinic also supported my career until my first academic stay abroad. When I returned to the University Hospital and developed problems with his [male] successor as director of the clinic, he once again gave me very good advice. A senior consultant (*Oberarzt*) [male] who had had similar difficulties with the new boss and had therefore left the University Hospital has also been an important discussion partner over the past few years, giving me tips and keeping me up to speed with the situation in our field in Switzerland. He is now head of department and director of an institute at a large cantonal hospital and actually more than a mentor, he's a friend of mine. Besides these mentors from my discipline, the strategic counseling I received from a [female] mentor outside my field, who is well acquainted with the rules of the game and the intrigues of academia, has been an important addition. Over all these years, she's always lent a sympathetic ear to me."

What personal skills and institutional framework conditions are important for overcoming career obstacles and the obstruction of one's career by one's clinic director?

"It takes courage, more than anything, to pursue unconventional paths and risk a step into the unknown. One should take advantage of opportunities to discuss the pros and cons of career options with experienced clinicians. You've got to activate your network to acquire good jobs as an alternative. But it also requires an understanding partner who is willing to put his own career aside temporarily. Last but not least, financial reserves are also essential."

What sort of support from a partner is important to help a female physician achieve a successful academic career?

"I would say that this is the crucial point in general – and no one can help you here either. Earlier on, a relationship of mine broke up because of my evening work in the lab. In retrospect, that was perhaps a good thing. When a woman is carving out a career for herself, she needs a partner who's flexible. He can be carving out his own career, but he's got to be flexible. Another option is employing people to take care of the house and children. My husband has definitely carved out his own career, he still earns more than I do, but he can organize his day, and can also work from home from time to time."

What should change in medical faculties and university hospitals so that qualified women consider a full professorship or the position of clinic director worth aspiring to?

"Above all, it takes encouragement and support from one's superiors, and good role models who've been down a similar career path and managed to reconcile job and family. It's also important to create incentives for pursuing

[5] A project run as part of the Swiss Federal Equal Opportunities Program, ProWiss offered courses at the University of Zurich in multidisciplinary skills that are important for a research and academic career.

a research/academic career. This can be done on several levels, e.g. by paying for conference attendance, praising a high level of commitment publicly and giving criticism in a constructive manner in the clinic, celebrating successes, and granting facilities for postgraduate clinical training. For women, the option of a part-time academic career (60%-time for residents and 80%-time for senior consultants) as well as in-house childcare with extended hours for out-of-hours care (from 6.30am to 7.30pm) are important framework conditions for progressing on the career path they've pursued.

For me, a major impetus was my first clinic director saying to me that he thought me capable of an academic career. He even made funds available from the hospital's budget for me so that I could do the postdoc stage abroad without excessive financial sacrifices – in other words, he topped up my SNSF grant. Through his interest in research, his active participation in the Medical Faculty's Research Day, his setting-up of and active participation in internal departmental research seminars, and his involvement in the organization of conferences, this clinic director contributed substantially to a creative scientific climate in his clinic. And this, although he himself was not a basic scientist. With him, you noticed that he was proud of the success of his staff, and did not envy them it. It was a major desire of his to award the *Habilitation* to a woman in our specialty for the first time in Switzerland. Although several of his female junior staff received a great deal of support from him, they did not then manage to negotiate the rocky path to the *Habilitation*. I myself was positively spurred on by obstacles or such incentives. When he said to me for the first time that he thought me capable of an academic career, he did, however, add the caveat that at 31 I was already relatively old for an academic career. These remarks and the idea of being the first woman in something spurred me on to prove both to myself and to him that I could do it. Through the obstructiveness of the following clinic director, I became the second rather than the first woman to achieve a habilitation in our field. On the other hand, I now have the chance of possibly becoming the first Swiss female full professor (*Ordinaria*) in our field."

Key Messages

The following are needed for a successful academic career:

- Career support at an early stage of postgraduate training
- A number of different role models
- Heads of institutes and clinics who give positive feedback to young colleagues interested in or involved in an academic career, in addition to supporting them on various levels
- Personality traits predisposing one not to accept difficulties as insurmountable obstacles, but to confront them as challenges, with the conviction that they can be overcome
- Perseverence and the courage to try new things, rather than pursuing previously trodden paths
- Willingness to compromise and flexibility in one's personal environment

If these institutional and personal requirements are fulfilled, mentoring and management courses represent important additions to career support.

5.4.2 Portrait 2: Female Full Professor as Mentor – a Professional and Personal Role Model for Younger Colleagues

Forty-seven years old in 2011, when the mentoring program was set up in 2002 this senior consultant at the University Hospital Zurich was close to acquiring her habilitation in her discipline. She had completed a broad clinical postgraduate education, followed by further training. After a two-year research fellowship in the USA, she continued her flourishing research activity at the Medical Faculty of the University of Zurich with her own research group. Thanks to top-notch scholarship and her excellent network connections, she repeatedly managed to acquire third-party funding for her projects as well as grants (*inter alia* a Marie Heim-Vögtlin grant – a program supporting women in research – from the Swiss National Science Foundation (SNSF), and an appointment via special measures at federal level for junior academic staff development).

In the pilot phase of the mentoring program she mentored a group of six young (male and female) physicians who were looking primarily for advice and support from her in the planning of their own small research projects. A few group members then also collaborated in projects run by her research group. Active for two years, the pilot-phase mentoring group met at regular two-month intervals. During this period, the mentor brokered jobs for advanced group members in foreign research laboratories whose heads she herself knew. She visited a number of her mentees abroad during conventions at their research centers and discussed with them the further progress of their research and their return to an institute or clinic in Switzerland.

In recent years she has repeatedly taken on new mentees with an interest in research, thereby contributing very significantly to junior academic staff development at the University Hospital Zurich. Obtaining her *Habilitation* in 2003, in 2009 she was awarded an *ad personam* chair in anesthesiology. Throughout all these years she worked half-time as a chief consultant (*Leitende Ärztin*) in clinical anesthesiology while devoting the other 50% of her working hours to research. In 2011 she was elected a member of the Research Council of the Swiss National Science Foundation.

She is a role model for many young female physicians in several respects: she is one of the few women full professors in medicine; she is both an eminent researcher and an experienced clinician; she is married to a partner who has likewise carved out a career for himself, i.e. they are a dual-career couple; and she has two children. She radiates *joie de vivre* and fills young colleagues with an enthusiasm for research. At present, she also mentors junior researchers from other specialties.

Throughout the ten-year term of the mentoring program she was always an active mentor, and together with the program director contributed with her experience to the further development of the program. During this period, she built up her own academic career in parallel with her mentoring activity. In various phases of her career, this colleague was also mentored by the program director. In 2012, the current program director Barbara Buddeberg-Fischer will be handing over the reins of the Medical Faculty and University Hospital Zurich mentoring program to this colleague, Beatice Beck Schimmer.

Interview with the Mentor on her Experiences of Mentoring Relationships

What was your motivation in championing mentoring at your institute in 2002?

Over the many years in which I've done both clinical and research work, I've come to realize first-hand how important good planning is to get ahead purposefully in one's career. As a young resident I myself had had no mentor, and in retrospect I saw this as a deficiency. That's why, in my current position as a chief consultant, the logical conclusion for me was to offer my services as a mentor, to give young colleagues a "boost" in their career. What's more, I've noticed that many young medics work in a less-than-target-oriented manner, without developing a medium-term career perspective. Both of these factors prompted me to take part in the mentoring program.

How do you explain the fact that you are a role model for many young physicians?

I imagine that the young medics see that in spite of high professional commitment, success, and also the occasional failure, I've remained an enthusiastic physician and researcher, and am satisfied with my life. I've always remained true to my principles, and have never "sold my soul". Even though the commitment is often great, I enjoy working in a competitive professional environment. I'm well organized, so that I get good benefits from a reasonable amount of effort.

Young colleagues also notice that I am happy to champion junior academic staff and give them disinterested support in their careers. This means I come across as trustworthy.

I've also always cultivated a life outside of the University and the University Hospital. My family and my social network are very important to me. The upshot of this is that I'm also understanding of the personal situation of my staff.

What benefit have you yourself derived from mentoring?

It was only through mentoring that I became properly aware of the importance of good, open communication in working groups. Just as I call on the mentees to seek a dialog with their superiors, I have learned to actively seek dialog and discussions with staff or superiors in my own professional environment, even when I've sometimes had to force myself to do so.

What difficulties do you experience when mentoring colleagues from different disciplines?

With mentees from other clinics, it's sometimes hard for me to get a handle on the written and unwritten rules that apply in their discipline, and on how their clinic is organized. Understandably, the mentees are often unable to gauge their current situation objectively. It's important to bear in mind the subjectivity of the mentee's point of view so as not to jump to the wrong conclusions when providing career guidance.

How many junior physicians do you mentor in the narrower sense of the word?

At present I have six mentees – four women and two men.

What differences do you see between the mentoring relationships with your individual mentees?

Differences between the individual mentees: There are mentees who both actively take pains to cultivate the mentoring relationship and who also quickly implement the professional and personal suggestions they are given. Then there are also a few mentees who even after a certain number of mentoring meetings still show little initiative in implementing career steps. They come to the next round of mentoring with similar concerns to the last time. In these instances, I increase the intervals between mentoring sessions and urge the mentees to deal with their pending issues and initiate the suggested steps.

A mentee-mentor relationship has intensive and less-intensive phases. The initial phase requires sessions at shorter intervals in order to establish the relationship, build trust, and set the essential goals of the mentoring. Then there are also quieter phases in which it's more a question of consolidating career steps. In such situations, the intervals between meetings can be longer. Should an urgent question or issue arise, a meeting is arranged at short notice.

Mentoring is an important element of junior-staff development. What additional measures could be added to mentoring in order to give especial support to women in an academic career?

Although various university bodies continually discuss the issue of what measures are needed to support junior academic staff, no binding guidelines have been adopted to date. The important thing is to make bosses and institute/clinic directors aware of junior-staff development and to motivate them to support young colleagues in a timely and goal-oriented manner. The desire to have children should no longer be a reason for female physicians to be excluded from targeted career support; instead, more flexibility is needed for specifically female career paths. Last but not least, institutional framework conditions such as sufficient childcare places are important requirements for encouraging women interested in research not to give up prematurely on their academic-career goals.

Do you think that a manual on mentoring would be helpful for mentors? If so, in what way? What have you learned about mentoring from me?

A manual would certainly be helpful, in particular to point out the differences between mentoring on the one hand and coaching, tutoring, etc. on the other. Mentors who have only recently assumed this role could, for instance, benefit from other mentors' experiences in a workshop. Some of the topics dealt with could be the principles of confidentiality, objectivity, and commitment within a mentoring relationship, as well as the opportunities, and limits of mentoring.

From you as a mentor and program director, I learned the principles of mentoring. Especially important for me was the concept that as a mentor I should try to adopt an objective attitude towards the mentee, stick to the central theme of the counseling session, and create a commitment to the mentoring relationship, such as e.g. the mentor and mentee agreeing on objectives, and keeping a log of the mentoring sessions.

Why, in your opinion, do some mentoring relationships fizzle out?

There are always mentees who are advised by their superiors to take part in the mentoring program. Although these colleagues turn up to be placed with a mentor, deep down they have no real concern or interest in a mentoring relationship. They join in at first because it's offered, other colleagues are also taking part, and it's "in", so to speak. After one or two sessions the relationship fizzles out because the mentee no longer makes an effort to arrange meetings with the mentor. Of course, a mentoring relationship doesn't just mean taking part in a discussion; mentees are meant to confront their current situation and actively address certain points. This takes energy, time, and the willingness on the part of the mentee to actually do this.

On the other hand there are also mentors who ostensibly declare their willingness to take on a responsibility of this nature because they want to be well regarded on the faculty council. In reality, however, they have little interest in involving themselves in a mentoring relationship. Often, they are not available for their mentees, or stretch out the intervals between meetings with the result that no real mentoring work can get underway.

Who actually needs mentoring?

Physicians of both sexes interested in either an academic or clinical career – the former in particular – can benefit from mentoring. In my opinion, students are also an important target group. Especially before completion of one's course of study, mentoring allows for a more goal-oriented approach to career planning. Setting a course early on is very important for a successful career. Because of the potential challenges involved in combining a job and family, female physicians in particular would benefit from early career counseling and planning.

Which aspects of our mentoring relationship helped you in your career? What was lacking?

I learned to discover where I stood. That was an important step for me, which brought a certain calm to my academic life. You also taught me to focus on several essential points and to pursue these systematically.

You showed me how to handle failures positively – what one can gain from them, and take into the planning of one's further steps.

I didn't miss out on anything. In several situations, you advised me to seek additional career mentoring from other people. This was partly because you didn't rate yourself as objective enough in some matters, or because you thought that someone from my discipline would be in a better position to examine certain issues. I found that very wise and helpful.

No doubt you'll have had several mentors over the course of your career. In what phases of your career where what sorts of mentors important?

Unfortunately there were hardly any mentors in medicine at the beginning of my undergraduate degree and postgraduate training. While I was working on my habilitation thesis, I got to know a circle of just a few specialists who mentored me selectively in terms of my research activities. These mentors have remained "faithful" to me to this day. They were – in some cases, are – full professors at the University of Zurich, some of whom have emeritus status. Their professional and institutional perspectives are extremely valuable, allowing them to advise colleagues in an unbiased and disinterested manner. In difficult situations, one often loses the ability to look at oneself critically. It's then especially that you need good mentors, to provide you with positive yet objectively and professionally grounded support.

In summary, the portrait of this mentor shows that she missed out on goal-oriented career support in the early years of her career – support which would have saved her a number of time-consuming detours which had little relevance for her career. She is a structured, well organized, efficient person, and thanks to these abilities set up a mentor network for herself on her own initiative while studying for her postdoctoral qualification. This experience contributed substantially to her commitment to the mentoring program of both the Medical Faculty and

the University Hospital Zurich. Since she is one of the few female full professors in the Medical Faculty and in addition to being a top-notch researcher has a satisfying private life, including a family, she is a popular mentor and role model, especially for younger female colleagues. Sometimes the program director even needs to protect her from being used as a mentor by too many female physicians. One of the reasons she is so successful in her mentoring role is that she not only mentors younger colleagues, but also continually seeks support in mentoring relationships for herself.

Key Messages

- The motivation for mentoring junior staff is often based on one's own positive experiences as a mentee, or on the realization that such experiences were missing from one's own career.
- Mentors should receive guidance for their mentoring role.
- Mentees should be aware of their personal responsibility within the mentoring relationship.
- Mentoring is more or less intensive depending on the phase, and is particularly helpful during career transitions.
- Mentoring provides for optimum use of an individual's professional abilities and their incorporation in one's life plan.

6 Mentoring Program for Medical Students at the University of Zurich

6.1 Impetus and Initiatives for the Development of the Program

Since 2007, as part of the academic reforms instituted at the Medical Faculty of the University of Zurich [88, 89], optional lecture courses have been offered in the so-called *Mantelstudium* (specialized studies) in additional to the compulsory lectures and courses. Out of a range of about ten modules, students choose a semester-long seminar for which attendance is then compulsory. Evidence of participation in the seminar must be furnished in order to earn two credits.

The independent Department of Psychosocial Medicine of the University Hospital Zurich (headed up to 2010 by Prof. Dr. med. Claus Buddeberg) was responsible for the planning and execution of an interdisciplinary module consisting of 28 hours per semester. The results of a research project on the career development of young physicians carried out in the Department of Psychosocial Medicine and funded by the Swiss National Science Foundation showed that many graduates would have liked more information on career opportunities in medicine during their degree course [74, 90, 91]. This led to students in second to fourth year being offered a seminar entitled *Career Planning and Work-Life Balance* (run by Prof. Dr. med. Barbara Buddeberg-Fischer and Dr. phil. Martina Stamm). This optional lecture course was very popular with the students, and the 30 places were quickly filled. Given top marks in the evaluation, it was therefore offered again in subsequent semesters.

A number of topics of general importance for medics were dealt within the seminar: learning and time-management strategies, presented by a professor of business education and management training; society's view of physician, patient and medicine, lecture by and discussion with a medical ethicist [92]; importance of interdisciplinary skills for academic and professional success, by a university educationalist; stress management in studies and career, in a contribution from a psychologist who had developed an empowerment project as a preventive program for physicians; future prospects for the medical profession, from the perspective of a health economist. The career-specific themes dealt with aspects of planning specialist medical postgraduate training. In addition, a half-day block was devoted to each specific career: career in practice (general or specialist practice), clinical career, and research-academic career. As preparation for each seminar block, three students at a time visited a male or female physician from the career in question, interviewed them as to their background, and questioned them in particular on their current work-life balance. For the female medical students, the issue of how women physicians managed to reconcile career and family was particularly important. The students presented their findings at the seminar in a brief report. This was followed by a lecture given by the expert from the career in question and subsequent discussion with him/her. Both the findings from research studies [3, 93] and the experiences of the physicians giving the presentations consistently identified mentoring as an essential building block of one's career. The experts encouraged the students to approach older male and female colleagues and ask them for mentoring. They also informed the students that experienced colleagues would be pleased to receive such a request. "Plan your career proactively while you're still studying and make use of a mentor" was the consistent message given by the speakers to the students.

A third-year student, Esther Frei, took this message seriously. She proposed in particular to tackle the shortcoming that, unlike in the USA, there were as yet no mentoring programs for medical students at Swiss universities. She came to me (Barbara Buddeberg-Fischer) to ask whether I would support her in the planning of a mentoring program for students of human medicine at the University of Zurich. Delighted by this student's enthusiasm and commitment, I was at the same time sceptical of the chances of such a program being implemented, owing to my own experiences in setting up a mentoring program for junior academic staff. I recommended that as a first step, she write a review article on research papers dealing with mentoring programs for medical students, as a medical dissertation. In this way, she would be able to learn the ropes of the subject and glean suggestions on how a mentoring program should be set up. Within a year, this spadework was completed with the publication in a scientific journal: *Mentoring programs for medical students – a review of the PubMed literature 2000-2008* by Esther Frei, Martina Stamm and Barbara Buddeberg-Fischer [7] (cf. Appendix 12.4, from p. 83). The finding obtained from the literature that mentoring is important for students, both for their personal development and for goal-oriented career planning, strengthened the now-fourth-year student Esther Frei's wish to initiate concrete steps to establish a mentoring program for medical students at the University of Zurich. In 2009, together with two

fellow students, Silvio Wehrle and Roman Gähwiler, and with the same determination with which she had written her dissertation, she set to the planning and setting up of a mentoring program for medical students.

6.2 Structures of the Mentoring Program for Medical Students (MedStudMent)

At the beginning of each academic year (late summer/fall), the MedStudMent project directors, consisting of two third-year medical students, send out a letter to all heads of departments and chief consultants at the University Hospital Zurich (USZ), University Children's Hospital (KiSpi), and the Psychiatric University Clinics, as well as to the physicians in private practice teaching family medicine at the University of Zurich, asking whether they would be willing to make themselves available as mentors to third-year medical students. To date, the Orthopedic University Clinic Balgrist has not taken part in the program.

The **program is advertised and introduced** to the students via the 'Virtual Education Platform Medicine' (abbreviated as 'VAM' in German), in a newsletter from Mediflash (an electronic information medium of the Student Medical Society), as well as in a lecture, where it is personally presented by the project directors.

Potential mentors and mentees both apply via a form listing key benchmark data, on the basis of which the project directors undertake the **matching of mentors to mentees**.

Mentors provide information on their discipline and main professional focus, on the institution where they work (institute/clinic/practice), on their position or role, and on their personal interests.

Mentees answer questions on the reasons for their interest in the mentoring program, on their expectations of the mentor and of the program as a whole, on their future career plans (clinic/research/practice/fellowship abroad), and on their academic (i.e. subject area) and extra-curricular interests.

The mentoring **objectives** are circumscribed as follows: In a **one-to-one mentoring** relationship, students are meant to gain an insight into clinical routine and experience medical practice up close, receive recommendations for planning their clinical electives year (*Wahlstudienjahr*)[6] and advice for planning their postgraduate medical training, and be able to observe the mentor as a professional and personal role model.

The mentoring relationship has no imposed time limit. Ideally, mentoring should continue from the third year of the mentee's undergraduate degree until the start of his or her postgraduate training.

6.3 Implementation of the MedStudMent and Participants

After the preparatory work in 2009, the MedStudMent was first advertised in the spring semester of 2010. Fifty-eight mentors and 46 mentees applied for a mentorship. Because of the positive response in the pilot phase, in which 46 mentoring pairs (third-year students with a male or female mentor) were formed, the second round of the program followed quickly – in fall 2010 – for the new year cohort. Sixty-one students had a choice of 65 mentors. In September 2011, the third round took place.

Two second-year students are initiated by the project directors (medical students Esther Frei, Roman Gähwiler, and Silvio Wehrle) in the organization of the program, so that they can take over the organization in the next round, when they themselves are third-year students. This ensures the continuity of the program even when its initiators progress to later semesters or leave the university. The director of the faculty mentoring program (Barbara Buddeberg-Fischer) helped the students to conceptualize the MedStudMent, reported on her mentoring experiences to physicians at the launch event, and monitored the evaluation process.

Financial resources: To date, students have had little funding to fall back on. The Medical Dean's Office and the Institute of Family Medicine each made CHF 1500 available. A large part of this sum had to be used for the ini-

[6] Clinical electives year (*Wahlstudienjahr*) – the practical year of a medical degree course during which students gain clinical experience in various disciplines

tial meeting at the start of third year, where mentors and mentees met for the first time. Very little was left over for setting up a homepage (www.vam.uzh.ch/Mentoring), or for developing evaluation instruments and analyses.

6.4 Evaluation

From spring 2010 to summer 2011, the program passed through two recruitment phases. The evaluation for both groups took place at the same time in summer 2011. The mentoring relationships lasted from 12 to 15 months. A total of 106 mentors and mentees took part in the program. One (female) mentee dropped out of the program right at the beginning. Forty-seven mentees (44%) and 58 mentors (55%) took part in the online evaluation.

Table 6.1 outlines how many mentoring meetings took place, how long the sessions lasted, and what benefit mentees obtained from their mentoring experience.

Tabelle 6.1: Frequency and length of mentoring meetings and assessment of the benefits of mentoring from the perspective of both mentees (n = 47) and mentors (n = 58) in the MedStudMent Program

Frequency of Mentoring Meetings	Mentees n = 47 n (%)	Mentors n = 58 n (%)
Up to 3 times	27 (57)	33 (57)
4 – 6 times	14 (30)	17 (30)
More frequently	6 (13)	8 (13)
Length of Mentoring Meeting		
Up to 30 minutes	8 (17)	7 (12)
30 – 60 minutes	21 (45)	19 (33)
60 – 90 minutes	5 (11)	18 (31)
longer	13 (27)	14 (24)
Benefit of Mentoring for Mentees		
Clinical electives year	18 (39)	17 (30)
Choice of specialty	16 (33)	16 (27)
Medical skills	12 (26)	9 (16)
Personal aspects	29 (62)	19 (32)

The results show that mentees rated the benefit they received from mentoring differently. In terms of advice for the clinical electives year, increase in medical skills, and particularly with regard to personal aspects, mentees rated the benefit they received from the mentoring relationship significantly higher than the extent to which the mentors assumed that they had helped them in these respects.

Eighty-five per cent of the mentees and 86% of the mentors could imagine remaining in touch with each other even after the mentees had graduated from medical school. Seventy per cent of mentees and 85% of mentors were (very) satisfied with the matching.

The mentees also commented in their own words on their mentoring experiences. The “taster” days at the practice were highly appreciated. In addition, many of them received helpful tips on their master’s thesis and dissertation. On the negative side, it was reported that some mentors failed to turn up at arranged meetings without offering an explanation, or did not reply to emails. This then led to the breaking off of contact. Mentioned as a further problem was a mentor having no actual clue as to how to structure the relationship with his mentee.

The mentors too were given the opportunity to supplement their rating of their mentoring experiences with comments in their own words. Several brought their mentees with them to their workplace – hospital or practice

– as a sort of "taster" day, to give them an insight into practical medical activity. There were also those, however, who complained about the mentees' lack of initiative in keeping in touch. Below, we give a few examples:

Mentors' comments

- "I developed a friendship with my mentee. I doubt we'll lose sight of one another."
- "For me, the relationship with my [female] mentee was an enriching experience, a gift. I got to know a highly motivated, very gifted and committed young physician."
- "Bearing in mind his personal career goals, I was able to give my mentee advice on how to choose the right specialties as early as during his undergraduate degree. He wanted to know exactly what we do in our clinic so as to be able to gauge to what extent he'd like to get involved with us even before finishing his degree."
- "Mentoring a student brought me a number of benefits: I became better acquainted with the hopes and worries of todays students, and made an effort to find the right choice of words to explain to a newcomer what benefit he could derive from a research job."

When the MedStudMent was readvertised in late summer 2011, the example of a clinic director showed that misapprehensions still existed with regard to the aims of mentoring. The following email was sent by said clinic director to the Director of Research and Education, as well as to the Medical Director of the USZ:

Vignette – Misapprehensions with regard to the aims of mentoring for medical students

"I wonder if a mentoring program for students is still appropriate nowadays. Significantly more women are studying medicine. Even in surgical disciplines there are already (considerably) more women than men who are working as residents, and some accordingly aspire to an academic career, which we are naturally very happy to support. I understand that women have yet to catch up in departmental head and senior and chief positions, but this is just a question of time."

Response from the Director of Research and Education:

"In your email of August15, 2011 you raise the question of whether mentoring is still appropriate for medical students nowadays, since there are already more women than men studying medicine. In response, we would like to comment as follows:

1. The purpose of mentoring for medical students is not to increase the number of women medical students. Mentoring is offered to medical students [of both sexes] during study phases in which the course is set for subsequent medical activity:

   - in the third year of study, when students begin planning their clinical electives year. Experiences in this period of study strongly influence the subsequent choice of discipline;
   - in the sixth year of study, when students arrange places for their postgraduate medical specialty training or for research activity.

2. As shown by experiences from the mentoring program for physicians at the University Hospital and the Medical Faculty of the University of Zurich, which has been running since 2002, women plan their careers in a less goal-oriented manner. For this reason, they particularly benefit from mentoring. Precisely because more women than men have been studying medicine since the mid-1990s and successfully graduating, and for the above-mentioned reasons, mentoring programs which start during their undergraduate degrees are important for women.

3. To date, there has been little experience of mentoring programs for medical students in the German-speaking countries. As highlighted in a literature survey by Ms Esther Frei *et al.* [7] as part of her medical dissertation, up until now there have only been mentoring programs from the English-speaking countries. The

evaluation of the mentoring programs showed that medical students are motivated by mentoring to choose certain disciplines (*inter alia* surgical fields), or to decide on a research career. An important aspect of mentoring is the networking. In the USA, medical students are being involved in institute/clinic teams and research teams while still undergraduates.

4. The above-mentioned dissertation has been published, and was awarded the 2010 Semester Prize of the Medical Faculty. The findings of the literature survey led Ms. Frei, together with fellow students and under the guidance of Prof. Barbara Buddeberg-Fischer and Dr. Lorenzo Käser, to plan and implement the mentoring program for medical students at the UZH. Initial experiences of both mentees and mentors (including several clinic directors) have been distinctly positive.

5. Our ten-year experience of the mentoring program for junior academic staff at the USZ and UZH shows that mentoring requires different and compatible interventions at different stages of a medic's professional career."

As the above email from a clinic director shows, there are still influential heads of clinics and faculty members who express reservations towards mentoring.

6.5 Summary of Experiences of the Mentoring Program for Medical Students

The large number of people interested in the mentoring program has shown that heads of departments and chief consultants are sensitive to the concerns of students, and that the mentoring program meets the needs of those students. When the program is advertised and at the kick-off event where mentors and mentees meet up for the first time, program directors should ensure that the objectives of the mentoring program are clearly communicated. It is also important to stress that in embarking on a mentoring relationship, both the mentor and mentee assume a mutual responsibility and commitment. As the evaluation showed, a few mentoring relationships unfortunately fizzled out. This leads to disappointment on both sides, and has a negative effect on the continuity of the program.

Perhaps it is asking too much that the mentoring relationship not be limited in time, and it would be better to limit it initially to one year. If the mutual benefit is significant and the mentor-mentee relationship develops well, the relationship will carry on in any case. Several comments indicate that longer-lasting relationships evolved in particular between mentors in private practice and mentees who see themselves pursuing a similar career. The desire of young students to gain an insight into the day-to-day routine of a medical practice plays an important role in this context.

The students became very involved in the conceptualization and set-up of the MedStudMent. In order to further increase the effectiveness of the mentoring program and thereby ensure its continuity, the MedStudMent should become part of the faculty mentoring program (FMP). The FMP's program directors could provide the MedStudMent with a better institutional anchorage and with financial and human resources.

In summary, results suggest that the need for and benefit of mentoring is particularly high during decision-making phases and at times of career transition [94]. This is why mentoring should be offered to students in their third year, i.e. at the beginning of their clinical training. They can then be advised by their mentors with regard to the planning of the various stages of their clinical electives year. In the final year of studies before taking the state examination or obtaining their master's degree, medical students should be offered informational events on various career paths in medicine, as well as in-depth information on the most important disciplines. In addition there should also be an opportunity for one-to-one talks with established medics of both sexes, in which the expectations of the up-and-coming physicians concerning their career path and personal life plan can be more clearly identified. Based on this analysis, students would be able to address the transition from study to work and the planning of their postgraduate education in a more goal-oriented fashion. This would reduce personal disappointments and frustrations and would also make economic sense, as it would lead to fewer gaps and wrong turns in ones professional and personal biography.

Key Messages

Mentoring programs for medical students should:

- form part of a medical faculty's comprehensive mentoring concept
- be planned for one year's duration initially
- be offered in the third year of the degree (the start of clinical training) to provide counseling and to help with the planning of the practical year
- be offered in the sixth year of studies to provide counseling with regard to choice of discipline and to help with planning further training, as well as to provide information on career opportunities
- Ensure careful matching of mentor and mentee according to clearly defined criteria

7 Digression: Research Findings on Mentoring from the Career Project (SwissMedCareer Study 2001 - 2011)

7.1 Initial situation

As already mentioned in the previous chapters, the percentage of female medical students has risen steadily since the mid-1990s: since 2008, in Switzerland as well as in other western countries, more than 60% of first-year students of human medicine have been women. This so-called "feminization of medicine" [75] has a lasting impact on the healthcare sector. To an extent, women doctors choose different specialties and career paths than male doctors [22, 74]. In addition, they aspire more frequently to part-time positions after acquiring their specialist qualifications [22, 95].

The maximum weekly working hours for residents and senior consultants (*Oberärzte*) of 50 hrs/week introduced with the collective employment contract (GAV 2000 and 2005) changed the framework conditions for postgraduate medical training. Since – owing to cost constraints – the requisite number of additional jobs were not created, pressure to perform and pressure of time have increased in the institutes/clinics. In addition, it is often no longer possible to complete the postgraduate curriculum within the stipulated period of six years, especially in the surgical specialties.

Limited as it is by the *numerus clausus* system, the number of students embarking on a medical degree leads to a shortage of up-and-coming physicians in Switzerland. In some disciplines and institutes/clinics nowadays, over half of the physicians come from abroad. Switzerland also suffers from a shortage of young blood for academic careers and jobs.

As already mentioned in Chapter 4.1.3, to date there has been no longitudinal study in Switzerland investigating the career paths of graduates in human medicine over a longer period of time. The aim of the SwissMedCareer Study on the career progress of young physicians in Switzerland [96] was therefore to identify factors that support and hinder a career, with a view to deriving measures for optimizing career progress [97]. In particular, we investigated which personal and institutional factors should be borne in mind when supporting the careers of female physicians so that they can develop their professional and personal potential in the healthcare sector more fully.

The SwissMedCareer Study (2001 – 2011) was carried out by Barbara Buddeberg-Fischer and Martina Stamm in parallel to the mentoring program at the University Hospital and the Medical Faculty of the University of Zurich. The experiences and findings from the research project provided important suggestions for the development of the mentoring program. Likewise, the mentoring programs provided us with numerous pointers for interpreting and discussing the research findings.

7.2 SwissMedCareer Study – Study Design and Questions

As part of a research project sponsored by the Swiss National Science Foundation and prospectively funded for eight years, students from the three German-speaking Swiss medical faculties of Basel, Bern and Zurich who had passed the state examination in 2001 and 2002 were surveyed five times between 2001 (T1) and 2009 (T5, seven years after the state examination) by means of a questionnaire. A total of 711 individuals (71% of all sixth-year medical students enrolled at these three universities) took part in the initial survey (T1), while 579 people (81.4% of the rate of participation at T1) remained in the survey at T5. Over all the surveys, the average sex ratio was 53% women to 47% men.

At each of the measurement points, participants in the study were asked what discipline [74] and career [22] they aspired to, what importance they ascribed to career and private life, whether they had a mentor, and how they rated their career-support network (career support and psychosocial support) [98]. In addition, at T5 they rated their objective career success, operationalized and measured with the number of lectures given at scientific congresses, publications, involvement in research projects, months of full-time research activity, grants and

research awards, as well as competitively acquired third-party funds. Subjective career success was surveyed with the following question: “When you compare yourself to your former academic colleagues, how successful do you rate your professional career to date as being?” In addition, they assigned an overall rating to their career satisfaction.

Participants in the study who at T4 stated that they aspired to an academic career (n = 41) were also asked in a semi-structured telephone interview which factors were in their opinion important for a successful academic career [20].

7.3 Selected Findings on the Aforementioned Questions

7.3.1 Choice of Discipline

In the survey in 2009 (T5), seven years after the state examination, 579 people answered the question as to what discipline they aspired to [21]. Table 7.1 gives the frequency distribution for the major disciplines as a function of sex.

Table 7.1: Frequency distribution of aspired-to disciplines as a function of sex

Aspired-to Discipline	Total (n = 579) n (%)	Ärztinnen (n = 292) n (%)	Ärzte (n = 287) n (%)
General medicine	65 (11.2)	34 (11.6)	31 (10.8)
Internal medicine	174 (30.1)	93 (31.8)	81 (28.2)
Surgical fields	71 (12.3)	**15 (5.1)***	**56 (19.5)***
Gynecology & Obstetrics	32 (5.5)	**28 (9.6)***	**4 (1.4)***
Anesthesiology	49 (8.5)	23 (7.9)	26 (9.1)
Pediatrics / Adolescent Medicine	42 (7.3)	**34 (11.6)***	**8 (2.8)***
Psychiatry	42 (7.3)	24 (8.2)	18 (6.3)
Other disciplines	72 (12.4)	24 (8.2)	48 (16.7)
Not yet decided	32 (5.5)	17 (5.8)	15 (5.2)

* $p < .001$

It can be seen that men choose surgical disciplines significantly more frequently, while women are overrepresented in gynecology, pediatrics and adolescent medicine ($p < .001$). This shows that the choice of specialty is influenced by gender stereotypes. Furthermore, the postgraduate-training and working conditions in the surgical disciplines are less geared to female physicians’ lives. Even seven years after taking the state examination, 5% of participants have not yet decided on a specific discipline.

7.3.2 Aspired-to Career (T2 – T5)

A total of 358 people took part in all four postgraduate surveys (T2 – T5), each time answering the question as to what career they aspired to [22]. Four different groups were identified. By halfway through their postgraduate training (T2 and T3), one-quarter of the participants had decided on a career in practice and another quarter on a clinical career, while 11% aspired to an academic career. With these three groups, the career goal remained constant at the subsequent surveys (T4 and T5). A further group of participants (39%) either stated a different career goal at each survey point, or were still undecided in terms of their career goals. Female doctors were overrepresented in the group aspiring to a career in practice and in the “undecided” category ($p < .001$), while male doctors were overrepresented in the group aspiring to an academic career ($p < .001$). There was no significant gender difference for the group aspiring to a clinical career.

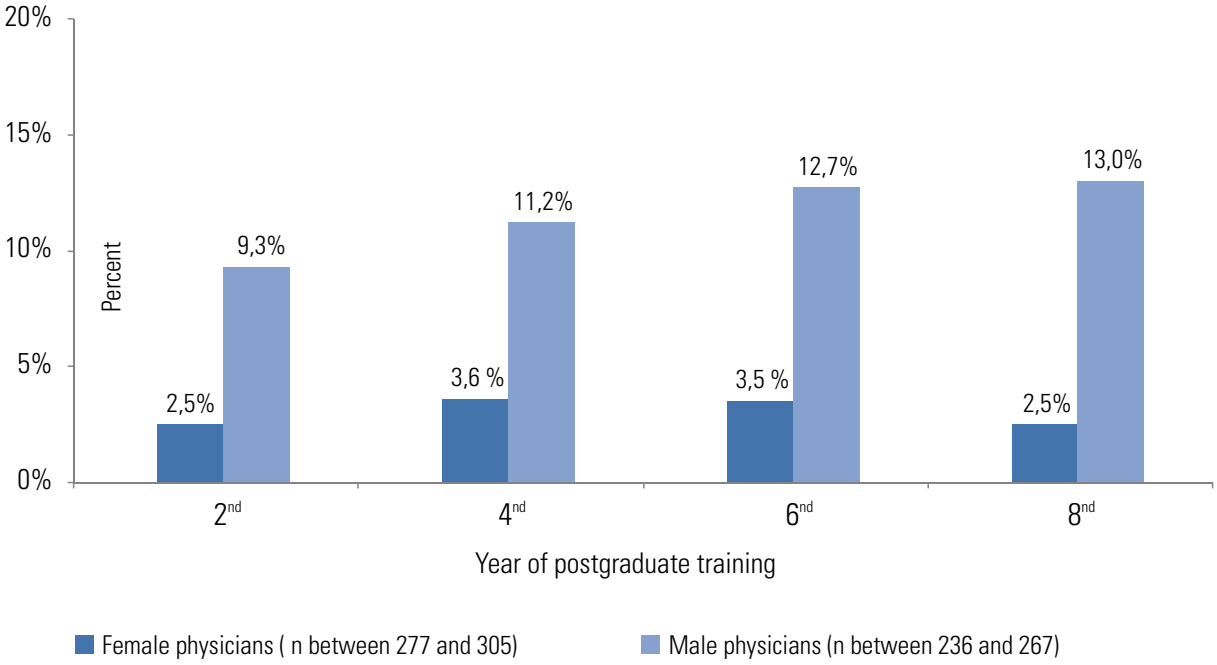
Table 7.2: Gruppenzugehörigkeit der Teilnehmenden hinsichtlich Konstanz des angestrebten Laufbahnziels (T2 – T5) in Abhängigkeit vom Geschlecht

	Total n (%)	Ärztinnen n (%)	Ärzte n (%)
Career in private practice	88 (24.6)	**53 (26.9)***	**35 (21.7)***
Clinical career	90 (25.1)	43 (21.8)	47 (29.2)
Academic career	40 (11.2)	**11 (5.6)***	**29 (18.0)***
Career undecided	140 (39.1)	**90 (45.7)***	**50 (31.1)***
	358 (100.0)	197 (100.0)	161 (100.0)

* $p < .001$

Furthermore, we were interested in how physicians of both sexes developed an **interest in an academic career** over the course of the postgraduate training. As Figure 7.1 shows, the male physicians' interest in an academic career increased steadily, standing at 13% at the final survey, i.e. five times higher than for the women. The female physicians' interest increased slightly over this period, falling again to the initial value of 2.5% towards the end of their postgraduate training. In particular, female physicians with children gave up their original goal of an academic career after starting a family.

Figure 7.1: Female and male physicians interested in an academic career over the course of their postgraduate specialist training (T2 – T5) [22]



Participants were also asked what experiences in their postgraduate training they saw as promoting or hindering their careers. For **career-promoting factors**, participants attributed the greatest importance to career support from superiors and their own achievement motivation. For experiences perceived as **hindering their careers**, giving high priority to extra-professional concerns (family, leisure), unfavorable institutional framework conditions and personality traits such as shyness, lack of aggressiveness, good-naturedness and "being unable to say no" were mentioned [97].

7.3.3 Mentoring (T2 – T5)

At the postgraduate-survey timepoints (T2 – T5), 326 people answered the question as to whether they currently had a mentor, or had had one in the past. As can be seen from Table 7.3, depending on the time of the survey, the **mentorship frequency distribution** shows a spread of 37.4% to 50.0%. More male than female physicians had, or had at some point, a mentor. From T2 to T5, 26.4% of the participants claimed that they had never had a mentor, while 23.6%, 19.3% and 14.7% reported that they had had a mentor at one, two or three measurement points, respectively. Only 16.0% stated that they had had a mentor at all of the survey timepoints.

Over half of the male participants were already looking for a mentor at the start of their postgraduate training – an important support for goal-oriented career planning. Towards the end of their postgraduate training, a full 60% of the male physicians had a mentor. At the turning points in doctors' careers, as they make the transition from residency to a senior position, mentoring proves to be an important factor in setting the right course. By contrast, only a third of the female physicians had the benefit of a mentoring relationship at the start of their postgraduate training – and significantly fewer women than men had the support of a mentoring relationship towards the end of their postgraduate training to help with the planning of their future careers.

Tabelle 7.3: Frequency distribution "Have/had a mentor (T2-T5)" as a function of sex

	Total (N=326) n (%)	Females (n=172) n (%)	Males (n=154) n (%)	p
Mentor at T2	135 (41.4)	**56 (32.6)**	**79 (51.3)**	**≤0.001**
Mentor at T3	122 (37.4)	59 (34.3)	63 (40.9)	0.218
Mentor at T4	135 (41.4)	59 (34.3)	76 (49.4)	0.006
Mentor at T5	163 (50.0)	**70 (40.7)**	**93 (60.4)**	**≤0.001**

The frequency distribution of the **mentorships varied as a function of the mentees' aspired-to careers at T5** (Table 7.4). Physicians who aspired to an academic career had a mentor significantly more frequently than those with other career goals ($p < .001$). Those physicians who still had not decided on a specific career seven years after passing the state examination had a mentor significantly less frequently than those participants who had decided on their careers.

Tabelle 7.4: Frequency distribution "Have/had a mentor (T2-T5)" as a function of the aspired-to career in T5

	Career in Private Practice (n=121) n / %	Clinical Career (n=134) n / %	Academic Career (n=31) n / %	Other Career in Medicine (n=16) n / %	Career Undecided (n=24) n / %	p
Mentor at T2	45 / 37.2	54 / 40.3	**24 / 77.4**	7 / 43.8	**5 / 20.8**	**≤0.001**
Mentor at T3	41 / 33.9	48 / 35.8	**21 / 67.7**	7 / 43.8	**5 / 20.8**	**0.003**
Mentor at T4	43 / 35.5	59 / 44.0	**23 / 74.2**	4 / 25.0	**6 / 25.0**	**≤0.001**
Mentor at T5	51 / 42.1	71 / 53.0	**29 / 93.5**	6 / 37.5	**6 / 25.0**	**≤0.001**

At T5, 163 people were exercising a mentoring role. Of these, 79.8% were men. The average age of the mentors was 48 (range 33 – 67 years). Eighty-seven percent of the mentorships had been set up informally. As for the mentors' positions, 45.5% were senior or chief consultants, 24.5% were heads of departments, and 19.0% were faculty members or university chairs. The remaining mentors either worked in a private practice or in another medical institution. Female physicians did not have a female mentor more frequently, nor did male physicians

have a male mentor more frequently. There were, however, gender differences to the effect that women had university full professors as mentors less frequently, and mentors from private practice more frequently.

As mentioned above, men more frequently had a mentor. Independently of the gender factor, personality traits such as being proactive, decisive, and persistent were positively correlated with having a mentoring relationship, while people for whom extra-professional concerns such as convenient working hours and a favorable work-life balance were important were less likely to have a mentoring relationship.

To investigate the impact of mentoring on career success, three important aspects of support were surveyed: having a mentor, career support received, and psychosocial support. Being a man, career-orientedness, having a mentor, and career support received were significant predictors for career success, though psychosocial support received was not.

The results of this longitudinal section study highlight the positive influence of mentoring on career success. This is why medical students and physicians of both sexes should be encouraged to seek mentoring relationships at all stages of their postgraduate training.

7.3.4 Prerequisities for a Successful Academic Career (T4)

Thirty-one of the 41 participants in the study who at T4 indicated their aspirations for an academic career took part in a semi-structured telephone interview. In the interview, physicians described the various aspects of the career support which they had experienced up to that point, as well as the factors which they rated as important for a successful career [20].

In order to receive career support, the young physicians needed to demonstrate their interest, seize the initiative, and ask experienced colleagues for support and inclusion in research groups. In other words, young physicians interested in academia had to actively pursue a mentoring relationship. On the other hand, there were also a number of senior faculty members who noticed proactive young colleagues and offered them career support off their own bat. These were usually people who themselves had had positive mentoring experiences, for the most part while abroad.

Recommendations which interview participants would make to younger colleagues for a successful academic career were (1) starting to plan in a goal-oriented manner early on in one's career; (2) going after postgraduate training places in well-known clinics; (3) devoting oneself with dedication and commitment to research as well as to clinical training; and of particular importance, (4) finding a suitable and committed mentor for their current career stage. In the beginning, this can even be a colleague who is only slightly older and more experienced. The further on a resident is in his or her career, however, the more influential the mentor should be, so that he can introduce his younger colleague to his professional network and help him integrate in it. Thirty-one of the 41 participants in the study who at T4 indicated their aspirations for an academic career took part in a semi-structured telephone interview. In the interview, physicians described the various aspects of the career support which they had experienced up to that point, as well as the factors which they rated as important for a successful career [20].

In order to receive career support, the young physicians needed to demonstrate their interest, seize the initiative, and ask experienced colleagues for support and inclusion in research groups. In other words, young physicians interested in academia had to actively pursue a mentoring relationship. On the other hand, there were also a number of senior faculty members who noticed proactive young colleagues and offered them career support off their own bat. These were usually people who themselves had had positive mentoring experiences, for the most part while abroad.

Recommendations which interview participants would make to younger colleagues for a successful academic career were (1) starting to plan in a goal-oriented manner early on in one's career; (2) going after postgraduate training places in well-known clinics; (3) devoting oneself with dedication and commitment to research as well as to clinical training; and of particular importance, (4) finding a suitable and committed mentor for their current career stage. In the beginning, this can even be a colleague who is only slightly older and more experienced. The further on a resident is in his or her career, however, the more influential the mentor should be, so that he can introduce his younger colleague to his professional network and help him integrate in it.

7.4 Summary Conclusions from the SwissMedCareer Study Findings

Choice of discipline: At the outset of their postgraduate training, many young female physicians still aspire to a career in a surgical discipline. After two to three years, they often switch to obstetrics and gynecology, or abandon surgical specialties altogether and continue working in internal medicine or pediatrics. The reason they give for this is that they are not taken seriously or supported in their chosen surgical field by their male colleagues and superiors. Furthermore, working conditions in the surgical disciplines are still to a large extent geared to male career tracks.

Aspired-to career: Female physicians more often aspire to a position in a practice than their male colleagues. Only a few consider an academic career. It is worth bearing in mind, however, that over the course of their postgraduate training, the female physicians' interest in an academic career decreases, while that of their male colleagues increases. It would seem that there are 'barriers' in both the clinics and the social environment, as well as "in peoples' heads", which more often prevent women than men from purposefully and successfully pursuing an academic career.

Mentoring is an important key to career success. Throughout the whole of their postgraduate training, female physicians less often have a mentor than their male counterparts – especially if they also have children [21]. In some cases, women shy away from openly expressing their interest in a mentoring relationship and actually approaching experienced older colleagues. Since they also less often aspire to an academic career, they are not infrequently "overlooked" by superiors – particularly male ones. A further reason for the low number of mentored female physicians is the shortage of female mentors who can serve as role models and who are sensitive to the concerns of their younger female colleagues.

Key Messages

- With the increasing "feminization of medicine", there will be a shortage of surgical specialists in the near future. Because of this, women physicians in these disciplines in particular should receive guidance in planning their careers, targeted career support, and mentoring support, right at the start of their postgraduate training, and taking account of their life plans. For this to happen, there must be structural change in the surgical disciplines.
- In order to gain rather than lose female physicians on the road to an academic career, supervision by commited mentors is an essential addition to early career support from superiors. Mentoring not only promotes professional development, but also takes account of a young female physician's personal life context.
- When it comes to achieving career success, female physicians have the odds stacked against them in several respects. Among other things, they are less likely to have a mentor, and institutional framework conditions adversely affect physicians with children (lack of models for flexible working hours, insufficient childcare provision). This often leads to female physicians with a family giving up a clinical or academic career.
- The so-called 'leaking pipeline' [99, 100] can be averted by timely, goal-oriented career support and mentoring for female physicians, especially those with children.
- 'Self-imposed mental barriers' are in some cases the result of women physicians having a fairly traditional view of motherhood, and giving up their career aspirations during pregnancy and after the birth of a child.
- Mentees must show initiative in order to be perceived by potential mentors as interested individuals in whom it would pay to invest professionally and personally.
- Mentors should develop sensitivity and a commitment to discovering and approaching capable junior staff and championing them over the long-term.

8 Impact of the Zurich Mentoring Program

8.1 National Impact

At the beginning of the 21st century, German-speaking countries became aware that it would make sense to optimize the support provided to junior academic staff in medicine, especially to female physicians. Our published papers on the mentoring program and the SwissMedCareer Study sparked an interest at a number of universities in both Switzerland and Germany in using the experiences gained in the Zurich program in the planning and implementation of their own university mentoring programs.

8.1.1 Mentoring in the Medical Faculty of the University of Basel

In 2004, a mentoring program for female senior physicians (*Oberärztinnen*) aspiring to an academic career – run by Professor Regine Landmann-Suter, Vice-Dean of the Medical Faculty and Chair of the Equality Commission of the University of Basel – was also launched at the Medical Faculty of the University of Basil with the support of the Federal Equal Opportunities Program. The mentoring relationships facilitated by the program were in each case limited to 18 months. The program was supplemented by side events on the following topics: prerequisites for an academic career in clinic and research; acquiring third-party funding for research; leadership experience; time management; reconciling career and family [101]. In 2010, after three rounds of advertising, the program was also opened to men. Since then, the mentoring program has been a permanent part of junior-staff development at the Medical Faculty, by which it is financed. Professor Irene Hösli (Head of the Department of Obstetrics and Prenatal Medicine) took over the reins of the mentoring program in 2010. The Zurich and Basel mentoring programs benefited from the project directors' sharing of their experiences.

8.1.2 Mentoring in the Medical Faculty of the University of Bern

To date, it has not been possible to set up a mentoring program specifically for physicians in the Medical Faculty of the University of Bern. As part of the Switzerland-wide mentoring programs, however, junior medical researchers at the University of Bern can also apply for a mentoring relationship.

8.1.3 Mentoring at VetSuisse

The positive experiences of the University of Zurich's Faculty of Human Medicine with the mentoring program led the Dean of VetSuisse Switzerland, Prof. Dr. med. Viktor Meyer, the Dean of VetSuisse Zurich, Prof. Dr. med. vet. Felix Althaus, and the Dean of VetSuisse Bern, Prof. Dr. med. vet. Andreas Zurbriggen to offer a similar mentoring program for veterinarians. The shortage of up-and-coming academics in veterinary medicine is a serious problem, with it often being impossible to adequately fill advertised positions.

Since veterinary medicine is chosen by an even higher proportion of women than human medicine, programs in support of the up-and-coming generation of vets must also bear in mind the specific needs of women, and the structures of the program must be adapted accordingly. In 2009 the proportion of women students in veterinary medicine stood at 80-86%, while the figure was 29% for postdocs and *Privatdozenten* and just 7% for full professors.

VetMENT is a mentoring project at both sites of the VetSuisse faculties, Bern and Zurich. Launched in 2010, it is jointly financed by the Federal Equal Opportunities Program and VetSuisse. The Dean of Vet Suisse, Prof. Felix Althaus, is the program director, while PD Dr. med. Vet. Nicole Borel (Zurich site) and Dr. med. Vet. Christine Aeschlimann (Bern site) are the program coordinators. Thirty-four junior researchers (27 women and 7 men) were admitted to the program. The mentees were at different stages of their careers: the majority were Ph.D. students, while the rest were studying for their *Habilitation*, or were veterinary residents undergoing postgraduate training in their chosen specialty. Of the 34 mentors (15 women and 19 men), 70% were full professors and Privatdozenten at VetSuisse, while 30% were either from a human medicine discipline, the Swiss Federal Institute of Technology Zurich (ETH), the Institute for Viral Diseases and Immune Prophylaxis, the WHO, the Federal Office of Veterinary Medicine, or were foreign academics. Where possible, mentees from Zurich were matched with a mentor from VetSuisse Bern and vice versa. Since both faculties are small, particular care was

taken during the matching that the mentoring relationships did not involve any subordinate or dependency relationships.

VetMent's focus is on one-to-one mentoring, which is initially arranged for a period of one year with a jointly formulated agreement on objectives between mentee and mentor. Continuation of the mentoring relationship as part of the official program is possible with a new agreement on objectives. As in other programs, associated events are offered: workshops for mentees (acquisition of third-party funding, conflict management in the work environment, learning to delegate) and experience-sharing for mentors. The first internal evaluation revealed positive results, leading to a further round being carried out in 2012 [102].

8.2 International Profile

8.2.1 Mentoring in the Medical Faculty of the University of Würzburg

In 2005, the director of the Zurich Mentoring Program for Physicians, Barbara Buddeberg-Fischer (BBF), was invited to speak at the Medical Faculty of the University of Würzburg. In her talk she reported both on the results of the Swiss longitudinal study on the career development of young physicians and on experiences with the mentoring program. This gave the university authorities and the Dean of the Medical Faculty the impetus to develop a mentoring program for junior female academic staff like the one in Zurich. In two planning sessions, BBF advised the project managers on implementation. In 2007, the first round of "*MENTORING med* for Female Physicians and Medical Researchers" was launched with a kick-off event in which BBF gave the keynote lecture. Mentoring is carried out in a one-to-one setting, accompanied by a supporting program for mentees and mentors. The project has been successful so far, and is currently in its third round (2011-2013).

After two years' experience of the mentoring program for female physicians, the "*MENTORING studmed*" program for female medical students in semesters 6 to 11 was launched in 2009 as a group mentoring project. It too is currently in its third round.

8.2.2 Mentoring in the Medical Faculty of the University of Leipzig

The long-standing cooperation of Barbara Buddeberg-Fischer's research group with the University of Leipzig research groups of Prof. Elmar Brähler and Prof. Dorothee Alfermann in the sphere of young physicians' career development, as well as the practical experiences from the Zurich Mentoring Program for Physicians, led to the development of a mentoring program for medical students in Leipzig as well. The "*EliMed Mentoring Project*" (2004 – 2008) set itself the task of supporting high-powered, career-motivated female medical students in their career planning and in the clarification of their own professional and private goals. In the publicity, it was stressed that with the support of their mentors, mentees would be able to set up a professional network providing them with career-relevant knowledge on structures, processes and the rules of the game of the medical-science system. The mentors (female wherever possible) served as role models for the mentees. The mentors were also expected to benefit from the program, as it would give them the opportunity to retain qualified junior staff in their clinics and institutes from the outset, to further develop their own advisory skills, and to reflect on their own career progression and approach to work. The program ran for a year in each case. It was replaced by the *MedMentoL* (*Medicine Mentoring Leipzig*) program for students in the clinical phase of their studies. Still running, this program pursues the same aims as the preceding project, but is open to both men and women.

8.2.3 Mentoring for Medical Students at Universities in Non-German-Speaking Countries

Our publications on mentoring programs [3, 7, 16, 72] also attracted attention from outside the German-speaking countries. Over the last few years, this has led to a knowledge exchange with the Head of the Center for Medical Education of the University of Aarhus/ Denmark, Dr. Line Sloth Carlsen; with the Director of the Department of Family Medicine at the University of Haifa/ Israel, Prof. Shmuel Reis; and with the Vice-Dean for Junior Academic Staff Support at the Hofstra School of Medicine, NY/ USA, Prof. Andrew Menzin. These three universities have plans to set up mentoring programs for medical students, primarily in the form of group mentoring.

9 Conclusions and Recommendations for Mentoring Programs in Human Medicine

9.1 Mentoring as a Developmental Process

The present report on the development of the mentoring programs at the University Hospital and the Medical Faculty of the University of Zurich is to some extent a microanalysis of past processes. The intention is to highlight the fact that mentoring as an instrument of junior-staff support cannot develop independently of the discipline and institutional framework conditions in question. As a rule, implementation takes place over a fairly long period of time, since it requires changes in the attitudes and self-image of all those involved in the process. Hierarchical and patriarchal structures often still exist in medicine. Mentoring, however, can only be lasting and efficient where the responsibility for junior-staff development does not lie with just one person, but is understood and practiced as teamwork.

The fact that the program director herself has had an academic career as well as having a background in systems theory and many years of research experience in career development had a positive effect on the development process of the mentoring programs described above. Most of the members of a medical faculty are somatically/scientifically oriented. This made the well-grounded social sciences know-how of the program director all the more important when it came to convincing the academic governing bodies of the quality and benefit of mentoring programs. Her own experiences as a mentee, mentor and program director also contributed to the development of the mentoring programs over the course of the ten years.

9.2 Mentoring in Various Scientific Disciplines

Our experiences in setting up the mentoring programs at the University Hospital and the Medical Faculty of the University of Zurich have shown that mentoring for physicians differs from mentoring in other subject cultures. Although in every discipline it is a question of acquiring skills and getting to know the rules of the game of the scientific community in question, as well as being able to move about confidently within that community, the framework conditions for research differ greatly in the individual disciplines. Research in medicine takes place almost exclusively in teams. What's more, it usually requires significant financial and spatial resources. This means that there are more dependency relationships with superiors, heads of research groups, and sponsors than in other scientific fields. Mentoring is therefore an important support instrument precisely because of the institutional independence between mentor and mentee.

In all scientific disciplines, the "leaky pipeline" phenomenon [99, 100] exists for female researchers. The phrase describes the tendency of women to abandon their academic careers early on in many cases, e.g. after receiving their doctorate, or before earning their habilitation. Both external barriers such as a lack of support as well as internal obstacles such as the traditional conviction that a research career is incompatible with family life are mentioned as reasons for this. The aim of the Federal Equal Opportunities Program is *inter alia* to make funding available in order to keep women in academic careers and to increase the proportion of female full professors from 7% in 1999 to 25% in 2012. At best, this will be achievable in the philosophy, law and theology faculties. Owing to the extended specialization and qualifying phase (postgraduate medical training and research activity), the road from doctorate to habilitation to full professorship in medicine is often very long. This is why longer-term support programs for female physicians are especially important.

9.3 What Mentoring Can, and Cannot, Do

Mentoring ist *one* of the building blocks of junior-staff development, and is intended to promote the optimal use of an individual's personal abilities in the service of their professional career, bearing in mind their personal life plan. This can only take place in a context where there is no dependency relationship between mentor and mentee such as that found in the superior-subordinate relationship.

In medicine, there are several phases of undergraduate and postgraduate training in which mentoring is particularly valuable:

(1) *In the sixth year of studies, at the crossroads between an undergraduate degree and further postgraduate training:* A mentor can advise a medical student who has just passed his state exam on how he should first of all clarify his professional interests, take stock of his abilities and personal qualities, and choose his specialty accordingly. Young physicians all too often get "stuck" in the discipline or the institution which appealed to them in their clinical electives year or while studying for their master's degree. Although this may prove to be the right decision, in some cases it only becomes obvious later that the individual's ideas on longer-term professional and personal development were not sufficiently thought through.

(2) *After the first two years of postgraduate training:* Once the medical work – whether in the context of clinical postgraduate training or a research activity – has gotten off to a successful start and there is a certain familiarity and confidence in coping with the professional routine, the young physician should once again consider very carefully whether the chosen discipline and the aspired-to career goal match her/his abilities and life plan. A mentor can offer helpful support for this critical reflection. Moreover, because of his professional experience and professional network, he is well placed to help his young colleague with further career planning.

(3) *In the advanced phase of postgraduate training:* Which mentor is suitable for a given junior physician essentially depends on the latter's career goals. If, for example, a female physician aspires to a job in a family practice after completing her postgraduate training, she will probably choose a female primary-care physician as a mentor. The starting situation is different when, for example, a young physician with some research experience under his belt is thinking about how to develop his academic career. The best thing he can do is to find himself a mentor from a similar research discipline. Here, a mentor is an important addition to support given by the head of the research group, since the latter's own interests always come into play.

(4) *Before the habilitation:* In the phase before an academic has fulfilled the requirements for the *Venia legendi* (university teaching credential), unbiased advice from a mentor is especially valuable. In this critical career phase, tensions often arise between a boss and the junior academic if the former sets unnecessarily high demands vis-à-vis the submission of the postdoctoral thesis and curtails or withdraws time or material resources. Not infrequently, this behaviour is motivated by rivalries of a more or less conscious nature. Particularly for female physicians, who may have started a family during this period, objective advice not led by institute/clinic interests is of great value. Having a baby should not lead to a young female academic facing career discrimination.

(5) *Phase of applying for a head-of-department position or full professorship:* Whereas under favorable circumstances up-and-coming academics are supported by their superiors until they gain their habilitation, Privatdozenten must subsequently find a place in the scientific community through their own initiative. In some cases the young academic is seen by his former boss as a competitor, and because of this is given no further support. Here too, a mentor, who in many cases comes from a similar research discipline to the mentee, is an important adviser, for whom the professional progress of his mentee is a matter of personal concern.

Key Messages

- Ideally, mentoring is a “custom instrument” for junior-staff development which must be designed differently depending on the mentee’s discipline and specialty, undergraduate or postgraduate educational status, the aspired-to career goal, and the institution concerned.
- Mentoring should be a core component of the support given to junior physicians in both clinical and research fields.
- Mentoring can be of short duration, or develop over a fairly long period of time.
- Early experiences of mentoring lead to junior staff actively and deliberately seeking mentors in later phases of their careers also.
- Mentoring contributes to the use of highly qualified human resources.
- Mentoring is not intended to relieve young physicians of the responsibility of goal-oriented career planning.
- Mentoring does not replace junior-staff development in institutes and clinics. Junior-staff development should be viewed by the institute and clinic directors as an important task and obligation that is separate from mentoring.

9.4 What Are the Reservations against Mentoring Programs?

Institutional reservations

Prestige, influence and power still play an important role in medicine. Many bosses claim a ‘sovereign right’ over junior-staff development and feel that a mentor might challenge them on this ground. In addition, some directors do not like the idea of their institute/clinic being too open to the scrutiny of a mentor. Without saying so explicitly, they give their junior academic staff to understand that they see taking part in a mentoring program as ‘unnecessary’, and a sort of ‘two-timing’.

Another reason for the resistance to the setting up of mentoring programs are mistaken notions as to what mentoring as opposed to coaching actually means (cf. Chap. 2.2).

Nowadays, with major research-partnership projects, the allocation of third-party funds is sometimes linked with the obligation to reserve a specific percentage of the funding for junior-staff development, or explicitly for mentoring programs. Those in charge of the projects do not always have the foresight to then actually deploy these funds in accordance with their purpose. All too often, they are used for other research purposes.

The start-up funding of the Zurich mentoring program provided by the Federal Equal Opportunities Program contributed significantly to the institutional acceptance of the project, and was instrumental in encouraging the Director’s Office of the University Hospital and the Dean’s Office of the Medical Faculty to provide co-funding.

Time and again, critics raise the issue of the effectiveness of mentoring. The literature contains few studies focusing on the evaluation of mentoring that go beyond a purely descriptive approach [61, 62]. There are several reasons for this. For one thing, for ethical reasons it is not possible to set up a control design according to the usual scientific criteria. Mentoring is offered in various settings and at different career stages in different disciplines. Because of this, it is difficult to establish uniform, measurable success metrics. Career progress is an individual matter, and is slower or faster depending on the person concerned. A further factor is how long it takes e.g. to be appointed to a full professorship in medicine. The SwissMedCareer Study is the first to supply reliable data to the effect that mentoring has a positive impact on longer-term career success in terms of research output [3, 20, 103] (cf. Chaps. 7.3 and 7.4).

Individual Barriers

The individual mentoring programs were readvertised at either yearly or two-yearly intervals. Although initially there was a great deal of interest, the degree of commitment to setting up, and in particular to maintaining a mentoring relationship subsequently varied. Over and over, we observed how young physicians were so burdened by the demands of their daily clinical work that they no longer took the time to take advantage of offers of support. Perhaps some of them were not even aware of the longer-term benefit they would receive from mentoring. Often, junior academics only approached the program head with a request for mentoring when they found themselves in an occupational blind alley. Up to that point, they had believed that mentoring was not something they needed.

Key Messages

- Bosses should not view mentoring as "meddling" in their "territory" of junior-staff development, but rather as an important addition.
- The financing of mentoring programs should be an obligatory part of junior-staff development, especially in the case of major research projects.
- Mentoring programs should be regularly evaluated.
- Mentoring should not be seen as a "fire drill" where job-related difficulties exist.

9.5 What Gender-Specific Aspects Should Be Borne in Mind in Mentoring Programs?

As results from both the SwissMedCareer Study and other studies show, women have a mentor significantly less often than their male counterparts [3, 4] in all phases of their careers. Whether men search more actively for a mentor than women at an earlier point in time or at important crossroads in their career, or whether they are offered mentoring by their superiors and influential specialists cannot be deduced either from our data or from other studies. Whatever the case, female physicians should be encouraged to pursue mentoring relationships more actively. The majority of mentoring relationships arise informally. It is likely that women are at a disadvantage here because they often do not dare to ask influential specialists to mentor them. This is why they benefit more from formal mentoring programs in which the program directors specifically look for mentors for interested female mentees. It is also important for enough women who could serve as role models for the young female researchers to be available as mentors. Despite this, mentoring must not be equated with the advancement of women, which is why the Zurich mentoring program was open to both male and female physicians from the start. The group-mentoring setting in particular offered an excellent opportunity to practice gender-sensitive career counseling and career support.

Faculty relationships are a classic example of the "old-boy network", which is why women whose careers are obstructed by their superiors find little support. A mentor can assume an important mediating role here. There are, of course, ombudsman's offices in each medical faculty and in the university hospitals; but since the ombudsmen often have a professional or even personal relationship with other institute/clinic directors, even blatant instances of career obstruction are not solved in favor of the disadvantaged party. This is why an ombudsman's office should be created at national level to clarify and mediate in serious cases of career obstruction.

It should be possible for postdoctoral students to submit their *Habilitation* thesis even without the support of the director of their institute or clinic. Where discrimination exists, the postdoctoral student's work should be checked by an independent external authority.

As part of faculty mentoring programs, resources are provided to release scientists for their research work in addition to their clinical work. Termed '*Protected Research Time*', this support instrument should be awarded to women in particular for two reasons. As studies show, female physicians put their patients' well-being before their own career interests, spending more time on patient care than their male colleagues do. The motto "Women free up men for research" applies here [76, 104]. While female physicians tend to their patients, their male colleagues head to the laboratory. A part-time release for research work enables women also to be relieved from

time-consuming clinical work for a given time. A second argument for granting women protected research time is that female physicians with children tend to receive less support from their bosses, and occasionally are even "written off" for academic careers. Protected research time would make it easier for them to continue with their research careers alongside their family commitments.

The Medical Dean's Office of the University of Zurich and the Director's Office of the University Hospital are planning further junior-staff development measures. In view of the *feminization of medicine*, special attention should be focused on ensuring that interested and talented young female physicians benefit from these measures. For an academic career, physicians are often required to complete part of their qualification abroad so as to benefit from outside suggestions and link up with international networks. It is not always possible for dual-career couples to do this at the same time, and women's mobility is sometimes limited by family commitments. In these circumstances, short-term *fellowships* are often a good option. Here, funding could be deployed relatively quickly and with minimal red tape.

Key Messages

- For women, formal mentoring programs are an important counterbalance to men's "old-boy networks".
- Mentoring should not to be equated with the advancement of women.
- Because of possible family obligations, protected research time and fellowships are important additions to career development for women.

9.6 Conclusions

As repeatedly demonstrated in this report, the implementation of mentoring programs is a process that takes place on several levels. First of all, governing bodies and people in leadership positions must be made aware that special support measures are essential for the professional and personal development of junior medical staff. In a further step, instruments must be developed that are suitable for each group of students, residents and academics in question. This is followed by the phase in which potential mentors and mentees are made aware of the benefits of participating in the mentoring programs. When mentees experience improved professional and personal development owing to the relationship with their mentor, and mentors realise that they too benefit from the relationship, mentoring will take root in an institution and continue to develop. To keep the process going, each phase of the program should be evaluated. In order to ensure that mentoring programs become anchored in their institutions for the long term, continuous professional commitment from the program directors – and just as importantly, financial, personal and spatial resources – are essential.

Key Messages

- The implementation of mentoring takes place on an institutional and personal level over a fairly long period of time until the process is institutionalized, and requires continual adaptation to the needs of the participants.
- Mentoring programs benefit from an interaction with research projects investigating the personal, institutional and societal determinants of the career development of physicians. Experiences and findings from the SwissMedCareer Study provided important suggestions for the Zurich mentoring programs. Likewise, numerous tips for the interpretation and discussion of the research findings were drawn from the mentoring programs.

10 References

1. Standing Committee on Postgraduate Medical and Dental Education: **Supporting doctors and dentists at work: An enquiry into mentoring**. London: SCOPME; 1998.
2. Garmel GM: **Mentoring medical students in academic emergency medicine**. *Acad Emerg Med* 2004, **11**(12):1351-1357.
3. Stamm M, Buddeberg-Fischer B: **The impact of mentoring during postgraduate training on doctors' career success**. *Med Educ* 2011, **45**:488-496.
4. Coleman VH, Power ML, Williams S, Carpentieri A, Schulkin J: **Continuing professional development: racial and gender differences in obstetrics and gynecology residents' perceptions of mentoring**. *J Contin Educ Health Prof* 2005, **25**:268-277.
5. Ramanan RA, Taylor WC, Davis RB, Phillips RS: **Mentoring matters: Mentoring and career preparation in internal medicine residency training**. *J Gen Internal Med* 2006, **21**:340-345.
6. Buddeberg-Fischer B, Vetsch E, Mattanza G: **Career support in medicine: experiences with a mentoring program for junior physicians at a university hospital**. *Psychosoc Med* 2004, **1**(Doc04).
7. Frei E, Stamm M, Buddeberg-Fischer B: **Mentoring programs for medical students - a review of the PubMed literature 2000 - 2008**. *BMC Med Educ* 2010, **10**:32.
8. Bussey-Jones J, Bernstein L, Higgins S, Malebranche D, Paranjape A, Genao I, Lee B, Branch W: **Repaving the road to academic success: the IMeRGE approach to peer mentoring**. *Acad Med* 2006, **81**(7):674-679.
9. Files JA, Blair JE, Mayer AP, Ko MG: **Facilitated peer mentorship: a pilot program for academic advancement of female medical faculty**. *J Womens Health (Larchmt)* 2008, **17**(6):1009-1015.
10. Meyerhofer U: **Die MentoringWerkstatt an der Universität Zürich 2000-2004. Erfahrungen und Empfehlungen**. Zürich: UniFrauenstelle - Gleichstellung von Frau und Mann, Universität Zürich; 2004.
11. Balmer D, D'Alessandro D, Risko W, Gusic M: **How mentoring relationships evolve: A longitudinal study of academic pediatricians in a physician educator faculty development program**. *J Contin Educ Health Prof* 2011, **31**(2):81-86.
12. Feldman D, Arean PA, Marshall SJ, Lovett M, O'Sullivan P: **Does mentoring matter: results from a survey of faculty mentees at a large health sciences university**. *Med Educ Online* 2010, **15**(5063).
13. Wasserstein A, Quistberg D, Shea J: **Mentoring at the University of Pennsylvania: Results of a faculty survey**. *Soc Gen Internal Med* 2007, **22**:210-214.
14. Buddeberg-Fischer B, Buddeberg C: **Karriereförderung in der Psychosomatischen und Psychotherapeutischen Medizin**. *Z Psychosom Med Psychother* 2002, **48**:313-322.
15. Blixen CE, Papp KK, Hull AL, Rudick RA, Bramstedt KA: **Developing a mentorship program for clinical researchers**. *J Contin Educ Health Prof* 2007, **27**(2):86-93.
16. Buddeberg-Fischer B, Herta KD: **Formal mentoring programmes for medical students and doctors–a review of the Medline literature**. *Med Teach* 2006, **28**(3):248-257.
17. Reichenbach L, Brown H: **Gender and academic medicine: impact on the health workforce**. *BMJ* 2004, **329**:792-795.
18. Bowles A, Kevorkian C, Rintala D: **Gender differences regarding career issues and promotion in academic physical medicine and rehabilitation**. *Am J Phys Med Rehabil* 2007, **86**:918-925.
19. Berweger S, Keller C: **Prädiktoren der akademischen Laufbahnintention. Ergebnisse einer geschlechtervergleichenden Befragung von Doktorandinnen und Doktoranden auf dem Hintergrund der sozial-kognitiven Laufbahntheorie**. *Zeitschrift für Pädagogische Psychologie/German Journal of Educational Psychology* 2005, **19**(3):145-158.
20. Buddeberg-Fischer B, Stamm M, Buddeberg C: **Academic career in medicine - requirements and conditions for successful advancement in Switzerland** *BMC Health Serv Res* 2009, **9**:70.
21. Buddeberg-Fischer B, Stamm M, Buddeberg C, Bauer G, Hämmig O, Knecht M, Klaghofer R: **The impact of gender and parenthood on physicians' careers – professional and personal situation seven years after graduation**. *BMC Health Serv Res* 2010, **10**(40).
22. Buddeberg-Fischer B, Stamm M, Klaghofer R: **Career paths in physicians' postgraduate training – an eight-year follow-up study**. *Swiss Med Wkly* 2010, **140**(w13056).
23. Indyk D, Deen D, Fornari A, Santos MT, Lu WH, Rucker L: **The influence of longitudinal mentoring on medical student selection of primary care residencies**. *BMC Med Educ* 2011, **11**(27).
24. Coates W, Crooks K, Slavin S, Guiton G, Wilkerson L: **Medical school curricular reform: fourth-year colleges improve access to career mentoring and overall satisfaction**. *Acad Med* 2008, **83**(8):754-760.

25. Zink BJ, Hammoud MM, Middleton E, Moroney D, Schigelone A: **A comprehensive medical student career development program improves medical student satisfaction with career planning**. *Teach Learn Med* 2007, **19**(1):55-60.
26. Macaulay W, Mellman LA, Quest DO, Nichols GL, Haddad J, Jr., Puchner PJ: **The advisory dean program: a personalized approach to academic and career advising for medical students**. *Acad Med* 2007, **82**(7):718-722.
27. Kosoko-Lasaki O, Sonnino RE, Voytko ML: **Mentoring for women and underrepresented minority faculty and students: experience at two institutions of higher education**. *J Natl Med Assoc* 2006, **98**(9):1449-1459.
28. Scheckler WE, Tuffli G, Schalch D, MacKinney A, Ehrlich E: **The Class Mentor Program at the University of Wisconsin Medical School: a unique and valuable asset for students and faculty**. *Wisconsin Medical Journal WMJ* 2004, **103**(7):46-50.
29. Tekian A, Jalovecky MJ, Hruska L: **The impact of mentoring and advising at-risk underrepresented minority students on medical school performance**. *Acad Med* 2001, **76**(12):1264.
30. Kanter SL, Wimmers PF, Levine AS: **In-depth learning: one school's initiatives to foster integration of ethics, values, and the human dimensions of medicine**. *Acad Med* 2007, **82**(4):405-409.
31. Zier K, Friedman E, Smith L: **Supportive programs increase medical students' research interest and productivity**. *J Investig Med* 2006, **54**(4):201-207.
32. Coates RJ, Ankel F, Birnbaum A, Kosiak D, Broderick KB, Thomas S, Leschke R, Collings J: **The virtual advisor program: Linking students to mentors via the World Wide Web**. *Acad Emerg Med* 2004, **11**(3):253-255.
33. Dorrance KA, Denton GD, Proemba J, La Rochelle J, Nasir J, Argyros G, Durning SJ: **An internal medicine interest group research program can improve scholarly productivity of medical students and foster mentoring relationships with internists**. *Teach Learn Med* 2008, **20**(2):163-167.
34. Kalet A, Sanger J, Chase J, Keller A, Schwartz MD, Fishman ML, Garfall AL, Kitay A: **Promoting professionalism through an online Professional Development Portfolio: successes, joys, and frustrations.** *Acad Med* 2007, **82**(11):1065-1072.
35. Goldstein EA, Maclaren CF, Smith S, Mengert TJ, Maestas RR, Foy HM, Wenrich MD, Ramsey PG: **Promoting fundamental clinical skills: a competency-based college approach at the University of Washington**. *Acad Med* 2005, **80**(5):423-433.
36. Kalet A, Krackov S, Rey M: **Mentoring for a new era**. *Acad Med* 2002, **77**(11):1171-1172.
37. Murr AH, Miller C, Papadakis M: **Mentorship through advisory colleges**. *Acad Med* 2002, **77**(11):1172-1173.
38. Mahood S, Rojas R, Andres D, Zagozeski C, White G, Bradel T: **Educational contracts in family medicine residency training**. *Can Fam Physician* 1994, **40**:549-552, 555-556.
39. Morzinski J, Diehr S. Bower, D. Simpson, D: **A descriptive, cross-sectional study of formal mentoring for faculty.** *Fam Med* 1996, **28**(6):434-438.
40. Nasmith L, Boillat M, Rubenstein H, Daigle N, Goldstein H, Franco ED: **Faculty advisor program for family medicine residents**. *Can Fam Physician* 1997, **43**:1257-1263.
41. Jogerst G, Lenoch S, Ely J: **Russian family practice training program: a single step on a long journey.** *Fam Med* 1998, **30**(5):372-377.
42. McCord JH, McDonald R, Sippel RS, Leverson G, Mahvi DM, Weber SM: **Surgical career choices: The vital impact of mentoring**. *J Surg Res* 2009, **155**:136-141.
43. Sambunjak D, Straus SE, Marusic A: **Mentoring in Academic Medicine**. *JAMA* 2006, **296**:1103-1115.
44. Pearlman S, Leef KH, Sciscione AC: **Factors that affect satisfaction with neonatal-perinatal fellowship training**. *Am J Perinatol* 2004, **21**:371-375.
45. Kuehnle K, Winkler DT, Meier-Abt PJ: **Swiss national MDPhD program: an outcome analysis**. *Swiss Med Wkly* 2009, **139**(37-38):540-546.
46. Fried LP, Francomano CA, MacDonald SM, Wagner EM, Stokes EJ, Carbone KM, Bias WB, Newman MM, Stobo JD: **Career development for women in academic medicine**. *JAMA* 1996, **276**:898-905.
47. Morahan PS, Voytko ML, Abbuhl S, Means LJ, Wara DW, Thorson J, Cotsonas CE: **Ensuring the success of women faculty at AMCs: Lessons learned from the National Centers of Excellence in women's health.** *Acad Med* 2001, **76**:19-31.
48. Von Salis K, Obexer-Ruff G: **Nachwuchsförderung in der Medizin - "geschlechterdifferenziert". Tagungsbericht vom 3.11.2004.** Bern: Lenkungsausschuss des Bundesprogramms Chancengleichheit der Schweizerischen Universitätskonferenz; 2005.
49. Müller F, Bachmann R, Spreyermann C, Rothmayr C: **Mentoring-Projekte: Fallstudien. Wirkungsanalyse im Rahmen der Evaluation des Bundesprogramms Chancengleichheit von Frau**

und Mann an den Universitäten 2000 -2007. Bern: Staatssekretariat für Bildung und Forschung; 2007.
50. Spreyermann C, Rothmayr C: **Evaluation Bundesprogramm Chancengleichheit von Frau und Mann an Universitäten. Bericht zu den Leistungen und Wirkungen des Programms 2000 - 2007**. Bern: Staatssekretariat für Bildung und Forschung; 2009.
51. Allen TD, Poteet ML, Eby LT, Lentz E: **Career benefits associated with mentoring for protégés: A meta-analysis**. *J Appl Psychol* 2004, **89**(1):127-136.
52. Eby LT, Allen TD, Evans SC, Ng T, DuBois DL: **Does mentoring matter? A multidisciplinary meta-analysis comparing mentored and non-mentored individuals**. *J Vocat Behav* 2008, **72**:254-267.
53. Kammeyer-Mueller JD, Judge TA: **A quantivative review of mentoring research: Test of a model**. *J Vocat Behav* 2008, **72**:269-283.
54. Underhill CM: **The effectiveness of mentoring programs in corporate settings: A meta-analytical review of the literature**. *J Vocat Behav* 2006, **68**:292-307.
55. Palepu A, Friedman RH, Barnett RC, Carr PL, Ash AS, Szalacha L, Moskowitz MA: **Junior faculty members' mentoring relationships and their professional development in U.S. medical schools**. *Acad Med* 1998, **73**(3):318-323.
56. Bartels. S.J., Lebowitz BD, Reynolds CFr, Bruce ML, Halpain M, Faison WE, Kirwin PD: **Programs for developing the pipeline of early-career geriatric mental health researchers: outcomes and implications for other fields**. *Acad Med* 2010, **85**(1):26-35.
57. Keyser DJ, Lakoski JM, Lara-Cinisomo S, Schultz DJ, Williams VL, Zellers DF, Pincus HA: **Advancing institutional efforts to support research mentorship: a conceptual framework and self-assessment tool**. *Acad Med* 2008, **83**(3):217-225.
58. Pololi LH, Knight SM, Dennis K, Frankel RM: **Helping medical school faculty realize their dreams: an innovative collaborative mentoring program**. *Acad Med* 2002, **77**:377-384.
59. Jackson VA, Palepu A, Szalacha L, Cheryl C, Carr PL, Inui T: **"Having the right chemistry": a qualitative study of mentoring in academic medicine.** *Acad Med* 2003, **78**(3):328-334.
60. Rogers J, Monteiro M, Nora A: **Toward measuring the domains of mentoring**. *Fam Med* 2008, **40**(4):259-263.
61. Straus SE, Chatur F, Taylor M: **Issues in the mentor-mentee relationship in academic medicine: A qualitative study**. *Acad Med* 2009, **84**:135-139.
62. Stenfors-Hayes T, Kalén S, Hult H, Dahlgren L, Hindbeck H, Ponzer S: **Being a mentor for undergraduate medical students enhances personal and professional development**. *Med Teach* 2010, **32**:148-153.
63. Ramani S, Gruppen L, Kachur EK: **Twelve tips for developing effective mentors**. *Med Teach* 2006, **28**(5):404-408.
64. Yeung M, Nuth J, Stiell IG: **Mentoring in emergency medicine: the art and the evidence**. *CJEM* 2010, **12**(2):143-149.
65. Hauer KE, Teherani A, Dechet A, Aagaard EM: **Medical students' perceptions of mentoring: a focus-group analysis**. *Med Teach* 2005, **27**(8):732-734.
66. Rose GL, Rukstalis MR, Schuckit MA: **Informal mentoring between faculty and medical students**. *Acad Med* 2005, **80**(4):344-348.
67. Hill JA, Boone S: **Personal perception on mentoring**. *Clin Orthop Relat Res* 2002(396):73-75.
68. Zerzan J, Hess R, Schur E, Phillips R, Rigotti N: **Making the most of mentors: A guide for mentees**. *Acad Med* 2009, **84**(1):140-144.
69. Benson CA, Morahan PS, Sachdeva AK, Richman RC: **Effective faculty preceptoring and mentoring during reorganization of an academic medical center**. *Med Teach* 2002, **24**:550-557.
70. Sloan REG, McMillan J: **Developing mentoring skills for general practitioners using simulated doctor**. *Med Educ* 2003, **37**:1044-1045.
71. Connor MP, Bynoe AG, Redfern N, Pokora J, Clarke J: **Developing senior doctors as mentors: a form of continuing professional development report of an initiative to develop a network of senior doctors as mentors:1994-99**. *Med Educ* 2000, **34**:747-753.
72. Buddeberg-Fischer B, Beck Schimmer B, Hornung R, Dietz C, Mattanza G, Klaghofer R: **Mentoring zur klinischen und akademischen Karriereförderung junger Ärztinnen und Ärzte**. *Schweiz Ärzteztg* 2005, **86**(46):2566-2572.
73. Donovan A: **Views of radiology program directors on the role of mentorship in the training of radiology residents**. *AJR* 2010, **194**:704-708.
74. Buddeberg-Fischer B, Klaghofer R, Abel T, Buddeberg C: **Swiss residents' speciality choices - impact of gender, personality traits, career motivation and life goals**. *BMC Health Serv Res* 2006, **6**(137).

75. Kraft E, Hersperger M: **Daten und Demographie – informativ und spannend (5) Ärzteschaft in der Schweiz – die Feminisierung der Medizin**. *Schweiz Ärzteztg* 2009, **90**(47):1823-1825.
76. Jacquemart C, Boos L: **Gleichberechtigte Nachwuchsförderung von Ärztinnen und Ärzten am UniversitätsSpital Zürich**. Zürich: Institut für Betriebswirtschaftliche Forschung der Universität Zürich; 2000.
77. **Bundesprogramm Chancengleichheit 2000 - 2003. Ein Programm des Bundes zur Förderung der Chancengleichheit von Frau und Mann im universitären Bereich gemäss der Botschaft über die Förderung von Bildung, Forschung und Technologie in den Jahren 2000–2003** http://www.cus.ch/wDeutsch/beitraege/chancengleichheit/Programminformationen/Chancengleichheit_D.pdf
78. Bachmann R, Rothmayr C, Spreyermann C: **Evaluation Bundesprogramm Chancengleichheit von Frau und Mann an Universitäten. Bericht zu Umsetzung und Wirkungen des Programms 2000 bis 2003**. Bern: Staatssekretariat für Bildung und Forschung; 2004.
79. Dubach P, Graf I, Stutz H, Gardiol L: **Evaluation Bundesprogramm Chancengleichheit von Frau und Mann an den Universitäten 3. Phase 2008-2011**. Bern: Staatssekretariat für Bildung und Forschung; 2011.
80. **Verhaltenskodex Gender Policy, Universität Zürich**
81. Maurer E, Meyerhofer U: **Peer-Mentoring. Erste Erfahrungen mit der *MentoringWerkstatt* an der Universität Zürich**. In *Mentoring-Programme für Frauen in der Wissenschaft*. Ed Loether A. Bielefeld: Kleine; 2003:29-40.
82. Gilland Lutz K: **Training by doing: Peer mentoring at the University of Zurich**. In *Mentoring for change. A focus on mentors and their role in advancing gender equality*. Eds Fueger H, Hoeppel D. Fribourg: eument-net; 2011.
83. Seyfarth T, Spieler M, Maurer Lutz E: **Gleichstellungsmonitoring 2010**. Zürich: Universität Zürich, Abteilung Gleichstellung; 2011.
84. Metzinger A: *Arbeit mit Gruppen*. Freiburg i. Br.: Lambertus; 1999.
85. Wellhöfer PR: *Gruppendynamik und soziales Lernen*. Stuttgart: Lucius und Lucius; 2001.
86. Mark S, Link H, Morahan PS, Pololi L, Reznik V, Tropez-Sims S: **Innovative mentoring programs to promote gender equity in academic medicine**. *Acad Med* 2001, **76**(1):39-42.
87. Rosenberg MB: *Gewaltfreie Kommunikation. Eine Sprache des Lebens*. 9. ed. Paderborn: Junfermann; 2010.
88. Schirlo C, Gerke W, Groscurth P, Vetter W: **Inhalte und Struktur des neuen Medizinstudiums**. *Schweiz Rundsch Med Prax* 2002, **91**(33):1300-1302.
89. Schirlo C: **Die Reform des Studiengangs Medizin – Leitkonzepte und spezifische Aspekte der Modularisierung**. *Beiträge zur Lehrerbildung* 2006, **24**(3):388-396.
90. Buddeberg-Fischer B, Klaghofer R, Abel T, Buddeberg C: **The influence of gender and personality traits on the career planning of medical students**. *Swiss Med Wkly* 2003, **133**:535-540.
91. Buddeberg-Fischer B, Dietz C, Klaghofer R, Buddeberg C: **Swiss residents' arguments for and against a career in medicine**. *BMC Health Serv Res* 2006, **6**(98).
92. Maio G: **Ethisch-anthropologische Grundfragen zu den Paradigmen der modernen Medizin**. *Zeitschrift für Medizinische Ethik* 2007, **53**(3):229-254.
93. Sambunjak D, Straus SE, Marusic A: **Mentoring in academic medicine. A systematic review.** *JAMA* 2006, **296**:1103-1115.
94. Levy BD, Katz JT, Wolf MA, Sillman JS, Handin RI, Dzau VJ: **An initiative in mentoring to promote residents' and faculty members' careers**. *Acad Med* 2004, **79**(9):845-850.
95. Stamm M, Buddeberg-Fischer B: **How do physicians and their partners coordinate their careers and private lives?** *Swiss Med Wkly* 2011.
96. Buddeberg-Fischer B, Klaghofer R, Stamm M, Buddeberg C: **Swiss Physicians' Career Development Study 2000 - 2009.** Zürich: Universitätsspital Zürich, Abteilung Psychosoziale Medizin 2009.
97. Buddeberg-Fischer B, Ebeling I, Stamm M: **Karriereförderliche und karrierehinderliche Erfahrungen in der Weiterbildungszeit junger Ärztinnen und Ärzte. Ergebnisse einer Schweizer Longitudinalstudie**. *Dtsch Med Wochenschr* 2009, **134**:2451–2457.
98. Blickle G, Kuhnert B, Rieck S: **Laufbahnförderung durch ein Unterstützungsnetzwerk: Ein neuer Mentoringansatz und seine empirische Überprüfung**. *Zeitschrift für Personalpsychologie* 2003, **2**(3):118-128.
99. Chesler N, Barabino G, Bhatia S, Richards-Kortum R: **The pipeline still leaks and more than you think: A status report on gender diversity in Biomedical Engineering**. *Ann Biomed Eng* 2010, **38**(5):1928-1935.

100. European Commission: **Women in science and technology. Creating sustainable careers**. Ed Directorate-General for Research, Science, Economy, Society: European Commission; 2009.
101. Landmann R, Von Gunten A: **Professionelle Karriereförderung auf dem Weg zur Professorin oder Chefärztin. Mentoringprogramm für Frauen an den Universitätenskliniken Basel**. *Schweiz Ärzteztg* 2006, **87**(44):1901-1906.
102. Borel N, Aeschlimann C: **VetMENT Zwischenevaluation Juni/Juli 2011**. Zuerich und Bern: VetSuisse; 2011.
103. Buddeberg-Fischer B, Stamm M, Buddeberg C, Klaghofer R: **Career-Success Scale - a new instrument to assess young physicians' academic career steps**. *BMC Health Serv Res* 2008, **8**(120).
104. Taragin MI, Wilzek AP, Karns ME, Trout R, Carson JL: **Physician demographics and the risk of medical malpractice.** *Am J Med* 1992, **93**:537-542.

11 Acknowledgements

The development and setting-up of the mentoring programs described in this report was only possible thanks to the moral and material support provided by several people and institutions to whom we owe a debt of gratitude. Initial support was received by us in 2002 from the Directors of the University Hospital Zurich (USZ) (Dr. med. Christiane Roth and Prof. Dr. med. Thomas Pasch). The continuous financial support of the individual projects by the Federal Equal Opportunities Program (2004 – 2011) was an important factor in the institutionalization of the mentoring programs, for which we are very grateful. Since 2008, the various mentoring programs (Mentoring for Medical Students, Mentoring for Residents and Mentoring for Junior Academic Staff) have been jointly supported by the Director of Research and Education of the University Hospital Zurich (USZ) (Prof. Dr. med. Gregor Zünd) and the Deans of the Medical Faculty of the University of Zurich (Prof. Dr. med. Walter Bär and Prof. Dr. med. Dr. med. dent. Klaus Grätz), for which we extend to them also our sincere thanks.

This report too was only possible thanks to the financial support of both the Federal Equal Opportunities Program and the Department of Research and Education at the University Hospital Zurich.

Our special thanks go to all mentors who with their commitment to their mentees made a great contribution to the development of the mentoring programs. We also thank the mentees for the trust they showed the program directors. We were equally happy to receive both positive feedback and critical suggestions.

The Program Director received energetic support in the organization and evaluation of the programs from Dr. phil. Martina Stamm. My sincere thanks go to her for the substantial contribution she made to the success of the mentoring programs.

The discussions in the steering group composed of the (female) directors of all university mentoring projects and led by Dr. phil. Elisabeth Maurer, Department for Gender Equality of the University of Zurich, provided us with valuable suggestions.

The Coordinator of the Federal Equal Opportunities Program, Dr. sc. ETHZ Gabriela Obexer-Ruff, and the Director of Research and Education at the USZ, Prof. Dr. med. Gregor Zünd, encouraged me to produce this report on mentoring programs in medicine. I'd like to extend my deep gratitude to both for the opportunity to write this paper.

I am especially grateful to Prof. Dr. med. Beatrice Beck Schimmer, who has not only been a highly committed mentor and role model for many up-and-coming female academics, but who will also be assuming the directorship of the mentoring programs in January 2012. I wish her and the program every success.

Claus Buddeberg and Martina Stamm edited the manuscript extensively and provided valuable suggestions, for which I'd like to offer them both my sincere thanks.

Lastly, I am very grateful to Ms. Debra Nicol for her careful translation of this report.

Barbara Buddeberg-Fischer, Zurich, June 2012

12 Appendix

12.1 Buddeberg-Fischer B, Herta KD. Formal mentoring programs for medical students and doctors – a review of the Medline literature. *Med Teach* 2006, 28(3):248-257.

12.2 Information flyer on the Mentoring Program for Physicians at the University Hospital Zurich

12.3 Information flyer on the Faculty Mentoring Program for Junior Medical Academic Staff at the University Hospital and the Medical Faculty of the University of Zurich

12.4 Frei E, Stamm M, Buddeberg-Fischer B. Mentoring programs for medical students – a review of the PubMed literature 2000 – 2008. BMC Med Educ 2010, 10:32

Medical Teacher, Vol. 28, No. 3, 2006, pp. 248–257

Taylor & Francis
Taylor & Francis Group

Formal mentoring programmes for medical students and doctors – a review of the Medline literature

BARBARA BUDDEBERG-FISCHER & KATJA-DANIELA HERTA
Department of Psychosocial Medicine, University Hospital Zurich, Switzerland

ABSTRACT *Mentoring programmes have been implemented as a specific career-advancement tool in the training and further education of various groups in the medical profession. The main focus of our investigation was to examine what types of structured mentoring programmes exist for doctors as well as for medical students, what short- and long-term goals these projects pursue, and whether statements can be made on the effectiveness and efficiency of these programmes. A literature-search strategy was applied to Medline for 1966–2002 using the keyword combinations: (a) mentor* [AND] program* [AND] medical students, and (b) mentor* [AND] program* [AND] physicians. Although a total of 162 publications were identified, only 16 papers (nine for medical students and seven for doctors) met the selected methodological criteria. The majority of the programmes lack a concrete structure as well as a short- and long-term evaluation. Main goals are to increase professional competence in research and in further specialization and to build up a professional network for the mentees; no statements are to be found on the advantages for the mentors. Programme evaluation is for the most part presented descriptively in terms of great interest and high level of satisfaction. No publication contains statements on the effectiveness or the efficiency of the programme. Although the results of mentoring are promising, more formal programmes with clear setup goals and a short- and long-term evaluation of the individual successes of the participants as well as the cost-benefit analysis are needed.*

Practice points

What is already known?

- Mentoring has proved to be an important career-advancement tool, especially for women. Over the last few decades, structured mentoring programmes have been designed for health professionals, mainly nurses, but not many for medical students and doctors.

What does this study add?

- The present literature review aimed at reporting what types of structured mentoring programmes exist for doctors and students. Only 16 mentoring programmes – one-to-one, group and peer mentoring models – could be identified which give the duration of the programme, the exact number of participants, concrete goals, evaluation and results as well as data on effectiveness and efficacy.

Suggestions for further research

- In an era of 'feminization of medicine', mentoring programmes may acquire increasing importance. Of special interest would be an evaluation of the individual successes of participants in a control design with and without mentoring over a fairly long period.

Mentoring and mentoring programmes

Mentoring was developed in the USA in the 1970s in large private-sector corporations to support junior staff. Since the 1990s, mentoring programmes have been introduced in various groups in the medical profession. They are found most frequently in the field of nursing. Formal mentoring programmes for medical students and doctors, however, have only recently been developed. It was, therefore, of special interest to search for mentoring programmes for these two medical professional groups in the literature. Women are under-represented in the higher echelons of medicine. Therefore, some programmes have been implemented exclusively to support women (Levinson *et al.*, 1991; Morahan *et al.*, 2001). Other target groups of mentoring programmes are handicapped people and/or members of ethnic minorities (Johnson *et al.*, 1998; Abernethy, 1999).

There exist different mentoring models: the classic *one-to-one mentoring* between mentor and mentee; *group mentoring*, a (small) group of mentees supervised by a mentor; individual or group mentoring with a number of mentors (the *multiple-mentor experience model*); and mentoring among co-equals (*peer mentoring*).

Objectives and issues

It is the aim of this paper to investigate the following issues:

(1) What types of structured mentoring programmes for medical students and doctors are reported in the scientific medical literature?
(2) What short- and long-term goals do these projects pursue?
(3) Are statements on both their short- and long-term successes possible?
(4) Can concrete statements be made on the effectiveness (i.e. the efficacy of the measures) and efficiency (meaning the cost-effectiveness, i.e. the ratio

Correspondence: Professor Barbara Buddeberg-Fischer, Department of Psychosocial Medicine, University Hospital Zurich, Haldenbachstr. 18, CH-8091, Zurich, Switzerland; email: barbara.buddeberg@usz.ch

ISSN 0142–159X print/ISSN 1466–187X online/06/030248–10 © 2006 Taylor & Francis
DOI: 10.1080/01421590500313043

between money spent and success) of mentoring programmes?

Methods

The search strategy for this paper was set up to identify any scientific paper on mentoring programmes for medical students and doctors.

The search strategy was elaborated in the following steps:

(1) An online search dated April 2003 (google) with the term mentor* generated more than two million hits. The term mentor* was applied in order to include the terms mentor, mentoring and mentorship.
(2) To distinguish between scientific and popular literature and between the medical field and other professional fields we decided to limit the search strategy on Medline, which is the greatest worldwide medical bibliography data base.
(3) For the term mentor*, 3,052 sources were found.
(4) Finally, the following keyword combinations (*a*) *mentor** [*AND*] *program** [*AND*] *medical students*, and (*b*) *mentor** [*AND*] *program** [*AND*] *physicians* were used for the Medline search. The term program* was chosen to include program(s) and programme(s).
(5) Using the search strategy in the period from 1966–31.12.2002, we found a total of 162 articles. The keyword combination (a) revealed 71, and the keyword combination (b) 91 papers. Of these 162 publications, 19 were listed under both, medical students and doctors.
(6) Titles and abstracts identified by each of the searches were read by both authors. Papers that were easily identifiable as outside the scope of this study were excluded. The remaining papers were passed onto the next stage.
(7) The full version of the paper was read by the two authors independently to determine suitability for inclusion.

The following inclusion criteria were established:

(1) The aim of the mentoring project is the advancement of the mentee's career with respect to an activity in patient care, medical basic research, clinical research, the university/academic field, and/or alternative professional fields.
(2) The mentoring programme aims at the advancement and consolidation of academic/professional and non-academic/non-professional competencies.
(3) Mentoring does not foster individual capabilities, skills or knowledge, but represents a combined, integrated approach to supporting the all-round development of the mentee.
(4) The education and training level normally considered appropriate for the mentee at his/her particular stage is surpassed.
(5) The mentee is either a medical student or a doctor.
(6) The mentor is from a medical professional group and has already pursued a successful career.
(7) During the mentoring programme there exists a fixed relationship between a mentor and one or more mentees, or alternatively between a clearly defined number of mentors and a group of mentees.
(8) The minimum length of the mentoring programme is 6 months.
(9) The paper involves a final or interim evaluation (the latter after a minimum period of 6 months) of the accompanying evaluation of a medical institution's structured mentoring programme.

In the last (8) stage, the full versions of the papers meeting the inclusion criteria were examined, and the publication data were compiled according to the following categories:

(1) Year published, author and country of origin.
(2) Duration of programme.
(3) Number of participants and the category they belong to (generally, as for example students or doctors; specifically, as for example women or ethnic minorities).
(4) Programme structure.
(5) Aims of the programme: Introduction to studies, Career in health-care institutions, Clinical research, Medical basic research, Academic/university career and/or alternative professional fields.
(6) Type of evaluation.
(7) Programme results, possibly details of the costs.
(8) Advantages and disadvantages of the programme.

Results

The aim of this paper was to achieve an overview of the existing structured mentoring programmes for medical students and doctors, the goals aspired to, their outcome and their effectiveness and efficacy. As in other medical fields, the last few years have seen an exponential increase in the number of publications on the subject of mentoring. The first article on the subject of mentoring listed in the Medline database is from the year 1967 (Escoll & Wood, 1967). More papers were published in the year 2001 alone ($n = 391$) than between 1981–1990 as a whole ($n = 335$).

Of the 162 papers found by the described search strategy, only 16 papers fulfilled the described inclusion criteria. Most of the 162 publications limit themselves to the description of the current situation and the demand for specific mentoring programmes. In the 16 selected publications sufficient information was given to undertake categorization according to the described method. Nine of these papers describe mentoring programmes for medical students (Slockers *et al.*, 1981; Lemon *et al.*, 1995; Forrow & Wolf, 1998; Gonzales *et al.*, 1998; Woessner *et al.*, 1998; Abernethy, 1999; Frishman, 2001; Haq *et al.*, 2002; Kalet *et al.*, 2002), seven for doctors (Mahood *et al.*, 1994; Morzinski *et al.*, 1996; Nasmith *et al.*, 1997; Jogerst *et al.*, 1998; Johnson *et al.*, 1998; Markakis *et al.*, 2000; Pechura, 2001). With some of the papers, missing information meant that certain individual categories could not be taken into account. Thus, for example, the exact number of participating mentees is missing in four publications (Slockers *et al.*, 1981; Johnson *et al.*, 1998; Woessner *et al.*, 1998;

Markakis *et al.*, 2000), and the number of mentors in eight papers (Slockers *et al.*, 1981; Forrow & Wolf, 1998; Gonzales *et al.*, 1998; Johnson *et al.*, 1998; Markakis *et al.*, 2000; Frishman, 2001; Haq *et al.*, 2002; Kalet *et al.*, 2002). The evaluation instruments (e.g. questionnaires and other written feedback or surveys via interviews) are not given in two publications (Gonzales *et al.*, 1998; Haq *et al.*, 2002). An overview of the mentoring programmes described in greater detail below can be found in Table 1 (medical students) and Table 2 (doctors).

Formal mentoring programmes for medical students (Table 1)

Participants

Mentees. Seven of the nine programmes for students are from American institutions (Lemon *et al.*, 1995; Forrow & Wolf, 1998; Gonzales *et al.*, 1998; Abernethy, 1999; Frishman, 2001; Haq *et al.*, 2002; Kalet *et al.*, 2002, and one each from the Netherlands (Slockers *et al.*, 1981) and Germany (Woessner *et al.*, 1998). Two-thirds of all the programmes are exclusively intended for first- to third-year medical students (Slockers *et al.*, 1981; Lemon *et al.*, 1995; Gonzales *et al.*, 1998; Abernethy, 1999; Haq *et al.*, 2002; Kalet *et al.*, 2002). In one project, in addition to medical students, students from other medical professional groups (such as trainee nurses and future social workers) take part as mentees (Forrow & Wolf, 1998). In one programme, the mentees are students from ethnic minorities (Abernethy, 1999).

Mentors. Experienced doctors in higher positions, who for the most part work at the university institution running the mentoring project, act as mentors. The percentage of women among the mentors is given in only one of the programmes (Lemon *et al.*, 1995).

Short- and long-term aims

Of the six programmes for first- to third-year students, one programme serves exclusively as an introduction to everyday student life (Slockers *et al.*, 1981), one aims to recruit future doctors into general practice (Lemon *et al.*, 1995) and one aims to prepare students from ethnic minorities for the clinical part of the course of study (Abernethy, 1999). Three of the programmes for students convey specific research knowledge early on within the framework of the mentoring relationship (Gonzales *et al.*, 1998; Frishman, 2001; Haq *et al.*, 2002). Two of the programmes are designed to further acquaint participating mentees with the basic medical care institutions of underprivileged segments of the population (Forrow & Wolf, 1998; Haq *et al.*, 2002). Within the framework of the mentoring relationship, a research topic is to be dealt with in one of these two programmes (Haq *et al.*, 2002). The aim of building up a network of mentees is explicitly mentioned in two papers (Forrow & Wolf, 1998; Haq *et al.*, 2002). In three programmes for students (Gonzales *et al.*, 1998; Abernethy, 1999; Haq *et al.*, 2002) the described mentoring concept explicitly constitutes just one part of an overall career-development concept. Depending on the programme, for example, research placements, methodology courses, workshops and/or seminars are also possible.

Structure and duration of programme

In five of the nine programmes for students, a one-to-one ratio between mentor and mentee is striven for (Lemon *et al.*, 1995; Gonzales *et al.*, 1998; Abernethy, 1999; Frishman, 2001; Haq *et al.*, 2002). One of the two setups for group mentoring takes place in the peer group (Slockers *et al.*, 1981). Here, the mentees are first-year students, and the mentors second- to fourth-year students. With the other setup, faculty members act as mentors for students of different years (Kalet *et al.*, 2002). In one programme, both group and individual mentoring are possible (Woessner *et al.*, 1998). One setup includes so-called dual mentoring (two permanent mentors per mentee) (Forrow & Wolf, 1998). Only three programmes provide for specific training to prepare the mentors for their job (Slockers *et al.*, 1981; Lemon *et al.*, 1995; Abernethy, 1999). The process of matching mentors with mentees is not explained in greater detail.

Most of the programmes mentioned have existed for several years. The period of participation is usually between 6 months and 3 years. Up to the time of publication, several years of mentees have already been through the programme in most cases. Thus, a programme calculated to run for 6 months in each instance has been in place for 14 years (Slockers *et al.*, 1981). It should be noted that one programme to date has had to be suspended for financial and administrative reasons (Abernethy, 1999). Another programme has now been declared obligatory for all students, which no longer complies with the criteria of mentoring per se (Lemon *et al.*, 1995).

Formal mentoring programmes for doctors (Table 2)

Participants

Mentees. Of the seven programmes for doctors remaining in the evaluation, two are from Canadian (Mahood *et al.*, 1994; Nasmith *et al.*, 1997) and five are from American institutions (Morzinski *et al.*, 1996; Jogerst *et al.*, 1998; Johnson *et al.*, 1998; Markakis *et al.*, 2000; Pechura, 2001), none from Europe. Here, one publication describes a comprehensive further-training project for Russian doctors in the USA in which mentoring represents a partial aspect (Jogerst *et al.*, 1998). Four programmes are geared to further training in medical specializations (Mahood *et al.*, 1994; Morzinski *et al.*, 1996; Nasmith *et al.*, 1997; Markakis *et al.*, 2000). Here, three programmes involve further training in general practice (Mahood *et al.*, 1994; Morzinski *et al.*, 1996; Nasmith *et al.*, 1997), one in internal medicine (Markakis *et al.*, 2000). In two of the setups, the mentees are doctors belonging to ethnic minorities (Johnson *et al.*, 1998; Pechura, 2001).

Mentors. Only doctors take on mentoring tasks. These are subjects with management responsibilities, or who work as researchers.

Table 1. Mentoring programmes for medical students (listed by year of publication).

Ref. no.	Country Year	Duration of programme	Mentoring model	Participants	Goal	Evaluation	Results
Slockers *et al.*, 1981	Netherlands 1981	6 months each, running for 14 years	Peer-mentoring	*Mentees:* 1st year students *Mentors:* 2nd –4th year students	Introduction to everyday student life	Questionnaires	Generally high level of satisfaction Improvement of communication skills and learning in groups
Lemon *et al.*, 1995	USA 1995	3 years	One-to-one mentoring	*Mentees:* 1st–3rd year students *Mentors:* Family doctors, paediatricians	Training in primary care	Questionnaires Interviews Meetings	Great interest shown by students
Forrow & Wolf, 1998	USA 1998	1 year, running for 7 years	Dual mentorship: 2 mentors per mentee	*Mentees:* health professional students *Mentors:* Doctors, nurses, social workers	Humanistic and professional education, cooperation of different professional groups, networking, health care for underprivileged, organization of symposia	Written reports at the end of every year by all participants	Improvement of group cohesion and peer support Higher number of working hours for underprivileged people
Gonzales *et al.*, 1998	USA 1998	3 years, running for 7 years	One-to-one mentoring	*Mentees:* 1st year students interested in primary care *Mentors:* Researchers in primary care	Collaboration in the mentor's research project, training in research methodology, research placements, financial support	No details given	Increase in the number of publications and talks
Woessner *et al.*, 1998	Germany 1998	2 years	One-to-one and group mentoring	*Mentees:* students of different years *Mentors:* Faculty staff	Shared leisure activities, development of personal contact, counselling on career-relevant issues	Questionnaires	High level of satisfaction (85%), all mentees wanted to extend the duration of the programme
Abernethy 1999	USA 1999	2 years	One-to-one mentoring	*Mentees:* 1st–2nd year minority students *Mentors:* Non-minority faculty staff	Preparation for clinical training Bicultural support	Questionnaires Interviews Evaluation of the mentees by their mentors	Better preparation for clinical work Satisfaction with the meetings greater for mentors than for mentees

(Continued)

Table 1. Continued.

Ref. no.	Country Year	Duration of programme	Mentoring model	Participants	Goal	Evaluation	Results
Frishman, 2001	USA 2001	6 months each, running for 13 years	One-to-one mentoring	*Mentees:* 4th year students *Mentors:* Researchers	Collaboration on the mentor's research project	Questionnaires	Improvement in dealing with medical literature Upgrading of computer knowledge High level of satisfaction Desire for a scientific career in one-third of the mentees
Hag *et al.* 2002	USA 2002	4–5 years	One-to-one mentoring	*Mentees:* 1st–2nd year students interested in the care of social fringe groups *Mentors:* Primary care doctors cooperating with these social services	Development of leadership qualities Conducting a research project Building a social network	Not described	High satisfaction
Kalet *et al.* 2002	USA 2002	2 years	Group mentoring	*Mentees:* 1st–2nd year students *Mentors:* Faculty staff members	Development of understanding of principles and nature of the medical profession Getting to know highly motivated and qualified scientists	Questionnaires Focus group interviews	Programme taken up enthusiastically Model for reflection on one's professional career

Table 2. Mentoring programmes for doctors (listed by year of publication).

Ref.	Country Year	Duration of programme	Mentoring model	Participants	Goal	Evaluation	Results
Mahood *et al.*, 1994	Canada 1994	2 years	One-to-one mentoring	*Mentees:* Primary care trainees *Mentors:* Primary care doctors	Working out a traineeship contract Timely recognition of training gaps	Analysis of plans and conversations Simulated tests Set of questionnaires	Danger of increasing workloads for mentors Need for a mentoring course Programme also experienced as anxiety-producing
Morzinski *et al.*, 1996	USA 1996	6 months	One-to-one mentoring	*Mentees:* Primary care trainees *Mentors:* Faculty staff members	Training in primary care Academic career	Questionnaires Semi-structured interviews	Development of academic competence Personal growth Joint projects improve the success of the mentor-mentee relationship
Nasmith *et al.*, 1997	Canada 1997	2 years	One-to-one mentoring	*Mentees:* Primary care trainees *Mentors:* Faculty staff members	Traineeship contract Discussion of the aims of training Career planning Improvement of communication Timely recognition of problems	Questionnaires Evaluation of the traineeship contracts	Useful for training Communication made more difficult for mentees, improved for mentors Main problems: time unnaturalness of the contract, lack of flexibility of meetings, no opportunity to choose one's mentor
Jogerst *et al.*, 1998	USA 1998	6 months	One-to-one mentoring	*Mentees:* Primary care trainess from Russia *Mentors:* Faculty staff members of an American university	Provision of specialist knowledge, investigative techniques, economic knowledge, teaching skills	Questionnaires Exams Written assessment of the mentees by their mentors	Increase in capabilities, skills and knowledge (data) Reduction of costs (concrete figures) Effect on other doctors

(Continued)

Table 2. Continued.

Ref.	Country Year	Duration of programme	Mentoring model	Participants	Goal	Evaluation	Results
Johnson *et al.*, 1998	USA 1998	Up to several years	One-to-one mentoring	*Mentees:* Ethnic minority doctors *Mentors:* Minority faculty members	Increasing the number of ethnic-minority faculty staff Provision of skills for research, grant funding, teaching and publishing	Evaluation of number of publications, research grants and talks	Increased numbers of ethnic-minority faculty staff
Markakis *et al.*, 2000	USA 2000	3 years, running for 10 years	One-to-one mentoring	*Mentees:* Domestic and foreign doctors in specialist training of internal medicine *Mentors:* Faculty staff members	Acquisition of professional and humanistic knowledge Personal growth Discussion of individual strengths and weaknesses Working out of realistic goals Identification of resources Time management	Feedback from the mentees Pointing out of the mentees' progress by mentors at a monthly meetings	Great progress for mentees Mentor as protection in difficult times
Pechura 2000	USA 2001	4 years, running for 19 years	One-to-one mentoring	*Mentees:* Specialist trainees from ethnic minorities interested in research, with the aim of subspecialisation and an academic career (70% research activity) *Mentors:* Specialist doctors and researchers	Academic career for members of ethnic minorities	Two external experts	Example of a mentee that became an expert Recommendation of continuation of the programme

Short- and long-term aims

For the mentees currently undergoing specialist training, it is mostly individual goals, strategies and methods with respect to earning their specialist qualification that are meant to be worked on in the mentoring relationship. In the two Canadian programmes, this is stipulated and examined by means of a contract concluded between mentor and mentee (Mahood *et al.*, 1994; Nasmith *et al.*, 1997). Two publications state the support of members of ethnic minorities in their academic careers as an aim of the mentoring programme (Johnson *et al.*, 1998; Pechura, 2001). Both programmes are designed as a comprehensive career-support measure and serve to develop research competencies (Pechura, 2001) as well as to provide publication and teaching skills (Johnson *et al.*, 1998). This is meant to increase the proportion of ethnic-minority faculty members over the long run.

Structure and duration of programme

In all seven programmes for doctors, there is a one-to-one ratio between mentor and mentee. The possibility of the mentor supervising several mentees at a time is mentioned in three papers (Mahood *et al.*, 1994; Nasmith *et al.*, 1997; Pechura, 2001). As with the students, in three of the programmes for doctors, mentoring is explicitly just one part of an overall setup for career development (Jogerst *et al.*, 1998; Johnson *et al.*, 1998; Pechura, 2001). Depending on the programme, for example, research placements, methodology courses, workshops and/or seminars are also offered.

A 19-year-old programme, designed for the long term, for the progressive career development of members of ethnic minorities, runs from a university-studies preparation course for high school students to the conclusion of their academic careers (Johnson *et al.*, 1998). However, mentoring is provided solely for the participating doctors in support of their research activity and hence the building of their academic careers. Unlike the programmes for students, the doctors' programmes provide no specific training for mentors; nor is the matching process described in much detail in the doctors' projects.

Most of the programmes mentioned have been running for several years. The period of participation is usually between 2 and 4 years.

Results of the evaluation of all 16 programmes

The presented results of the programmes are mostly *descriptive* in terms of a great interest in the offering in question, or a high level of satisfaction among all participants. Percentage figures on satisfaction (80–90%) are given in two papers (Woessner *et al.*, 1998; Frishman, 2001). Further generally formulated results are: Improvement in communication and learning in the group (Slockers *et al.*, 1981), and progress in dealing with specialist literature and computers (Frishman, 2001). Concrete figures on the number of papers published and lectures/papers given at conferences as a result of a mentoring programme for students interested in research (but without comparison-group figures) are only given in one paper (Gonzales *et al.*, 1998). As long-term successes are reported: A rise in the number of members of ethnic minorities among all faculty members as a consequence of specific mentoring over 4 years (Johnson *et al.*, 1998); and an exemplary report of a former mentee who developed into an international expert (Pechura, 2001).

Three programmes for doctors in specialist training also report on concrete problems with mentoring: Danger of a fairly large time demand being placed on mentors (Mahood *et al.*, 1994); anxiety caused by the constant checking of the mentees by the mentors (Mahood *et al.*, 1994), and as a result, the danger of a worsening of communication between mentors and mentees (Nasmith *et al.*, 1997); difficulties arising from an insufficiently flexible mentor-mentee relationship (Nasmith *et al.*, 1997); a too large geographical distance between mentor and mentee (Morzinski *et al.*, 1996).

Effectiveness and efficiency of the mentoring programmes

Only three of the 16 programmes examined contain statements on the (partial) costs accruing (Jogerst *et al.*, 1998; Johnson *et al.*, 1998; Pechura, 2001). Financial support for the mentees in the form of grants and/or research funds is mentioned in three setups (Forrow & Wolf, 1998; Gonzales *et al.*, 1998; Haq *et al.*, 2002). The fact that mentors receive no financial compensation is stressed in two publications (Lemon *et al.*, 1995; Woessner *et al.*, 1998).

No publication contains statements on the effectiveness (efficacy of the measures) or the efficiency (cost-effectiveness, or the ratio between money spent and success) of the programme.

Discussion

Only 16 of 162 publications identified by the chosen search strategy met the inclusion criteria and were accepted in the final evaluation. Among these are nine mentoring programmes for medical students and seven for doctors. Tables 1 and 2 clearly show that none of these papers give detailed information about all of the eight classified features of the individual projects. Details on the number of participating mentors and mentees, the method and the results of the scientifically founded and longer-term evaluation are frequently missing.

Models of mentoring programmes

In the programmes for doctors, the mentee–mentor relationship is set up on a one-to-one basis; in those for medical students, different schemes are established, including peer (Slockers *et al.*, 1981), group (Woessner *et al.*, 1998; Kalet *et al.*, 2002) and individual mentoring (Lemon *et al.*, 1995; Gonzales *et al.*, 1998; Woessner *et al.*, 1998; Abernethy, 1999; Frishman, 2001; Haq *et al.*, 2002). One can assume that mentoring for doctors must be more stage-specific and goal-oriented for the individual mentee, whilst mentoring for students is also effective addressing a group of mentees at the same training stage. The duration of the programmes both for students and doctors varies a lot. In most of the papers whether the mentees participate in a

temporally circumscribed programme or the mentoring is a slow open process is not mentioned.

Short- and long-term goals

Only some programmes are geared specifically to the mentored support in the building of an academic and research career (Morzinski *et al.*, 1996; Johnson *et al.*, 1998; Pechura, 2001). Those programmes for students, which impart special research knowledge might contribute to a later academic career (Gonzales *et al.*, 1998; Frishman, 2001; Haq *et al.*, 2002). Most of the reported programmes either aim to stimulate students' interest in a certain medical specialty, mainly primary care (Lemon *et al.*, 1995; Gonzales *et al.*, 1998), or as a matter of help and support in earning their specialist degree (Markakis *et al.*, 2000; Pechura, 2001).

Short- and long-term successes

In general terms, mentoring leads to the expansion and consolidation of the mentees' professional and social skills. This also includes increased self-confidence, improved communication skills and more know-how in dealing with computers and specialist literature. Each of the included papers assumes the 'success' of their programme; but this term is not defined. Moreover, the method of measuring success has not been standardized. Some of the programmes suggest that a competitive process for admission to the programme and/or a high participation rate should be judged as a success (Slockers *et al.*, 1981). Furthermore, the project seems to be viewed as successful if, according to survey results, the majority of mentees and mentors feel that they have gained personally from participation, and would take part in the programme again (Nasmith *et al.*, 1997; Woessner *et al.*, 1998; Frishman, 2001). Here, the social desirability effect might come into play.

Evaluation of long-term successes after participation in a mentoring programme is still to come. That mentoring alone does not make a career possible is clear from the fact that in three projects (Gonzales *et al.*, 1998; Johnson *et al.*, 1998; Haq *et al.*, 2002), the mentoring programme explicitly only constitutes part of an overall career-development concept. The long-term successes are usually identified for the programme per se, and less for the individual participants (Johnson *et al.*, 1998). Interestingly, no statements are to be found on the advantages of a mentoring programme for the mentors.

Difficulties in the mentoring process

Three of the 16 programmes report on disadvantages and risks for the participants (Mahood *et al.*, 1994; Morzinski *et al.*, 1996; Nasmith *et al.*, 1997). The effect is negative if the mentor–mentee relationship was not chosen voluntarily, or if the evaluation of the mentoring is carried out by mentors who must also simultaneously qualify the mentees. Here, interests and dependencies become entangled.

Statements on the effectiveness and efficiency of the programme are not described in any of the publications. Jogerst *et al.* (1998) are the only ones to report on the economic aspects of the programme (structured and specific further training of five Russian general practitioners).

Limitations

The present literature review is limited to papers published in Medline. The purpose of the review was to look for scientific papers dealing with mentoring programmes for medical students and doctors, not for other health professionals. Abstracts and conference proceedings often report only work in progress.

Conclusion

Despite the fact that formal mentoring programmes have been acknowledged to be of great importance for the career support and promotion of junior physicians, there are not many papers published which give satisfying details on the various elements of such a programme. There is a need of a better evaluation.

The results of the programmes examined confirm that career development should for the most part be stage-specific and goal-oriented. It is precisely the long-standing programmes for comprehensive career advancement from (pre-) course of study to the academic career, that are able to offer a long-term, sustainable contribution to career development. Although there are some encouraging results and the presumable effect of mentoring is to be deemed highly promising, there are a series of unanswered questions on formal mentoring for medical students and doctors. Of particular interest here are the individual successes of participants over a fairly long period, as well as the cost-benefit analysis. A long-term study comparing the career courses of people with and without formal mentoring would also be of interest.

Notes on contributors

Barbara Buddeberg-Fischer, MD Professor, is a senior psychiatrist and psychotherapist, a senior researcher and lecturer at the Department of Psychosocial Medicine at the University of Zurich, Switzerland. Her main research topics are eating disorders and gender issues in medicine. She heads a mentoring-programme for junior physicians at the university hospital Zurich since 2002. First evaluation results are published: Buddeberg-Fischer B, Vetsch E, Mattanza G (2004) Career support in medicine: experiences with a mentoring program for junior physicians at a university hospital. http://www.egms.de/en/journals/psm/2004-1/psm000004.shtml

Katja-Daniela Herta, MD, is a senior psychiatrist and psychotherapist at the psychiatric hospital Zurich. Her main interests are gender issues in medicine.

References

Abernethy, A. (1999) A mentoring program for underrepresented-minority students at the University of Rochester School of Medicine, *Academic Medicine*, 74, pp. 356–359.

Escoll, P. & Wood, H. (1967) Preception in residency training: methods and problems, *American Journal of Psychiatry*, 124, pp. 187–193.

Forrow, L. & Wolf, M. (1998) Ideals in action: the US Schweitzer Fellows Programs, *Academic Medicine*, 73, pp. 658–661.

Frishman, W. (2001) Student research projects and theses: should they be a requirement for medical school graduation?, *Heart Disease*, 3, pp. 140–144.

Gonzales, A., Westfall, J. & Barley, G. (1998) Promoting medical student involvement in primary care research, *Family Medicine*, 30, pp. 113–116.

Haq, C., Grosch, M. & Carufel-Wert, D. (2002) Leadership opportunities with communities, the medically underserved, and special populations (LOCUS), *Academic Medicine*, 77, p. 740.

Jogerst, G., Lenoch, S. & Ely, J. (1998) Russian family practice training program: a single step on a long journey, *Family Medicine*, 30, pp. 372–377.

Johnson, J.C., Jayadevappa, R., Taylor, L., Askew, A., Williams, B. & Johnson, B. (1998) Extending the pipeline for minority physicians: a comprehensive program for minority faculty development, *Academic Medicine*, 73, pp. 237–239.

Kalet, A., Krackov, S. & Rey, M. (2002) Mentoring for a new era, *Academic Medicine*, 77, pp. 1171–1172.

Lemon, M., Yonke, A., Roe, B. & Foley, R. (1995) Communication as an essential part of program and institutional development, *Academic Medicine*, 70, pp. 884–886.

Levinson, W., Kaufman, K., Clark, B. & Tolle, S. (1991) Mentors and role models for women in academic medicine, *Western Journal of Medicine*, 154, pp. 423–426.

Mahood, S., Rojas, R., Andres, D., Zagozeski, C., White, G. & Bradel, T. (1994) Educational contracts in family medicine residency training, *Canadian Family Physician*, 40, pp. 549–552; 555–556.

Markakis, K.M., Beckman, H.B., Suchman, A.L. & Frankel, R.M. (2000) The path of professionalism: Cultivating humanistic values and attitudes in residency training, *Academic Medicine*, 75, pp. 141–149.

Morahan, P.S., Voytko, M.L., Abbuhl, S., Means, L.J., Wara, D.W., Thorson, J. *et al.* (2001) Ensuring the success of women faculty at AMCs: lessons learned from the National Centers of Excellence in women's health, *Academic Medicine*, 76, pp. 19–31.

Morzinski, J., Diehr, S., Bower, D. & Simpson, D. (1996) A descriptive, cross-sectional study of formal mentoring for faculty, *Family Medicine*, 28, pp. 434–438.

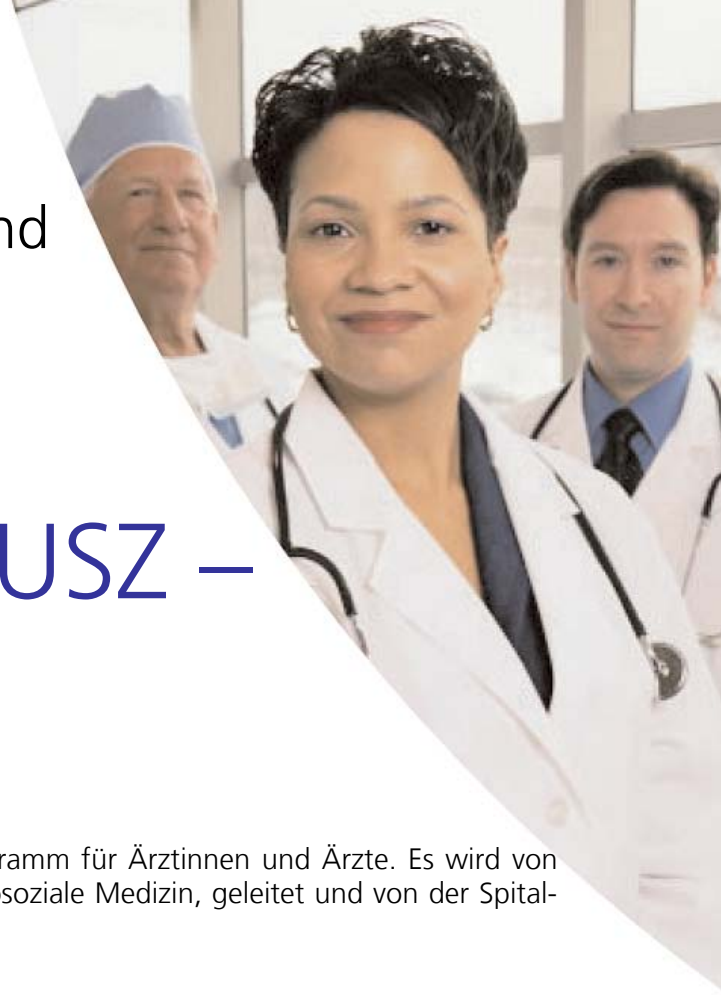
Nasmith, L., Boillat, M., Rubenstein, H., Daigle, N., Goldstein, H. & Franco, E.D. (1997) Faculty advisor program for family medicine residents, *Canadian Family Physician*, 43, pp. 1257–1263.

Pechura, C. (2001) Programs of the Robert Wood Johnson Foundation to develop minority medical careers, *American Journal of Medical Science*, 322, pp. 290–292.

Slockers, M., Van De Ven, P., Steentjes, M. & Moll, H. (1981) Introducing first-year students to medical school: experiences at the Faculty of Medicine of Erasmus University, Rotterdam, The Netherlands, *Medical Education*, 15, pp. 294–297.

Woessner, R., Honold, M., Stehle, I., Stehr, S. & Steudel, W. (1998) Faculty mentoring programme – ways of reducing anonymity, *Medical Education*, 32, pp. 441–443.

Berufliche und persönliche Förderung von Ärztinnen und Ärzten



Mentoring am USZ – Interessiert?

Seit dem Jahr 2002 läuft am USZ ein Mentoring-Programm für Ärztinnen und Ärzte. Es wird von Frau Prof. Dr. med. Barbara Buddeberg-Fischer, Psychosoziale Medizin, geleitet und von der Spitalleitung des USZ unterstützt.

An wen richtet sich das Angebot?
Assistenzärztinnen und –ärzte, die ihre berufliche Karriere gezielt planen und im Einklang mit ihrem persönlichen Lebensweg realisieren möchten.

Was ist Mentoring?
Es gibt unterschiedliche Möglichkeiten:

- **Gruppenmentoring**: Sie können sich zusammen mit anderen Assistierenden (3 – 5 Mentees) Ihrer Klinik/Ihres Institutes, mit denen Sie sich gut verstehen, an die Programmleiterin wenden. Sie wird mit Ihnen zusammen überlegen, wen Sie als Fach-Mentorin oder -Mentor anfragen möchten. Als MentorInnen kommen OberärztInnen oder Leitende ÄrztInnen Ihrer Klinik/Ihres Institutes in Frage. Der oder die MentorIn wird Sie zusammen mit der Programmleiterin in Ihren Karriere- und persönlichen Plänen beraten. Die geleiteten Gruppensitzungen finden ca. alle 2 Monate statt. Sowohl die Mentees wie auch der/die MentorIn und die Programmleiterin sind der Verschwiegenheit verpflichtet, d.h. der Inhalt der Gruppengespräche ist vertraulich.

- **One-to-One Mentoring**: Wenn Sie Ihre Karrierepläne nicht in einer Gruppe besprechen möchten, besteht auch die Möglichkeit, dass Sie zum Einzelmentoring zu der Programmleiterin kommen. Sie wird mit Ihnen zusammen Ihre Fragen diskutieren und Sie beraten, bei wem Sie zusätzliche Informationen zu fachbezogenen Karrierefragen einholen können. Auch hier gilt das Prinzip der Vertraulichkeit und Verschwiegenheit.

Die Erfahrungen der letzten Jahre haben gezeigt, dass beide Formen von Mentoring einen effizienten Beitrag zur Karriereförderung leisten können. Mentoring bringt allen beteiligten Personen einen Gewinn.

Falls Sie Interesse haben, am Mentoring-Programm teilzunehmen, nehmen Sie mit Frau Prof. Dr. med. Barbara Buddeberg-Fischer, Psychosoziale Medizin USZ, Kontakt auf. Sie freut sich auf ein email von Ihnen unter: barbara.buddeberg@usz.ch

UniversitätsSpital Zürich

FÖRDERUNG AKADEMISCHER NACHWUCHSKRÄFTE IN DER MEDIZIN

MEDIZINISCHE FAKULTÄT UNIVERSITÄT ZÜRICH
UNIVERSITÄTSSPITAL ZÜRICH

MENTORING PROGRAMM 2008–2011

Zielorientierte Förderung

Erfahrene Wissenschaftler/innen (Mentoren) beraten und begleiten Nachwuchswissenschaftler/innen (Mentees) in ihrer beruflichen und persönlichen Entwicklung. Mentoring findet ausserhalb des Vorgesetzten-Untergebenen-Verhältnisses statt und basiert auf Vertraulichkeit und Loyalität. Mentoring ist eine «bottom-up» Nachwuchsförderung, d. h. die Initiativen für Beratung gehen von den Mentees aus.

Zielpersonen

Nachwuchswissenschaftler/innen der Medizinischen Fakultät der Universität Zürich, die eine akademische Karriere im Bereich der klinischen Medizin oder der Grundlagenfächer anstreben.

Karriereplanung und Karriereschritte

Ziele des Mentoring-Programms: Frühe Sensibilisierung für Karrierepläne, Beratung bei der Entwicklung von Karrierezielen, Unterstützung von Karriereschritten, Integration in Forschungsgruppen und Etablierung von Forschungskooperationen, Beratung bei Forschungsanträgen, Vermittlung von Auslandaufenthalten, Unterstützung bei Publikationen, Vernetzung der Nachwuchswissenschaftler/innen untereinander.

Trägerschaft

Medizinische Fakultät UZH und UniversitätsSpital Zürich, Förderung durch das Bundesprogramm Chancengleichheit.

Struktur

Gruppen von Nachwuchswissenschaftlern aus verwandten Fachbereichen fragen potentielle Mentoren an; sie werden bei der Suche nach geeigneten Mentoren durch die Programmleitung unterstützt. Für fortgeschrittene Wissenschaftler/innen eignet sich auch ein one-to-one Mentoring. Eine schriftliche Vereinbarung zwischen Mentor und Mentees regelt die Häufigkeit der Beratungsgespräche (ca. 1 mal pro 3 Monate) und die Zielsetzungen für die nächsten 12 Monate.

Rahmenangebot

Für Mentees Plenarveranstaltungen zu Karriere relevanten Fragen:
z. B. Forschungsmethodik und Statistik, Antragstellung für Drittmittel finanzierte Forschungsprojekte, Planung von Auslandaufenthalten. Erfahrungsaustausch der Mentoren.

Begleitevaluation

Fragebogenerhebung zu Beginn des Programms und jeweils nach 12 Monaten zur beruflichen und persönlichen Entwicklung, zu Karrierefortschritten sowie zum Mentoring.

PROGRAMMVERANTWORTLICHE

Prof. Barbara Buddeberg-Fischer
Psychosoziale Medizin USZ
Programmleitung

Prof. Gregor Zünd
Spitaldirektion USZ
Direktor Forschung und Lehre

Prof. Giatgen Spinas
Medizinische Fakultät UZH
Prodekan Nachwuchsförderung

KONTAKT
barbara.buddeberg@usz.ch

UniversitätsSpital Zürich

Universität Zürich

Frei *et al. BMC Medical Education* 2010, **10**:32
http://www.biomedcentral.com/1472-6920/10/32

BMC Medical Education

RESEARCH ARTICLE Open Access

Mentoring programs for medical students - a review of the PubMed literature 2000 - 2008

Esther Frei, Martina Stamm and Barbara Buddeberg-Fischer*

Abstract

Background: Although mentoring is acknowledged as a key to successful and satisfying careers in medicine, formal mentoring programs for medical students are lacking in most countries. Within the framework of planning a mentoring program for medical students at Zurich University, an investigation was carried out into what types of programs exist, what the objectives pursued by such programs are, and what effects are reported.

Methods: A PubMed literature search was conducted for 2000 - 2008 using the following keywords or their combinations: mentoring, mentoring program, medical student, mentor, mentee, protégé, mentorship. Although a total of 438 publications were identified, only 25 papers met the selection criteria for structured programs and student mentoring surveys.

Results: The mentoring programs reported in 14 papers aim to provide career counseling, develop professionalism, increase students' interest in research, and support them in their personal growth. There are both one-to-one and group mentorships, established in the first two years of medical school and continuing through graduation. The personal student-faculty relationship is important in that it helps students to feel that they are benefiting from individual advice and encourages them to give more thought to their career choices. Other benefits are an increase in research productivity and improved medical school performance in general. Mentored students also rate their overall well-being as higher. - The 11 surveys address the requirements for being an effective mentor as well as a successful mentee. A mentor should empower and encourage the mentee, be a role model, build a professional network, and assist in the mentee's personal development. A mentee should set agendas, follow through, accept criticism, and be able to assess performance and the benefits derived from the mentoring relationship.

Conclusion: Mentoring is obviously an important career advancement tool for medical students. In Europe, more mentoring programs should be developed, but would need to be rigorously assessed based on evidence of their value in terms of both their impact on the career paths of juniors and their benefit for the mentors. Medical schools could then be monitored with respect to the provision of mentorships as a quality characteristic.

Background

Mentoring was developed in the USA in the 1970s within large private-sector corporations to support junior staff. Since the 1990s, mentoring programs have been introduced in various medical professions, most frequently in the field of nursing. Formal mentoring programs for medical students and doctors, however, were not developed until the late 1990s [1]. Since then, the term "mentoring" has become widespread. In a number of instances there is no clear distinction made between the terms "tutoring", "coaching", and "mentoring". Many definitions of mentoring are in use. The one most frequently cited in English scientific literature (SCOPME [2]) is *"A process whereby an experienced, highly regarded, empathetic person (the mentor) guides another (usually younger) individual (the mentee) in the development and re-examination of their own ideas, learning, and personal and professional development. The mentor, who often (but not necessarily) works in the same organization or field as the mentee, achieves this by listening or talking in confidence to the mentee."* Garmel [3] describes mentoring as "an insightful process in which the mentor's wisdom is acquired and modified as needed, as well as a process that is supportive and often protective. The successful mentor-mentee relation-

* Correspondence: barbara.buddeberg@usz.ch
[1] Research Center for Career Development, Zurich University Hospital, Zurich, Switzerland
Full list of author information is available at the end of the article

ship therefore requires the active participation of both parties. The mentoring relationship can be structured or loose. It can be a relatively short process or an ongoing one. There can be breaks in the relationship, with its re-establishment at some future time. The mentoring relationship is a dynamic one, evolving over time, during which both parties continually define and redefine their roles. It should be considered a process, not an end result, and the relationship must remain non-competitive."

Unlike coaching or counseling, mentoring is a cost-free career-promotion strategy based on a personal relationship in a professional context. Whereas a tutor, teacher/educator, coach, or supervisor mainly focuses on promoting and supporting a junior's professional skills, a mentor is an active partner in an ongoing relationship who helps a mentee to maximize his or her potential and to reach personal and professional goals [4]. Coates et al. [5] differentiate as follows: An *advisor* is a faculty member who provides assistance in scheduling clinical electives and advice on residency applications; a *role model* is someone a student uses as a positive example of how to approach a career in medicine; a *career mentor* is someone who plays an active role in helping the student in his/her professional and personal development. Mentoring also comprises supporting a mentee in coping with stress and in establishing a satisfying work-life balance [6]. Mentoring is a relational process in which five phases can be distinguished: information on career options, developing career plans, focusing on career goals, realization of career steps, and evaluation of career advancement [7,8].

Although several authors report that mentoring is a key to a successful and satisfying career in medicine [4,9,10], there is a lack of mentoring programs for medical students and doctors in most countries [1]. In a prospective study on career development in young physicians, graduates stated that mentoring in medical school would have helped them to make their decision on specialty training earlier and to adopt a more goal-oriented strategy in planning their careers [11]. As a starting point for planning and implementing a mentoring program for students at Zurich University Medical School, a PubMed literature search was conducted with the aim of investigating the following issues: (1) What types of structured mentoring programs for medical students are reported in scientific medical literature between 2000 - 2008? (2) What are the objectives pursued by these programs? (3) What concrete statements, if any, can be identified regarding the effects of mentoring programs? (4) What additional information is given in scientific literature (2000 - 2008) on different aspects of mentoring for medical students?

Methods

The search strategy for this paper was set up to identify all scientific papers on mentoring programs for medical students. In order to distinguish between scientific and popular literature and between medicine and other professional fields, we decided to limit the search strategy to papers listed in PubMed for the time period 2000 - 2008. The search strategy included the following steps:

(1) The PubMed online search dated December 2008 was conducted with the following keywords or combinations thereof: *mentoring, mentoring program, medical student, mentor, mentee, protégé, mentorship*.

(2) Using this search strategy, we found a total of 438 articles, the titles and abstracts of which were reviewed. Papers that were easily identifiable as lying outside the scope of this study were excluded (n= 353). The remaining 85 papers were retained for the subsequent stage.

(3) The full versions of these papers were reviewed separately by the first and senior author for final inclusion. All papers were written in English, but this was not a selection criterion. The following inclusion criteria were established: Mentoring is to be aimed at medical students; the aim of the mentoring is to support the professional and personal development of the mentee; the mentor is an experienced medical professional; mentoring is in the form of one-to-one mentoring or group mentoring. Only 25 papers met all of the inclusion criteria.

(4) In the final stage, the full versions of these 25 papers were examined.

For *mentoring programs*, the publication data was compiled according to (a) author, year published and country; (b) goal of the program; (c) mentoring model; (d) participants; (e) program evaluation; (f) effects of the program.

For articles referring to *mentoring for medical students in general*, publications were compiled according to (a) author, year published and country; (b) aims of the article; (c) results; (d) conclusion.

Results

Of the 25 papers that met the four inclusion criteria established, 14 papers [5,12-24] describe formal mentoring programs for medical students, provide information about the goal of the program, the mentoring model used, participants, the nature of program evaluation, and the effects of the program (Table 1).

Eleven papers [1,3,25-33] refer to mentoring for medical students in general, as well as its significance and impact as far as the students' professional development and success are concerned. These papers are mainly surveys and reports on personal mentoring experiences, while two papers [1,27] are systematic reviews (Table 2).

Table 1: Characteristics of 14 mentoring programs for medical students (listed by year of publication)

Author Year Country	Goal of mentoring program	Mentoring model	Participants	Program evaluation	Effects of the program
Coates et al. [5] 2008 USA	Mentoring as part of a 4th-year College program	One-to-one and group mentoring	*Mentees:* 4th-year medical students *Mentors*: Faculty members of the respective college	Pre-/post telephone interviews with students enrolled in the College program and a random sample of a control group	Higher level of satisfaction on the part of the College intervention group with their access to career mentoring, elective advising for scheduling the 4th--year and for the residency application process High level of appreciation of on-going contact with peers and faculty, longitudinal clinical experience and research opportunities
Dorrance et al. [12] 2008 USA	Increasing students' interest in internal medicine	One-to-one mentoring	*Mentees*: 1st-and 2nd-year medical students *Mentors*: Internal medicine faculty members	Quantitative (pre-/pos-program) and qualitative (post program) data collection	Greater interest in internal medicine as a career; career decisions by counseling; higher scholar productivity measured by presentations, publications and research awards
Kanter et al. [13] 2007 USA	Improving students' experiences in medical humanities; supporting students' research projects	One-to-one mentoring	*Mentees*: 3rd- and 4th-year medical students *Mentors*: Senior physicians	Questionnaire (quantitative and qualitative data from mentees and mentors)	Increased interest in a career as physician-scientist Improved research skills
Kalet et al. [14] 2007 USA	Mentoring as part of an online Professional Development Portfolio (PDP): Supporting professional growth and development; rewarding achievements outside required curriculum	One-to-one and group mentoring	*Mentees*: 1st- up to 4th-year medical students *Mentors*: Faculty members	Web-based survey tool for the acquisition of quantitative and qualitative data, independent of the PDP	Enrolled students assessed PDP as useful for: tracking own professional development increasing awareness of professional responsibilities preparing for the mentoring sessions
Zink et al. [15] 2007 USA	Providing students with career information, counseling on career decisions and advising on the residency match process	One-to-one mentoring	*Mentees*: A cohort of medical students over four years *Mentors*: Non-physician class counselors, assistant dean, faculty career advisors	Questionnaire (quantitative data)	Career decisions by counseling Broader insight into different medical fields

Table 1: Characteristics of 14 mentoring programs for medical students (listed by year of publication) (Continued)

Macaulay et al. [16] 2007 USA	Advising, guiding and supporting students in their academic and professional development and extracurricular activities	Group mentoring: One mentor for 30 students Structured and informal sessions	*Mentees*: 1st- up to 4th-year medical students *Mentors*: Senior physicians (faculty members), part-time job	Online questionnaire survey (quantitative data)	Career decisions by counseling Improved networking Increased social support Reduced stress experience
Kosoko-Lasaki et al. [17] 2006 USA	To provide career counseling and group support for underrepresented medical students	Group- and one-to-one mentoring	*Mentees, Mentors*: younger students mentored by advanced students; advanced students mentored by postgraduate students and faculty members	Questionnaire survey (quantitative data)	Improved skills for coping with the demands of higher education Increased social support Facilitated choice of residency program Fostered professional development
Zier et al. [18] 2006 USA	To increase interest in an academic career by providing opportunities to work on research programs	One-to-one mentoring	*Mentees*: 1st- to 4th-year medical students *Mentors:* Physicians from clinical and science departments	Questionnaire survey (quantitative data)	Increased research skills Increased number of research papers Higher number of postgraduates obtain positions with a research component
Goldstein et al. [19] 2005 USA	Continuous monitoring of the student's progress in medical school	Small group and one-to-one mentoring	*Mentees*: A cohort of medical students over four years *Mentors*: Senior physicians (faculty members)	Results of Mini-Clinical Evaluation Exercise (CEX) and of Objective Structured Clinical Examination (OSCE); students' Portfolio of written work	Improved bedside skills Improved learning skills Evolved ability to monitor the own developmental progress
Coates et al. [20] 2004 USA	Providing students with specialty-specific (Emergency Medicine, EM) career guidance: advice for scheduling their senior year, information about residency programs Role modeling for those embarking on a career path in EM	Two-tier virtual advisor program: First tier: general answers to 14 frequently asked questions (on the Web site) Second tier: Linking students to individual mentors	*Mentees:* Medical students interested in EM *Mentors:* Faculty members with experience in medical education, in advising students and with involvement in a EM residency program	Qualitative email-survey of mentees and mentors	Improved career counseling for a broad range of medical students interested in EM Although written guidelines are given, formal training of mentors is required

Table 1: Characteristics of 14 mentoring programs for medical students (listed by year of publication) (Continued)

Scheckler et al. [21] 2004 USA	Providing an opportunity for continuous professional and personal advice and providing a role model	Group and one-to-one mentoring	*Mentees*: 1st- up to 4th-year medical students *Mentors*: Experienced physicians (faculty members)	No systematic evaluation, collection of qualitative statements	Broader educational experience Feeling of being psychologically supported Increased awareness of possibilities for integration of professional and extraprofessional concerns
Kalet et al. [22] 2002 USA	Fostering the professional development of the students	Small group mentoring	*Mentees*: 1st- and 2nd-year medical students *Mentors*: Medical faculty members	Questionnaire survey (quantitative data), focus groups (qualitative data)	Improved professional behavior Development of a professional identity
Murr et al. [23] 2002 USA	Fostering the professional and personal growth and well-being of students	Small group- and one-to-one mentoring	*Mentees*: 1st- up to 4th-year medical students *Mentors*: Senior physicians	No systematic evaluation	Increased social support Career decisions based on counseling Increased networking
Tekian et al. [24] 2001 USA	To reduce the number of academic difficulties experienced by under-represented medical minority students	One-to-one mentoring	*Mentees*: Minority medical students over four years *Mentors:* Physicians, teachers, advisors, medical students' families, clergy	Personal interviews	Physician mentor: improved medical school performance Other mentors: non-specific personal and professional benefits

Table 2: Characteristics of 11 mentoring-related studies for medical students (listed by year of publication)

Author Year Country	Aim of the Article	Results	Conclusion
Keyser et al. [25] 2008 USA	Overview: Key domains of research mentorship	1. Mentor selection criteria: -experience and contacts in the mentee's area of research interest 2. Incentives for motivating faculty mentors: - institutional recognition, element for career promotion, awards and time 3. Factors facilitating the mentor-mentee relationship: - formal matching program, written guidelines for mentors and mentees 4. Mentor responsibilities for strengthening the mentee's research abilities: - to provide useful feedback, to supervise the mentees' research 5. Mentoring helps mentee - to build a professional network, to apply successfully for grants, to publish manuscripts, to shape personal performance 6. Mentor's benefits: - personal satisfaction, increased professional recognition	Research mentorship is a vital part of academic medical education. By establishing mentoring programs, institutions enhance the professional development of future researchers
Taherian et al. [26] 2008 UK	Overview: Advantages and disadvantages of mentoring	Advantages: - for mentees: shaping of personality, sharing experiences, networking - for mentors: satisfaction, sharing experiences, learning with juniors - for the organization: improvements in doctors' training and satisfaction Disadvantages of mentoring: - conflict of interests between the mentoring and supervising role of the mentor - patronizing attitude of mentors - mentor proposing solutions instead of enabling mentees to find their own way	Mentoring is a relationship rather than just a set of activities. It is a developmental process for both parties and, if well conducted, represents an enormous benefit

Table 2: Characteristics of 11 mentoring-related studies for medical students (listed by year of publication) (Continued)

Buddeberg-Fischer [1] 2006 Switzerland	Systematic review: Formal mentoring programs for medical students	Types of structured mentoring programs: - peer, group and individual mentoring Short- and long-term goals of mentoring programs: - to stimulate students' interest in a certain medical specialty - training and cooperation in research - to provide career counseling, networking Short- and long-term effects: - improvement in mentee's professional development and social skills - increased desire to pursue a scientific career	Formal mentoring programs are of great importance in terms of career support and promotion of junior physicians In the interests of clearly identifying the advantages and disadvantages of formal mentoring, there is a need for a better evaluation
Sambunjak et al. [27] 2006 Croatia and USA	Systematic review: Mentoring in academic medicine: evidence on the prevalence of mentorship and its relationship to career development	Three papers [31,34,35] (two programs) refer to mentoring for medical students: - prevalence of mentorship in academic and health institutions reported in one paper: 36% of 3rd- and 4th-year medical students - impact of mentorship on personal development, career guidance, specialty and academic career choice, research productivity and success: reported by 60 to 98% of the mentees	Weak evidence to support the perception that mentoring is important for career success
Hauer et al. [28] 2005 USA	Survey: Focus groups of 4th-year students with and without mentors Expectations towards mentors, perceived barriers to finding a mentor and suggestions for improving mentoring	Expectations towards a mentor: - devoted to develop a mentoring relationship, friendship and personalized guidance - impact on career development Barriers to finding a mentor: - faculty members seem to be busy, students were put off making an appointment - mentees' career indecision - courses of short duration making it difficult to establish a mentoring relationship Suggestions for enhancement of mentoring: - foster the awareness of the importance of mentorship	Medical students have a desire for supportive, personal and trusting relationships with faculty members, independent of specialty choice
Rose et al. [29] 2005 USA	Overview: Informal mentoring between faculty and medical student Advice on how to be an effective mentor	90% - 95% of students rate mentoring as important; one-third of students report having a mentor Requirements for being an effective mentor: - to be available, to invest in the mentee's personal and professional development, to share experiences, to review the student's progress Requirements for being a successful mentee: - follow through, accept challenge, set agendas, accept critique	Faculty members should be receptive to students' requests for mentoring and provide support when the mentee-mentor-relationship seems appropriate

Table 2: Characteristics of 11 mentoring-related studies for medical students (listed by year of publication) (Continued)

Cochran et al. [30] 2004 USA	Survey: To identify desirable qualities for surgical role models	Frequency of surgeon mentors: -84% of 3rd-year medical students have at least one surgeon mentor Types of surgeon mentors: -Attending surgeons (role of a teacher); -resident surgeons (role of a colleague)	Role models play a substantial part in the selection of a specialty
Garmel et al. [3] 2004 USA	Overview: Requirements for successful mentoring and possible pitfalls	Mentor's qualities and responsibilities: - is non-judgmental and accepts of personal differences - commits time and energy on a regular and ongoing basis - assists in the mentee's identity development - gives honest feedback in a constructive and caring manner Benefits for the mentor: - rekindled passion and excitement about the specialty Topics for mentoring: - career choice - application process for residency - academic advancement - career satisfaction - work-life-balance Pitfalls: - inappropriate expectations - breaching confidentiality	Mentoring is beneficial for both mentees and mentors Students' experience of mentoring in students may encourage them to be mentors themselves in the future
Aagard et al. [31] 2003 USA	Survey: Prevalence and characteristics of informal mentoring relationships among 3rd- and 4th-year medical students	Prevalence: - 26% of 3rd-year and 45% of 4th-year students have mentors - no gender difference in the frequency of mentoring relationships Development of mentoring relationship: - 28% during inpatient clerkships - 19% through research activities - 23% by actively seeking on the basis of similar interests Mentoring effects: - Choosing more often a research or an academic career - higher overall satisfaction in medical school	Advisors should refer students to potential mentors in the student's field of interest early in medical school
Hill et al. [32] 2002 USA	Personal perception of mentoring	Mentor's responsibility: - Supporting, counseling, sharing information, being available	Mentorship is a source of fulfillment for the mentor

Table 2: Characteristics of 11 mentoring-related studies for medical students (listed by year of publication) (Continued)

		Mentee's responsibility: - Seeking the mentor's advice, recognizing limitations of a mentorship	The mentee acquires new perspectives and is led towards his/her goal
Mahayosnand [33] 2000 USA	Short report on a Public Health E-Mentoring program	- Web-based application stating matching criteria - Matching on a central, national database all the year round - Providing essential mentoring literature on the Web site - Over 50% of communications conducted via e-mail	Time- and cost-efficient, but some funding necessary

Mentoring programs for medical students

All 14 papers [5,12-24] reporting on mentoring programs for medical students between 2000 - 2008 originate in the USA.

Goals of the mentoring programs

The mentoring programs reported pursued *different main goals*: (1) to provide career counseling [5,15-17,21,24], (2) to develop professionalism and to support students in their personal growth [14,19,22,23], (3) to increase interest in research and to support an academic career [5,13,18], and (4) to foster students' interest in a specialty for which a future shortage is projected [12,20].

Career counseling Coates et al. [5] report on the College Program at the University of California, Los Angeles (UCLA) for fourth-year medical students. This program has a broad scope, aiming to improve the fourth-year medical school curriculum and provide adequate access to career counseling by faculty mentors. Zink et al. [15] describe a four-phase career development program (CDP) consisting of career-exploring experience, a decision-making phase, preparing the residency application, and interviewing. Students meet with deans and counselors. Macaulay et al. [16] report on a formal Advisory Dean Program (ADP) providing personalized mentoring and advice for each student in terms of career counseling, professionalism, humanism and personal resources. Scheckler et al. [21] from the University of Wisconsin Medical School present their Class Mentor Program (CMP), in which a single mentor is allocated to each class of incoming students and supports the class with clinical and personal advice throughout the four years, up to and including graduation. Kosoko-Lasaki et al. [17] describe the Health Sciences Multicultural and Community Affairs (HS-MACA) Program, a pipeline program targeting students from high school through graduate school which offers special career counseling and mentoring for disadvantaged students (such as female, minority or financially disadvantaged students). Younger students are paired one-to-one with older, more experienced students, and senior students with faculty members. The mentoring program reported by Tekian et al. [24] aims at underrepresented minority students with a view to improving their performance in medical school.

Developing professionalism and personal growth In the online Professional Development Portfolio Program (PDP) described by Kalet et al. [14], mentoring is an integral part of the students' evaluation process in terms of professionalism and career development. The portfolio aims to make students aware of the importance of developing their professionalism; it also supports the setting of goals for the following years in the mentoring sessions. The program published by Goldstein et al. [19] focuses on ongoing personal faculty contact consisting of individual one-to-one mentorship of each student by a faculty member, with an emphasis on bedside teaching and role modeling to enhance clinical skills and professionalism. The same focus is described in the Master Scholars Program (MSP) by Kalet et al. [22], although here, a group of students is mentored by one or two faculty members. The University of California, San Francisco (UCSF) mentoring program, as reported by Murr et al. [23], is moving in the same direction, establishing an advisory college to promote the professional and personal growth and well-being of its students.

Increasing interest in research and academic careers Kanter et al. [13] report on a faculty mentoring program called Scholarly Project (SP), which forms part of a broader program supporting students in their personal and professional development. SP is based on a longitudinal mentoring experience in which the student engages in a hypothesis-driven research project. Each student pursues a focused question in depth with close guidance from a faculty member. SP focuses on the research process, with special attention being paid to ethical issues, and is based on the philosophy that students who become independent, creative thinkers will be better physicians. Moreover, it is believed that if students play an active role in the discovery process, a greater number of them are likely to pursue careers as physician-scientists and, more generally, in academic medicine. Rapid advances in biomedical research call for a large number of physicians being drawn to careers that include a research component. Zier et al. [18] report on a Medical Student Research Program extending over a 10-year period which aims to provide attractive research opportunities including faculty mentoring, acknowledgement of participation, and rewards for achievement to encourage student participation.

Fostering interest in certain specialties The program reported by Dorrance et al. [12] aimed to increase students' interest in pursuing a career as an internist in primary care settings. The faculty launched a medical-student research initiative to increase interest in research during undergraduate medical education. Integrating undergraduate students into internal-medicine research programs and encouraging mentoring relationships with internists working in the primary care field not only produced higher research productivity, but also contributed to a higher percentage of graduates opting for internal medicine training. A similar goal is being pursued by the American Society of Emergency Medicine (EM), which provides a specialty-specific two-tier online career guidance program to attract students to EM and to provide role models for those who choose EM [20].

Mentoring models

Six of the programs offer one-to-one mentorships [12,13,15,18,20,24]; in two programs, small groups of students are mentored by a faculty member or a senior phy-

sician [16,22], and six programs feature both settings, i.e. one-to-one and group mentoring [5,14,17,19,21,23]. Most mentorships are established in the first two years of medical school and continue up to graduation. In two programs [5,13] in which mentoring forms part of a broader curriculum reform, the mentoring relationship is deliberately not implemented until the fourth year. In some programs the mentors are special faculty career advisors. A virtual mentoring relationship was provided in one program only [20].

Effects of the mentoring programs

Eight programs were evaluated by means of questionnaire surveys [12-18,22]; some of these presenting quantitative and qualitative data [12-14,22], others providing only qualitative statements [5,19-21,24]. One program was not evaluated. The UCLA College Program [5] was the only program evaluated by means of a randomized controlled study design (pre- and post-intervention cohorts). The outcome showed that the majority of enrolled students were more satisfied in terms of access to career mentoring, elective advice for scheduling the senior year, and the residency application process; they valued the ongoing contact with faculty members and experienced better research opportunities than students graduating before the program was implemented. All programs reviewed aimed to establish a personal student-faculty relationship, and this was greatly appreciated by the students, especially in ongoing mentoring relationships. The mentors served as role models and contributed to the improvement of professionalism and performance in their mentees [5,12,14,17,19,21,22,24]. The mentored students receiving ongoing career advice and counseling were able to give more thought to the decision on their career, and how this could be matched to their interests and abilities [12,15-17,20,23]. Significant effects were identified in terms of improved medical school performance, increased interest in research, research productivity, and aspiration to an academic career. This was mainly due to the integration of medical students into research collaborations [5,13,18]. The students involved in mentoring programs also felt better supported at a personal level and rated their overall well-being as higher [16,17,21,23,24]. Only Tekian et al. [24] allude to the benefits that a mentor experiences from mentoring students, however.

Overviews of mentoring for medical students

The literature search revealed 11 papers reporting on mentoring for medical students in general: Keyser et al. [25] provide a conceptual analysis of mentorships, while other authors [3,26,29,32] list tips on how to be an effective mentor and a successful mentee, as well as the advantages and pitfalls of mentoring. The surveys published by Hauer et al. [28] and Cochran et al. [30] report on student attitudes towards mentoring, on the mentoring qualities of mentors, and on the difficulties experienced in finding a mentor. Aagard et al.'s survey [31] gives predictors for having a mentor. In a systematic review, Buddeberg-Fischer et al. [1] report on mentoring models and their effect in the long and short term [1]. Another review, conducted by Sambunjak et al. [27], lists inter alia three papers referring to the mentoring of medical students [31,34,35]. Keyser et al. [25] provide an assessment tool for mentorships. Mahayosnand [33] gives a short report on e-mentoring.

Characteristics of a good mentoring relationship

Five of the papers identified reported on the qualities required for being an effective mentor [3,25,26,29,32]. A mentor should be available on a regular and ongoing basis and be non-judgmental, he/she should empower and encourage the mentee, be a role model, build a professional network, and assist in the mentee's personal development. Rose et al. [29] specify the factors involved in becoming a successful mentee, such as the ability to set agendas, follow through, accept criticism, and reassess performance and the benefit of the mentoring relationship. Several authors also point out the difficulties and pitfalls of mentoring [3,26,28]: the short duration of medical school courses, making it difficult for students to make contact with and get to know potential mentors; superiors who make themselves out to be under constant time pressure, thus discouraging students from asking them for mentorship; mentors who put forward solutions instead of enabling mentees to find their own way. Aagard et al. [31] report that the students most likely to find a mentor are those who, having made their choice of career, decide to go in for research. All of the papers conclude that mentoring is an essential part of medical education that enhances the professional and personal development of future physicians and researchers, but only Keyser et al. [25] provide an assessment tool for monitoring institutions in terms of providing mentorships.

Discussion

Below, important aspects of the papers reviewed are discussed, addressing the issues of appreciation of mentoring, requirements for mentors and mentees, effects of mentoring programs, shortcomings, and suggestions for the design of future mentoring programs.

Appreciation of mentoring

It is striking that most papers originate in the USA, and few or no reports were searched from other countries using the described criteria and database. Mentoring for medical students is well established in some US medical faculties, and personal and financial resources are available for implementing these programs [5,13,14]. Even

more important is the prevalence of the attitude among senior faculty members and faculty authorities that an investment in the juniors' careers is vital in medical education [25,29]. Most authors emphasize that the mentoring relationship is a reciprocal process which supports juniors in their careers; the benefits as far as the mentors are concerned, however, are rarely described [3,25].

Experience of mentoring programs in Switzerland has shown that faculty members and authorities often think that mentoring should be provided for advanced postgraduate trainees only [7], and should focus on research mentorship [11]. Another problem in medical schools in Europe is the high number of students; in Switzerland this number peaks at 220 students per university per year. One way of making mentoring available to all students, however, would be to provide it in groups of up to eight students.

Requirements for mentors and mentees

Most conceptual and survey papers focus on the qualities required to become an effective mentor [3,25,28,29,32]. A confidential relationship and the mentor's commitment to his/her mentee's professional and personal development are considered to be the main requirements. Unfortunately, it is seldom mentioned whether mentors are assigned or self-appointed. In faculty mentoring programs, all senior faculty members are supposed to mentor one or more graduate students. Some authors suggest that mentors should be encouraged to participate in annual mentorship training programs [25]. Others point out in greater detail the qualities that a mentor should possess [26]. Souba [36] argues that a mentor should '**M**otivate, **E**mpower and Encourage, **N**urture self-confidence, **T**each by example, **O**ffer wise counsel and **R**aise the performance bar'. Only a few authors [3,25] point to the benefit for the mentor in terms of increased professional recognition and accelerated productivity in terms of his/her own research. There is an absence of recommendations in terms of the contribution students can make to being a successful mentee [29,32]. As described in the papers on mentoring programs [5,12-19,21-24], it is preferable that the initiative for establishing mentoring relationships be taken by faculty members, senior physicians, and program leaders, i.e. top-down. However, the responsibility for keeping the mentorship going rests with the mentees, i.e. bottom-up. This perspective is not described. Mentees are required to make themselves out to be proactive juniors. As found in a study on career support in junior academics [11], being proactive and acting on one's own initiative are behaviors by which ambitious and smart students were recognized by faculty members. If juniors prove to be committed, senior staff will approach them to seek their collaboration in research projects. Over time, a reciprocal relationship between juniors and senior staff is established in most cases.

Effects of mentoring programs

Evidence from the reviewed papers shows that three factors are important for effective mentoring programs. Firstly, for students pursuing an academic career, a one-to-one mentorship with an advanced scientist involving the junior in his/her research proves most effective. Secondly, the mentor must serve as both a professional and personal role model. Thirdly, provision of career counseling by mentors leads to juniors' making an earlier choice in terms of specialty and career.

It has to be said, however, that most of the evaluation studies on the effects of student mentoring programs are not based on validated questionnaires. Consequently, there is only weak evidence that mentoring is important for career success, as pointed out in Sambunjak et al.'s review [27]. Future mentoring programs would benefit from pre-/post-evaluations and randomized studies as reported by Coates et al. [5].

A further problem emerges from the studies reviewed. Some aspects of the mentoring programs mentioned appear to overlap with tutoring, counseling and coaching systems. Moreover, the difference between advisor, role model and career mentor, as described by Coates et al. [5], is not always clear-cut [20]. A further question arises as to whether e-mentoring [20] fulfils the criteria for a mentoring relationship, or whether this type of career support should be considered simply as career advice. In our opinion, e-mentoring lacks the essential requirements for mentoring, i.e. that the mentorship should encompass the mentor's personal commitment to the mentee's personal and professional development and career advancement. It would be difficult for a virtual relationship to cover these aspects of mentoring.

Shortcomings of the papers reviewed

There is an absence of studies into cost-effectiveness. If we compare the cost of conducting a mentoring program with the benefits to students of earlier career choice, better performance, and higher research productivity, the expense seems to be more than warranted. The mentors do their job without any financial incentives. The costs arising relate to program leaders, the holding of workshops, and some social events.

No data is available in terms of whether mentoring could also help students out of medical school if they are obviously not cut out to be physicians. Admittedly, it must be borne in mind that entrance tests and interviews as well as selective exams in the first year of medical school increase the probability that a majority of students will fit the profile of a medical professional.

Furthermore, the negative effects of mentoring are not reported in the studies. As noted in the Resident Mentoring Program at Zurich University Hospital [37], mentoring may be biased on account of institutional interests. It might lack confidentiality if the mentor is a senior physician in the same department responsible for supervising the resident and awarding their qualification. There should be no hierarchical dependency. In the aforementioned Zurich University program, mentees either choose their mentor on their own initiative or the mentorship is set up by the program leader, based on the main interests of the mentee.

Suggestions for the design of future mentoring programs

In our view, a useful and feasible model for a student mentoring program could be designed using tiers, as reported by Kosoko-Lasaki et al. [17]: younger students are mentored by advanced students, and advanced students are mentored by faculty members or senior physicians/researchers. Mentoring students calls for enjoyment in educating others as well as the ability to act as a role model and instill enthusiasm for a particular field of medicine or research. Female mentors might be especially important for female students, in that they may provide a role model for combining the demands of a job with family commitments. The program leader is called upon to approach qualified, suitable mentors for matching up with the mentees. It is the program leader's task to seek out and maintain contact with potential mentors.

Compared to our review on formal mentoring programs for medical students and physicians [1], the present paper covers the recent period 2000 - 2008, and focuses both on mentoring programs for medical students and on general overviews of mentoring for medical students. It provides a deeper insight into appreciation of mentoring in different countries, and requirements for mentors and mentees to establish an effective and successful mentoring relationship.

Conclusion

Mentoring is obviously an important career advancement tool, which would benefit from early implementation at medical school. Mentorships must be goal-oriented and rigorously evaluated in terms of the positive outcomes for mentees as well as for mentors. Once the effects of mentoring are more clearly documented, mentoring will receive more appreciation.

Competing interests

The authors declare that they have no competing interests.

Authors' contributions

EF has conducted the PubMed literature search, reviewed the papers and compiled the publication data together with MS. BBF reviewed the papers separately. BBF drafted the manuscript, which was critically revised by the other authors. All authors read and approved the final manuscript.

Acknowledgements

The study was supported by grants from the Rectors' Conference of the Swiss Universities, Federal Program on Gender Equality, Module 'Career Promotion of Young Academics' (Grant No: 08/50).

Author Details

Research Center for Career Development, Zurich University Hospital, Zurich, Switzerland

Received: 8 July 2009 Accepted: 30 April 2010
Published: 30 April 2010

References

1. Buddeberg-Fischer B, Herta KD: **Formal mentoring programmes for medical students and doctors--a review of the Medline literature.** *Med Teach* 2006, **28(3):**248-257.
2. Standing Committee on Postgraduate Medical and Dental Education: **Supporting doctors and dentists at work: An enquiry into mentoring.** London: SCOPME; 1998.
3. Garmel GM: **Mentoring medical students in academic emergency medicine.** *Acad Emerg Med* 2004, **11(12):**1351-1357.
4. Ramanan R, Phillips R, Davis R, Silen W, Reede J: **Mentoring in medicine: keys to satisfaction.** *Am J Med* 2002, **112(4):**336-341.
5. Coates W, Crooks K, Slavin S, Guiton G, Wilkerson L: **Medical school curricular reform: fourth-year colleges improve access to career mentoring and overall satisfaction.** *Acad Med* 2008, **83(8):**754-760.
6. Levy BD, Katz JT, Wolf MA, Sillman JS, Handin RI, Dzau VJ: **An initiative in mentoring to promote residents' and faculty members' careers.** *Acad Med* 2004, **79(9):**845-850.
7. Buddeberg-Fischer B, Beck Schimmer B, Hornung R, Dietz C, Mattanza G, Klaghofer R: **Mentoring zur klinischen und akademischen Karriereförderung junger Ärztinnen und Ärzte.** *Schweiz Ärzteztg* 2005, **86(46):**2566-2572.
8. Buddeberg-Fischer B, Buddeberg C: **Karriereförderung in der Psychosomatischen und Psychotherapeutischen Medizin.** *Z Psychosom Med Psychother* 2002, **48:**313-322.
9. Cain JM, Schulkin J, Parisi V, Power ML, Holzman GB, Williams S: **Effects of perceptions and mentorship on pursuing a career in academic medicine in obstetrics and gynecology.** *Acad Med* 2001, **76(6):**628-634.
10. Buddeberg-Fischer B, Stamm M, Buddeberg C, Klaghofer R: **Career-Success Scale - a new instrument to assess young physicians' academic career steps.** *BMC Health Serv Res* 2008, **8(120):**.
11. Buddeberg-Fischer B, Stamm M, Buddeberg C: **Academic career in medicine - requirements and conditions for successful advancement in Switzerland.** *BMC Health Serv Res* 2009, **9:**70.
12. Dorrance KA, Denton GD, Proemba J, La Rochelle J, Nasir J, Argyros G, Durning SJ: **An internal medicine interest group research program can improve scholarly productivity of medical students and foster mentoring relationships with internists.** *Teach Learn Med* 2008, **20(2):**163-167.
13. Kanter SL, Wimmers PF, Levine AS: **In-depth learning: one school's initiatives to foster integration of ethics, values, and the human dimensions of medicine.** *Acad Med* 2007, **82(4):**405-409.
14. Kalet A, Sanger J, Chase J, Keller A, Schwartz MD, Fishman ML, Garfall AL, Kitay A: **Promoting professionalism through an online Professional Development Portfolio: successes, joys, and frustrations.** *Acad Med* 2007, **82(11):**1065-1072.
15. Zink BJ, Hammoud MM, Middleton E, Moroney D, Schigelone A: **A comprehensive medical student career development program improves medical student satisfaction with career planning.** *Teach Learn Med* 2007, **19(1):**55-60.
16. Macaulay W, Mellman LA, Quest DO, Nichols GL, Haddad J Jr, Puchner PJ: **The advisory dean program: a personalized approach to academic and career advising for medical students.** *Acad Med* 2007, **82(7):**718-722.
17. Kosoko-Lasaki O, Sonnino RE, Voytko ML: **Mentoring for women and underrepresented minority faculty and students: experience at two institutions of higher education.** *J Natl Med Assoc* 2006, **98(9):**1449-1459.
18. Zier K, Friedman E, Smith L: **Supportive programs increase medical students' research interest and productivity.** *J Investig Med* 2006, **54(4):**201-207.
19. Goldstein EA, Maclaren CF, Smith S, Mengert TJ, Maestas RR, Foy HM, Wenrich MD, Ramsey PG: **Promoting fundamental clinical skills: a**

competency-based college approach at the University of Washington. *Acad Med* 2005, **80(5):**423-433.
20. Coates RJ, Ankel F, Birnbaum A, Kosiak D, Broderick KB, Thomas S, Leschke R, Collings J: **The virtual advisor program: Linking students to mentors via the World Wide Web.** *Acad Emerg Med* 2004, **11(3):**253-255.
21. Scheckler WE, Tuffli G, Schalch D, MacKinney A, Ehrlich E: **The Class Mentor Program at the University of Wisconsin Medical School: a unique and valuable asset for students and faculty.** *WMJ* 2004, **103(7):**46-50.
22. Kalet A, Krackov S, Rey M: **Mentoring for a new era.** *Acad Med* 2002, **77(11):**1171-1172.
23. Murr AH, Miller C, Papadakis M: **Mentorship through advisory colleges.** *Acad Med* 2002, **77(11):**1172-1173.
24. Tekian A, Jalovecky MJ, Hruska L: **The impact of mentoring and advising at-risk underrepresented minority students on medical school performance.** *Acad Med* 2001, **76(12):**1264.
25. Keyser DJ, Lakoski JM, Lara-Cinisomo S, Schultz DJ, Williams VL, Zellers DF, Pincus HA: **Advancing institutional efforts to support research mentorship: a conceptual framework and self-assessment tool.** *Acad Med* 2008, **83(3):**217-225.
26. Taherian K, Shekarchian M: **Mentoring for doctors. Do its benefits outweigh its disadvantages?** *Med Teach* 2008, **30(4):**e95-99.
27. Sambunjak D, Straus SE, Marusic A: **Mentoring in Academic Medicine.** *JAMA* 2006, **296:**1103-1115.
28. Hauer KE, Teherani A, Dechet A, Aagaard EM: **Medical students' perceptions of mentoring: a focus-group analysis.** *Med Teach* 2005, **27(8):**732-734.
29. Rose GL, Rukstalis MR, Schuckit MA: **Informal mentoring between faculty and medical students.** *Acad Med* 2005, **80(4):**344-348.
30. Cochran A, Paukert JL, Scales EM, Neumayer LA: **How medical students define surgical mentors.** *Am J Surg* 2004, **187(6):**698-701.
31. Aagaard EM, Hauer KE: **A cross-sectional descriptive study of mentoring relationships formed by medical students.** *J Gen Intern Med* 2003, **18(4):**298-302.
32. Hill JA, Boone S: **Personal perception on mentoring.** *Clin Orthop Relat Res* 2002:73-75.
33. Mahayosnand P: **Public Health E-Mentoring: An investment for the next millenium.** *Am J Public Health* 2000, **80(8):**1317-1318.
34. Osborn E, Ernster V, Martin J: **Women's attitudes toward careers in academic medicine at the University of California, San Francisco.** *Acad Med* 1992, **67:**59-62.
35. Osborn E: **Factors influencing students' choices of primary care or other specialties.** *Acad Med* 1993, **68(7):**572-574.
36. Souba W: **Mentoring young academic surgeons, our most precious asset.** *J Surg Res* 1999, **82:**113-120.
37. Buddeberg-Fischer B, Vetsch E, Mattanza G: **Career support in medicine: experiences with a mentoring program for junior physicians at a university hospital.** *Psychosoc Med* 2004, **1(Doc04):**.

Pre-publication history

The pre-publication history for this paper can be accessed here:
http://www.biomedcentral.com/1472-6920/10/32/prepub

doi: 10.1186/1472-6920-10-32
Cite this article as: Frei *et al.*, Mentoring programs for medical students - a review of the PubMed literature 2000 - 2008 *BMC Medical Education* 2010, **10**:32

Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra

Swiss Confederation

Federal Department of Home Affairs FDHA
State Secretariat for Education and Research SER
Universities

Hallwylstrasse 4
CH-3003 Bern
T +41 31 322 96 62
F +41 31 322 78 54
info@sbf.admin.ch
www.sbf.admin.ch