Mentoring Radiology Residents in Clinical and Translational Research.

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Mentoring radiology residents in clinical and translational research

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Abstract

To be an effective mentor at any level is always a challenge and requires a dedication to teaching, mentorship, and being prepared to devote a significant proportion of one's time. But if you are open-minded and deeply care for your mentee you have the opportunity to be a successful mentor. This presentation is based on personal experience of mentoring radiology residents, PhD students and post docs for several years.

Introduction

The word mentor comes from Mentor who was friend of Odysseus entrusted with the education of Odysseus' son Telemachus. A mentor is someone who teaches or gives help and advice to a less experienced and often younger person. “Mentoring is a process for the informal transmission of knowledge, social capital, and the psychosocial support perceived by the recipient as relevant to work, career, or professional development; mentoring entails informal communication, usually face-to-face and during a sustained period of time, between a person who is perceived to have greater relevant knowledge, wisdom, or experience (the mentor) and a person who is perceived to have less (the protégé, the mentee)" [1]. To achieve the goals of your mentorship, you need to have an interest in teaching and mentoring, be prepared to devote your time, and to be patient. It is your privilege to set the basic goals for your mentee whether these are; conducting a research study, writing and presenting an abstract at a meeting, writing a peer reviewed paper, learning about networking and social skills in the academic word or more commonly a mixture of all. However, you need to be open-minded if you want to succeed as a mentor. As a mentor you have to be able to present high but realistic goals, present the means to reach those goals, have a vision and be able to support the mentee to reach those goals, and to grow as an individual. To set high goals but not provide the support the mentor needs will only discourage the mentee, making them feel incompetent and that they have failed, and they may lose interest in a research career. Lack of support cannot be compensated by lowering the goals [2]. This approach will not help the mentee to grow in their profession or as an individual thus negating having a mentor.

This presentation will focus on some basic concepts and ideas that can help to make you a successful mentor and enlighten your mentees. The majority of what will be presented is based on my own experience as a previous mentee and from years of experience as a mentor for radiology residents and fellows, as well as for PhD students and post-doctoral students both in US and Sweden.

I will discuss the role of a mentor, what qualities one needs to succeed as a mentor, knowing your limitations, and when and how to terminate the mentor-mentee relationship.

What is the major role of a mentor of radiology residents in clinical and translational research?

Certainly, the answer about the role of a mentor to a radiology resident may vary depending upon who you ask; senior or junior faculty, program chair, department chair or individual resident. Personally, I believe that the overall goal should be to introduce the resident to the field of clinical and translational research but even more importantly to teach them what research is about, how to perform good scientific research and understand the time and effort commitment that underlies quality research. Other important roles as a mentor are to introduce the resident to a feasible project, teach the skill of writing a peer reviewed abstract for submission to (and presentation at) a society meeting, and how to write a manuscript. An important role is teaching and mentoring residents to present their research in public. Other important roles are demonstrating the value of networking, and conveying some basic social skills that will be helpful not only in the academic world but also in their daily practice [3]. The main reasons to mentor are shown in Table 1.

What to think of when mentoring radiology residents in clinical and translational research.

As a mentor it is important to understand the rules and regulations of the radiology training program. I think the most important assignment for a mentor is to support the resident, and influence them positively by demonstrating professionalism both in daily clinical practice as well as when planning and conducting clinical research [4]. The present program for radiology residents in US includes in their curriculum that residents conduct at least one research project and present the results at a meeting and write a manuscript based on the research project [5]. Similar curricular requirements exists for radiology residents in Sweden, and is also an important component in the education of medical students according to the Bologna process of uniform medical education in Europe [6,7].

Usually the residents have limited time to accomplish this part of their curriculum. In a recent survey of radiology residency program directors, the majority (85%) agreed that it was important for residents to have mentors [8].

Some residents truly enjoy doing research while others will just do it because they have to. Regardless, it is important as a mentor to give them a feasible project, and something that can be finished within the stipulated timeframe. To present a feasible project means a project that can be executed based on their capabilities and the time allotted. So, what is a feasible project? In my opinion a project that is focused, already has institutional review board approved (which can otherwise be very time consuming), has some initial data which the resident can be given to analyze. This allows the opportunity to teach the resident about study design and support them in the statistical analysis, and help and educate them through writing the first draft of an abstract and/or manuscript, i.e. make it doable for them the first time around, and encourage them to continue and take on more in the future. Make sure the project is streamlined and explain what you expect them to do and when and how [9]. During the process they need continuous support and encouragement. I believe that if you want to succeed it is important make them feel that they are an essential part of the research group. The feeling of being a part of the research group is more likely to stimulate the resident to continue with additional or related projects during their residency. If from the beginning you have a well-defined and prepared plan for their involvement you may find that it is possible and easier to generate more than one paper, and often see a growing interest from the resident to become more involved in clinical research. Research should be fun; you have to make it intriguing. There are different ways to stimulate a mentee; like giving them the chance to present at a national or international meeting. Taking your mentee with you to meetings is a great way of giving them the opportunity to meet your peers and other well-known colleagues and/or established researchers not only in the area of your research interest but within radiology in general. Make them feel that they are a part of the research group and not just a clerk getting the job done. There are some easy ways to

make a mentee feel part of the team and that will improve their work. Examples, that I think, make the mentee feel a part of the group are to include them in e-mail correspondence related to the project, involve them in discussions and introduce them as a member of your research group during encounters with other faculty, introduce them to peers in the field, listen to the mentees suggestions and take them seriously, explain the research project, and give them literature that can be of help for the deeper understanding of the topic, avoid leaving them alone to find solutions, stick to deadlines and reply to their communications in the same way that you would expect them to reply to yours. You have the right to disagree with your mentee but you should always remain professional. A mentor should always exhibit high professional standards and ethics and be respectful of the mentee as with others in the research group and professional colleagues. Emphasize the importance of maintaining good relations with other staff members, and the necessity of this to succeed in research and in general. Teach them to be open minded and positive in their encounters with others. Personally, I always make an effort to take my mentees with me to meetings (in my case to Europe); giving them an opportunity to attend the meeting and to meet peers from other parts of the world, concepts that I believe broaden their horizons and make them grow professionally and personally. There are four main types of mentors/mentoring styles. Mentoring can be a mixture of some or all of these, [Table 2].

Be aware that residents talk to each other about you as a person and as a mentor, your attitude and support (or worse, lack of support) towards your mentee, about the work or assignments you give your mentee, and what benefits they see in working with you compared to other faculty. A bad mentor will have difficulty finding new mentees whereas a good mentor will have mentees lining up outside their office door.

For the resident the important issues may be different to those of the mentor and these needs change as residents progress through their training [10]. Feasibility of the work, and a mentor that is visible, supportive, ready to answer their questions, willing to teach and explain to them is more

important than the topic of project itself. A good mentor needs to be prepared to devote time and effort to the mentorship, keep deadlines and fulfill promises [11]. You cannot expect more of the mentee then you expect from yourself. Face-to-face meetings with the mentee, concrete suggestions to solve problems, being available (always), and supporting your mentee is crucial if you want to succeed as a mentor, and have the possibility and opportunity to work with future residents. Generosity goes hand in hand with good mentorship. As a mentor it is important to have long-term plans and goals, have projects that can include more than one mentee, teaching mentees to collaborate and support each other. During my years as a mentor I have always had from the beginning, a long-term plan that can lead to more than one paper or presentation for each of the projects that I have for each of my mentees (if the mentee wants this), and I have always given them a chance to continue from one project to the next within the same topic and field. Under my mentorship, this approach has resulted in that most of my mentees publishing more than one paper and having more than one presentation at a meeting during their residency. I have been fortune to have several residents who continued with projects under my mentorship during their fellowships and as junior faculty.

To produce and maintain high quality work in a timely manner, it is important to have regular scheduled meetings with your mentee. These regular meetings, which can be short, give both the mentor and the mentee an opportunity to review the progress of the project, ensure deadlines are kept, answer questions, discuss any issues that arise, and possible solutions.

A final important task as a mentor is to give constructive feed-back on the mentees progress, the quality of their work, their work ethic, and their development as an independent researcher [12, 13]. A summary of the benefits of a mentoring relationship for the mentee are given in Table 3, [14].

If you are a good mentor and want to grow in your role as a mentor, ask for feed-back from the mentee, as there is always room for improvement. There are significant benefits of mentoring relationship for the mentor [14]. A summary of these benefits are given in Table 4.

What are the limitations and when is it time to "set the mentee free"?

You as a mentor and the mentee set the limits. However, there are some obvious limitations that exist, i.e. your and their limited time to devote to a specific project, the nature of the project, a mentee finishing their residency, and of course the decided initial goal. Then, of course, there are other less pleasant limitations such as poor work ethics, poor interpersonal relations, a non-feasible project, or a mentor or mentee that do not take the mentorship seriously.

It is in the nature of humans to find it comfortable to work with somebody that you have got to know well and that you have a good relationship with (good chemistry). However, there comes a time when you as mentor have to let the mentee go, let them be independent to work on their own projects or move to another project and another mentor for the former mentee to grow professionally and personally. There is no perfect time but it is the task of the mentor to re-evaluate his/hers mentorship and its value for the mentee and be open to suggest changes when the projects comes to a finish.

In conclusion to have the opportunity to mentor a radiology resident in clinical and translational research is fun, educational (to both the mentor and mentee) and sometimes challenging. It gives you the opportunity not only to guide a novice in research but also to grow professionally – which makes you grow. Take the opportunity and enjoy!

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Tables.

Table 1. The Main Reasons to Mentor.

Helps residents/junior staff settle into the institution.
Enables experienced, highly competent professionals to pass their expertise on to others who need to acquire specified skills, i.e. skills enhancement.
Helps residents when are early in their careers to understand what it means to be a professional in their working environment. Professionals embody the values of the profession and are self-initiating and self-regulating. Mentors play a key role in defining professional behavior for juniors, i.e. help them with their professional identity
Enables career development and helps residents plan, develop, and manage their careers. It also helps them become more resilient and more self-reliant in their careers and more responsible as self-directed learners.
Enables leadership and management development by encouraging the development of leadership competencies. These competencies are often more easily gained through example, role-modeling, guided practice or experience than by formal education and training.
Helps bridge the gap between theory and practice. Formal education and training is complemented by the knowledge and hands-on experience of a competent practitioner.
Can help communicate the values, vision and mission of the institution/organization; a one-to-one relationship can help juniors understand the organizational culture and make any necessary changes.

Table 2. Types of Mentors. There are four main types of mentors/mentoring styles. Mentoring can be a mixture of some or all of these.

Career Guide	Promotes development through career guidance, counseling and visibility.
Information Source	Provides information about formal and informal expectations.
Friend	Interacts with the mentee socially and provides information about people.
Intellectual Guide	Promotes an equal relationship, collaborates on research projects and provides constructive feedback and criticism.

Table 3. Benefits of Mentoring Relationship for the Mentee.

The Mentee
Makes a smoother transition as a researcher.
Furthers their development as a professional.
Gains the capacity to translate values and strategies into productive actions.
Complements ongoing formal study and/or training.
Gains some career development opportunities.
Develops new and/or different perspectives.
Gets assistance with ideas.
Demonstrates strengths and explores potential.
Increases career networks and receives greater exposure.

Table 4. Benefits of Mentoring Relationship for the Mentor.

The mentor
Renews their enthusiasm for the role of expert.
Obtains a greater understanding of the barriers experienced for residents.
Enhances skills in coaching, counseling, listening, and modeling.
Develops and practices a more personal style of leadership.
Demonstrates expertise and shares knowledge.
Increases generational awareness.