



REVIEW

Mentor–mentee relationship in medicine[☆]



Javier P. Gisbert

Servicio de Aparato Digestivo, Hospital Universitario de La Princesa, Instituto de Investigación Sanitaria Princesa (IIS-IP) y Centro de Investigación Biomédica en Red de Enfermedades Hepáticas y Digestivas (CIBEREHD), Madrid, Spain

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Abstract This study will review various aspects of the mentoring process, mainly in the medical field (both educational and research), in order to describe the mentor's role, the characteristics of the ideal mentor and mentee, how to find a good mentor, mentoring types, the benefits of a mentor–mentee relationship, and potential obstacles and possible solutions. Our ultimate goal is to encourage potential mentors to become actual mentors, and potential mentees to actively seek a mentor and not lose the opportunity to receive this precious gift that many of us have been fortunate to enjoy.

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PALABRAS CLAVE

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La relación mentor-aprendiz en medicina

Resumen En el presente manuscrito se revisarán diversos aspectos del proceso de mentoría, fundamentalmente en el ámbito médico (tanto docente como investigador), con el propósito de describir cuál es el papel del mentor, las características del mentor y del aprendiz ideal, cómo buscar un buen mentor, los tipos de mentoría, los beneficios de una relación mentor-aprendiz, así como sus potenciales barreras y posibles soluciones. Nuestro objetivo final será estimular a aquellos potenciales mentores a que pongan en práctica las funciones de *mentoría*, y a los potenciales aprendices a que busquen activamente un mentor y no pierdan la oportunidad de recibir este precioso regalo que muchos de nosotros hemos tenido la suerte de disfrutar.

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Introduction

According to the dictionary of the Spanish language, “mentor” comes from the Greek Μέντωρ *Méntōr*, a character in the *Odyssey*, adviser of Telemachus, and the word

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E-mail address: javier.p.gisbert@gmail.com

means “adviser or guide, teacher, patron”. Therefore, the term “mentor” comes from the *Odyssey*, written by the Greek poet Homer. When Ulysses prepares to go to fight the Trojan War, he realises that he will be leaving his son Telemachus, his sole heir, alone. Telemachus had to be trained to be king, and Ulysses trusted his friend Mentor to take his place in the training of the young man while he, Ulysses, was away fighting the Trojans.

By extension, the concept of mentor refers to one who acts as a guide or adviser to another person. In other words, a mentor is a person who has greater wisdom, experience or knowledge, and helps another who has less. The ideal mentor should be an adviser, a source of inspiration, energy and motivation. His or her goal should be to guide, stimulate, challenge and maximise the capacities and talents of another person on personal and professional levels.^{1,2}

The person who receives these teachings is traditionally known as a *mentee* in the literature written in English. This term, although often used in Castilian (Spanish), is not included (at least for the time being) in the dictionary of the Spanish language; several alternatives in Castilian have been proposed, such as *protegido* (protégé), *discípulo* (disciple) or *aprendiz* (apprentice). In this article, we will use the term “mentee”.

In English, the relationship between the mentor and the mentee is called *mentoring*. In this case, there is no suitable equivalent in Spanish. Translating it as “tutoring” (the term which most dictionaries provide) does not appear to be the most appropriate, because the role of the mentor is broader, lasts longer and goes deeper than that of the tutor. For this reason we have chosen to use the term *mentoring*; although it is not included in the dictionary of the Spanish language (thus we will put it in italics), it is indeed on Wikipedia and is often used in daily practice.

Through this link, the mentor shares his/her experience and knowledge with the mentee so that he/she can develop successfully on professional and personal levels. In the literature there are several definitions of *mentoring*, but all share a fundamental aspect: it involves communication and is based on a relationship. In this light, in *mentoring*, a relationship between 2 people is established based on trust, confidentiality, understanding and empathy. It has been proposed that *mentoring* can be seen as a collaborative learning relationship that goes through stages in time, with the purpose of helping a mentee to acquire the skills required for career-related success or professional development. From this perspective, a mentor is a teacher, a supervisor, and a counsellor or adviser. Unlike *coaching*, which is “the act of promoting short-term, behavioural-focused skills”, *mentoring* is “a guided, holistic relationship that has a long-term reach”.³

Mentoring is more about helping to learn than about teaching. This means helping a mentee to find his/her centre of gravity, so that he/she may then become the true protagonist of his/her development, decisions and destiny. The mentee must learn by listening, observing, asking and doing. The mentor should not provide solutions (well, sometimes they should). Rather, the mentor should give advice, and not answers. Ideally, the mentor should generate alternatives and help the mentee to generate them too, so that he/she can evaluate them and take decisions. In short, the mentee—guided by the mentor—must discover

the paths and follow them by assuming the consequences of his/her decisions. “Tell me and I forget; teach me and I may remember; involve me and I will learn” (Benjamin Franklin).

A successful relationship between the mentor and the mentee is a synergistic or symbiotic relationship in which both parties benefit.^{4,5} This is a great example of what is known as a *win-win situation*.⁶ Therefore, although it is often thought that in this relationship only the mentee learns, in reality this is not the case. Many mentors subscribe to the well-known aphorism that reads: “I have learned much from my teachers, more from my colleagues, and the most from my students” (Hindu proverb). In fact, mentees are often the best teachers.

In ancient Greece it was customary for young people to be assigned to an older, more expert person, so that each young man would learn and emulate the values of his mentor. Normally he would be a friend of the young man’s father or another of their relations. The Greeks based this relationship on the human principle of evolution and survival: humans learn skills, culture and values directly from other people whom they respect or admire. These principles of imitation and *mentoring* have been key elements in the continuity of art, guilds and trade since ancient times. The first documented medical *mentoring* in history was that of William Osler, who acted as a mentor to Harvey Cushing.⁷ More recently, in university hospitals, the *mentoring* relationship is usually established between the mentor and a student, a resident or a young physician associate. The mentor–mentee relationship, perhaps because it is a natural extension of the student–teacher relationship, develops better in an academic setting compared with a business one. Thus, for example, the mentor–mentee relationship tends to be deeper and longer lasting in medicine than in business.⁸

This article will review various aspects of the *mentoring* process, mainly in the medical field (both teachers and researchers), to describe not only the mentor’s role and characteristics, but also the ideal mentee. It will also discuss how to find a good mentor, the types of *mentoring*, the benefits of a mentor–mentee relationship and potential obstacles and possible solutions. Our ultimate goal will be to encourage potential mentors to practise the functions of *mentoring* and potential mentees to actively look for a mentor and seize the opportunity to receive this precious gift that many of us have been lucky enough to enjoy.

What is the mentor’s role?

The mentor should be a reference figure with vast experience in a professional field and have human values that make him/her a role model for the mentee. The mentor should be concerned to pass on this experience and these values to the mentee.

Being a mentor is not a profession that can be studied at university or in a postgraduate course. True, some people have the “constitutional” or inborn abilities needed to be a mentor. Nevertheless, other qualities—the majority of them—that are needed to properly develop a *mentoring* role depend on attitude. Here, as in everything else, emotional intelligence and empathy play a fundamental role.

Mentoring is an activity with many facets, and so it requires multiple ingredients.⁹ There are many more aspects involved in the mentor–mentee relationship than the simple transmission of knowledge and information from one experienced person to one with less experience. Good *mentoring* depends on effective learning, which occurs when there is a mixture of knowledge acquisition, application in practice and critical reflection on the process.¹⁰ *Mentoring* requires effort, commitment, responsibility, patience, energy and time; it also requires training. For example, the skills needed to write scientific articles is something that, fundamentally, is learned through effort and over time.¹¹ The same thing happens with the ability to analyse data from a study in statistical terms, or with the skill needed to present results in an oral report at a medical conference.¹² Without a doubt these skills will can be learned much faster under the tutelage of a mentor.

Being a mentor does not mean replicating or duplicating yourself and creating a clone in your image and likeness. Instead, it means giving the mentee a chance to develop as he/she sees fit.¹³ The mentor should not expect the mentee to become an extension of him/herself. Being a mentor is not about telling the mentee what to do, but about helping him/her make their own decisions. Precisely because of all this, it is perfectly understandable if sometimes the mentee (especially if he/she already has a certain amount experience) does not share each and every idea of the mentor.

The functions of a mentor can be summarised by using the letters of the word MENTORING: M for *meeting*, E for *enthusiasm*, N for *networking*, T for *building a team*, O for *oral skills*, R for *respect*, I for *intellectual curiosity*, N for *non-academic careers* and G for *many things*.¹⁴ It has been suggested that the mentor's various roles might include: *teacher* (teaching the mentee from the perspectives of teaching and research), *sponsor* (helping the mentee to establish connections with other professionals), *adviser* (serving as a guide to the mentee throughout his/her professional career), *protector* (helping to surmount the many obstacles the mentee will surely find in his/her way), *role model* (serving as an example to be emulated), *coach* (facilitating instruction, strategy and motivation) and *confidant* (providing emotional support).¹⁵

What are the characteristics of a good mentor?

Listed below are the characteristics that a good mentor should have and which are therefore the keys to a successful *mentoring* relationship. Obviously, it is difficult for people to possess all these qualities. Some qualities are part of how one understands life and others are innate, but many others can be learned, developed and improved.

Altruism and generosity

The mentor should not ask for anything in return for performing his/her teaching role. His/her involvement should not be tied to a financial reward or benefit. A good mentor must always bear in mind the interests of his/her mentee, and not only his/her own.¹⁶ Though it is true that *mentoring* is usually beneficial to both the mentee and the mentor, the mentor should not view this activity

as a way to promote his/her own career. In fact, if the mentor is unable to properly differentiate his/her needs (or priorities or benefits) from his/her mentee's, the *mentoring* relationship has a much greater chance of failing. This altruism is especially evident when we consider that in our setting there is generally no academic (or economic!) recognition of the work that mentors do.

Honesty, credibility and reliability

The mentor must comply with and transmit the fundamental ethical principles, in life in general and in science in particular, concerning patients in his/her care activity, lectures in his/her teaching activity and studies in his/her research activity. Honesty and integrity are the most valuable and respected qualities of leadership. As they say, "if a person does not inspire confidence in *all* respects, they will not do so in *any* respect". Mentoring is therefore not a one-way activity; it requires a two-way relationship. If the mentee has no confidence in his/her mentor, if he/she does not firmly believe in what he/she teaches, if he/she does not follow his/her advice, that person is not their mentor; he/she is simply a teacher or someone who transmits information or knowledge.

Experience

Although the best mentor does not necessarily have to be the most eminent member of a department, or the one with the most international visibility, he/she should have significant experience, at least in the discipline in which he/she means to instruct the mentee. You cannot guide someone in something you do not do or do not know how to do. If you want to do skydiving, you will not look for an expert who has read numerous books on how it feels to skydive. You will prefer an expert who actually skydives, someone who not only tells you how to do it, but also shows you how to do it.

Also, experience in methods of communication is highly desirable¹⁷ because this is necessary not only to tell how things are done (e.g. experiments), but also how results should be presented. It is not just the water that is important but also the jug that holds it. In this regard I always recall with satisfaction the positive, slow but inexorable progression of the young residents' communication skills—from their inevitably "awkward" beginnings in the department's plenary sessions to their brilliant expositions only a couple of years later.

The term *coach* is used in business as a figure who achieves extraordinary results. The *coach* is a professional who helps you to discover your potential, and gets you to leave your comfort zone and find your own resources, through *coaching* methods, tools and exercises. In this sense a *coach* might be a professional that facilitates learning, whereas a mentor, to add to that, shares his/her knowledge and experience. Therefore, *coaching* and *mentoring* are powerful methods of learning for individuals and organisations, which share the mission of enhancing personal and professional development. However, there is a fundamental difference in terms of the degree of experience each has: the *coach* does not need to be an expert, whereas the mentor has to be a reference figure of experience, with a life

trajectory and values to pass on. Another difference is that in *coaching*, the relationship between the teacher and the student is temporary and ends after one or maybe a few sessions. By contrast, the relationship between the mentor and the mentee is more stable and longer lasting.

Enthusiasm

Of course the mentor cannot convey enthusiasm to the mentee if the mentor him/herself does not feel it. Enthusiasm (and curiosity) can be contagious; you have to know how to feel it and how to convey it.¹⁸ For example, in terms of healthcare, it is stimulating for the mentee to see this enthusiasm when assessing a new patient (especially if it is a complex case). In the scientific field it is also stimulating to convey passion and emotion when putting forward a research hypothesis (by emphasising its novelty); when analysing the data obtained for the first time (by stressing that it is original information); when presenting first-ever results at a conference (in the hope of receiving public praise); or when submitting a manuscript to a good biomedical journal (in the hope that it will be accepted for publication).

Leadership

Good leaders often make good mentors. Leadership is the ability to transform a vision into reality. Leaders have (and communicate) a clear vision, and they choose (and articulate) a precise direction. Leaders think and talk about solutions, whereas followers do the same about problems. Good leaders inspire, encourage, and when necessary, discipline. Being a mentor is that part of a leader's role that results in his/her followers' development.

Persistence and dedication

It has been suggested that 2 of the most important ingredients for being a good researcher are persistence and dedication, which together act as a counterpoint to the enthusiasm mentioned in the section above.¹⁹ Persistence and dedication are also probably essential to being able to practise *mentoring* at a high level. In fact, it does not seem necessary to have an exorbitantly high IQ to be a good researcher or a good mentor; tenacity is much more important: "Your attitude, not your aptitude, will determine your altitude" (Zig Ziglar).

Critical spirit and perfectionism

A good mentor must spend hours reviewing and correcting articles or conference presentations prepared beforehand by the mentee, perfecting even the smallest detail. The mentor considers the mentee not only to represent him/herself to readers or an audience, but also to reflect the *mentoring* work behind them, and he/she believes that everything that goes to "represent" his/her team must be of the highest quality. "When someone criticises my mentee, it is as if they have criticised me". The mentee knows that he/she can make use of his/her mentor's critical

spirit, knows that his/her mentor will carry out a truly comprehensive review—a task that requires an interest and an effort that only the mentor and honest friends or colleagues will be willing to dedicate. "Quality is never an accident; it is always the result of intelligent effort" (John Ruskin).

Respect, active listening and sincerity

The success of a mentor–mentee relationship is based on mutual respect and a genuine interest on the part of the mentor in the mentee's professional development. The greatest display of respect for the mentee may be simply to listen to what he/she has to say.¹⁴ Even if the idea (for example, a revolutionary hypothesis or the proposal of an ambitious research protocol) is not appropriate, it is important to show the mentee that we at least consider their ideas, which is perfectly compatible with a sincere and respectful explanation of why that idea seems unviable! An honest *no* helps more than a *yes* destined for failure. It is important to remember that the mentee follows the mentor for what he/she can contribute, and not just to look for his/her approval.

Flexibility

The mentor must respond to his/her mentee's needs. He/she must use intuition and observe, remain flexible and know how to adapt to these needs at all times. As in any interpersonal relationship, the mentor–mentee relationship is not immutable, but rather dynamic. It can—and should—change and mature over time, to allow the professional and personal growth of both people.²⁰ In addition, the mentee's needs will probably change over time, in line with changes in his/her professional path. Thus, *mentoring* may be best understood as a triad or a continual interaction between the mentor, the mentee and the setting (which must be continually adapted to),²¹ and that is why the relationship between mentor and mentee requires continual and skilled adjustment.²²

Positive attitude towards failure

The mentor should help the mentee to identify any obstacles and their possible solutions, thereby improving their ability to solve problems. The mentor should teach the mentee how to live with success, but above all, how to deal with failure. He/she should encourage and excite the mentee when it is difficult for him/her to make progress or when he/she is not getting the results he/she expects. A positive attitude towards adversity is something that—at least in part—can be taught and learned, for example, when a journal rejects that article that we spent so much effort on, or that scholarship that we worked on for so many hours. In short, the mentor must instil in the mentee the philosophy that if he/she has learned from his/her failures, then he/she has not really failed.

Ability to identify strengths and weaknesses

The mentor should show the mentee his/her strengths and help to enhance them. The mentor often sees more talent

and ability in the mentee than does the mentee him/herself. Many people (mentees) have gone beyond what they thought they could do because someone (their mentor) believed in them. It is important for the mentor to highlight the mentee's strengths, but at least or even more relevant is identifying and expressing with sincerity the mentee's limitations. Only in this way will the mentor be able to help shore up the mentee's weaknesses. A good mentor knows how to see a future mentee become a leader and build self-confidence. "If you treat an individual as he is, he will remain how he is. But if you treat him as if he were what he ought to be and could be, he will become what he ought to be and could be" (Johann Wolfgang von Goethe).

Prioritising goals

One thing that requires a huge amount of time and effort is learning to establish a hierarchy of goals and priorities. "The hardest thing to learn in life is which bridge to cross and which to burn" (Bertrand Russell). And consequently you have to learn to say "no". "Learn to say *no* to the good so you can say *yes* to the best" (John C. Maxwell). Nevertheless, usually virtue lies near the golden mean, and neither is it good to set unattainable goals. Often the mentee wants to participate in large-scale projects, typically multicentre clinical trials. These projects are often complex and lengthy, and are therefore unlikely to be completed during the *mentoring* period. That is why a good mentor should guide his/her mentee towards a more manageable project, where the mentee can be the "protagonist" rather than a "secondary" character, and which makes it possible to finish in a reasonable period of time. On occasion the mentor should call the mentee's attention to the myriad opportunities he/she may have, and (re)direct him/her, though sometimes not without difficulty, to finish that less exciting (but more feasible) project at the expense of that other, apparently more attractive (but less viable) one.

The mentor should focus on the mentee and teach him/her how to select priorities to direct his/her efforts and resources appropriately. As a result, the mentee should be focused and not overextend him/herself. The mentee is often required to *focus, focus, focus!*²³ The vast majority of relevant contributions to science have been made by researchers who have persisted in their work with perseverance and tenacity. In other words, concentrating on answering important questions. All too often, young researchers are tempted to jump from one thing to another apparently more "fun" or more "fashionable" thing, with the result that they do not go deep enough into anything, and therefore becomes an expert in nothing.²⁴ "Jack of all trades, master of none", as they say.

Teamwork

Until relatively recently, most major scientific projects or treatises were the responsibility of a single person. For example, Newton alone was the author of the *Principia*, a monumental work. Today it is hard to believe that such a work would have only one author. Other great scientists,

such as Einstein, had a small number of publications, most of which they signed as the sole author. Now things are very different, and it is inconceivable that a department or team of researchers would be successful without good coordination and teamwork. This teamwork will be much more productive if it takes place in a good and cordial environment in which its members respect one another. Here again the role of the mentor is critical and can greatly facilitate the mentee's integration in that team.

Establishment of a network of collaborators

This consists of opening doors to the mentee so that he/she might have access to other colleagues in key positions in the scientific community. This will facilitate opportunities for professional development. The mentor should also guide the mentee on how to "navigate" within institutions. The mentor's ability to identify the right people, thus expanding the mentee's network of contacts, can help to guide the mentee in the development of his/her professional career. This may be particularly useful for establishing connections with potential collaborators in different research projects. *Networking* includes not only personal contacts, but also the skills needed to look for funding, contacts and relationships with scientific societies, as well as the complex and delicate relationship with the pharmaceutical industry.

Work-life balance

The mentor must instil in the mentee the idea that an adequate balance between professional and personal life is fundamental. It is important to make time for family and friends, and for yourself. It is essential to take care of your physical and mental health.²⁵ This is easy to say, but sometimes difficult to put into practice. The mentor can help in deciding when to say no to something, not because it is uninteresting, but because it simply interferes *too much* (this is the key phrase) in the mentee's personal life.

Availability

Although we have left it to the end, and at first blush it may seem like a secondary factor, availability is nevertheless a key aspect. Lack of time on the part of the mentor is probably the most common obstacle to proper *mentoring*. The most "requested" mentors are usually those who have successful scientific backgrounds, and precisely because of this they are generally busy professionals with limited availability. A mentor who is not available on a more or less regular basis would not be a good choice, even if his/her academic or scientific qualifications are excellent. Although the ideal frequency for meetings between mentor and mentee has not been established, meeting on at least a monthly (and ideally weekly) basis seems reasonable.¹⁴ For those who receive *mentoring*, time is also a critical factor, and every minute that the mentor dedicates is worth its weight in gold. Dedicating time does not refer only to meetings with the mentee but also, above all, to the attention that he/she needs in all his/her activities.

What are the characteristics of a good mentee?

As we have seen, the success of a *mentoring* relationship depends largely on the mentor. However, it also requires considerable effort on the part of the mentee. Obviously, having a mentor requires someone to be generous, but the first step is to open yourself to this possibility by knowing how to surround yourself with people with experience and by showing interest, concern and humility.

According to a recent study, the characteristics of an effective mentee included being receptive to feedback, actively listening, respecting the mentor's time, meeting agreed deadlines and taking responsibility for managing the mentor–mentee relationship and one's own learning.²⁶ At the start of the relationship the mentor has the greater responsibility. Later, the mentee takes on a role of greater importance, and this is where his/her initiative and proactive nature must come to the fore.

The mentee must be respectful with the mentor's time—which is usually limited, as previously mentioned. In any *mentoring* meeting, there should be a well-prepared agenda that covers the subjects to be dealt with. However, this includes some leeway in terms of time for *brainstorming* and allowing that brainstorming to become crystallised into new research projects.¹⁴ It is highly likely that some of the most productive sessions we have seen have taken place during one of these meetings where there was no strictly concrete agenda or schedule.

The mentee's frame of mind must always be critical, but in a constructive way. No time should be wasted in complaining about problems, but rather in trying to solve them. The mentor will have no trouble in considering the mentee's criticisms provided that they are accompanied by proposed alternative solutions. The mentee must develop the capacity for self-criticism and remain open to feedback; past failures should interest him/her so that he/she might learn from them. Mentees must be open to new settings, e.g. subjects, people and situations, and have the desire to learn from them.

It is important to agree beforehand on a timetable of goals to be achieved, which will allow for the proper scheduling of different *mentoring activities*.²⁷ "A goal properly set is halfway reached" (Zig Ziglar). In any case, the mentee must be honest with the mentor regarding their limitations. Sometimes it is not easy to recognise that there is not enough time, for example, if a mentor tasks a mentee with writing something that needs to be reviewed within too tight a deadline. However, it is always better to deal honestly with the problem than to commit to something that is not going to be able to be completed. In this regard, one of the most frustrating situations for the mentor occurs when the mentee starts a project and does not complete it. If this situation is unavoidable, the mentee must at least tell the mentor as soon as possible that he/she will not be able to complete the project to which he/she was committed.

Ultimately, the mentee should keep the mentor up to date on his/her progress, not only for formal (merely informative) reasons, but also because it is a stimulus for both parties and a form of appreciation. For example: "I've just finished writing the Results section, and I'm going to

start writing the Discussion" or "our article has just been accepted by *The New England Journal of Medicine*".

How to find a good mentor?

Looking for—and finding—a good mentor is not always easy. In practice, only a small number of potential mentees have mentors.^{15,28–30} The availability of mentors in the field of academic medicine ranges from 19% to 84%.³¹ A systematic review on this topic showed that in some disciplines less than 20% of professionals had a mentor.³¹

In a survey recently conducted by the *American College of Gastroenterology* (ACG), approximately 80% of the respondents said that they had a mentor.³² However, only 60% had a mentor whom they considered "very effective" or "extremely effective" (specifically, having had a mentor in one of these 2 categories was a predictor of being very satisfied). Therefore, it can be concluded that the fact of having a mentor per se does not guarantee success: the mentor has to be a good one. Finally, 80% of those who never had a mentor said that they would have liked to have had one.³²

Most mentors consider that the "obligatory" assignment of a mentor or a mentee is likely to have a negative impact on the relationship between the two.²⁶ Therefore, ideally this mentor–mentee relationship should arise spontaneously. Some mentors or mentees consider that they should be matched based on some potentially relevant aspects, such as age, gender or religion.^{26,33} This is probably not necessary, nor even desirable, as any disparities in these characteristics should not significantly influence the success of *mentoring*.

The mentor's specialty does not necessarily have to be the same as the mentee's, although this does help. Nor must they have the same professional interests; however, it is logical that if they are a good match, everything will be easier. For example, the mentor's profile might be fundamentally one of teaching, with an almost exclusive dedication of his/her time to university, whereas the mentee may be more interested in research. In these cases the mentee should look for a mentor more aligned with his/her interests.³⁴ Moreover, if the mentee's interest leans more towards primarily clinical research, and, say, inflammatory bowel disease is his/her preferred area, it would not make much sense for the mentor to focus his/her teaching efforts with the mentee on basic research in liver diseases. Ideally, the search for a mentor goes hand in hand with the search for a research project; it would be therefore be desirable to find both simultaneously.

A personal connection that goes beyond the professional relationship is an ingredient that greatly helps the success of the mentor–mentee relationship. Naturally, much of this depends on chance and is beyond the will of both the mentor and the mentee—they are who they are—but without question, sharing values in terms of clinical activity, research or personal life significantly helps in this personal connection. "Chemistry" between mentor and mentee is important, as it is in any personal relationship.

In reality, the precise details of what makes a mentor–mentee relationship successful are not known. There is no single standard model, but many models. In fact,

just because a previous mentor–mentee relationship fails, does not mean that a future relationship is doomed to fail. It is therefore not surprising that there is no easy or fast rule for finding a good mentor.³⁵ Obviously, the mentor's background is important; a professional with a long track record of successful mentees is the best guarantee of future success. For a mentor, being identified as a "star-maker" is the best way to attract the best and brightest future mentees.³⁶

Used properly, bibliometric indicators are valuable tools for studying scientific activity. Their main role is not to replace the experts, but to facilitate their decisions and to provide objectivity and transparency to evaluation-related processes. A simple *publication count* for a given researcher is an unreliable indicator for measuring the contribution a researcher has made to scientific progress. Furthermore the *impact factor* of the journal in which a work has been published does not help to predict the quality or the scientific relevance of that work. Hirsch's *h-index* has revolutionised how scientific research is evaluated, because it represents a balance between number of publications and citations to them. The *h-index's* main advantage is that it combines a quantity measure and a production-impact measure into a single indicator.³⁷ So the *h-index* makes it possible to differentiate researchers with significant influence in the scientific world from those who simply publish many works. Unfortunately, there is no "mentor index" that can be used to assess quality and impact in this respect. However, it has been proposed that combining the *h-index* of each mentee under the tutelage of a particular mentor (who is the *senior* author in the publications) in a specific period might be a reasonable approximation.³⁸

Single or multiple mentoring? In-person or virtual?

Traditionally, *mentoring* has been considered as a unique, exclusively mentor–mentee relationship, which has to be started early in the mentee's professional career and which is sustained over time with the same mentor and at the same institution.³⁹ However, more recently it has been found that the same mentee may need different mentors, with different profiles, at different periods in their professional career,⁴⁰ or even at the same time, the availability of several different mentors might be complementary,^{22,41} for example, combining a mentor with a more clinical/care-related profile with another with a more research-related/basic profile. The "spatial" coincidence (at the same hospital) of the *main* mentor will facilitate the relationship.³⁹ Thus, although it is conceivable that a *secondary* mentor may be found at an institution other than the mentee's, it is undoubtedly difficult to maintain the close relationship and frequency of meetings as would a mentor–mentee relationship in the same centre. In this sense, though it is true that many meetings can now be done virtually/telematically, nothing can replace a face-to-face relationship. In any case, a *mentoring* relationship that starts at the same institution and continues once the mentee is transferred to another is probably more appropriate than one which starts remotely at the outset.³⁹

The number of mentees that a mentor can or should supervise has not been established. In a recent survey conducted in the USA, an average of 5 mentees per mentor was calculated, but this figure usually ranged from 3 to 8³⁹; and the maximum number of mentees that the mentors considered appropriate to have at any one time was 6.³⁹

What are the benefits of the mentor–mentee relationship?

Basically, a mentor–mentee relationship is successful if both people consider it to be successful. The benefits of the mentor–mentee relationship have been demonstrated in numerous disciplines, including in medicine, nursing and business. In medicine in particular, it has been associated with a higher level of professional satisfaction on the part of mentees, higher rates of promotion and a larger number of publications.^{42–46} In addition, medical students who have had good mentors are more likely to be satisfied when they become clinicians, and clinicians who have benefited from this relationship feel more confident in their abilities than those who have not had mentors.^{29,32,47–49} In the same vein, successful researchers are more likely to have had mentors.²⁹ A systematic review concluded that *mentoring* has an important influence on professional development, career orientation, choice of career and research productivity, including success in publishing scientific articles and obtaining research grants.³¹

However, the effectiveness of *mentoring* programmes is not so clearly established when considered by using objective criteria.^{31,50} In this respect, 2 meta-analyses showed positive results associated with *mentoring* programmes, but they conclude that the extent of the benefit is limited.^{51,52} Therefore, although the benefit of *mentoring* seems clear, we should not overestimate its influence on the mentee's professional career and should therefore moderate the expectations of this relationship. There is a logic to this: personal and professional success depends on so many and such varied factors—both personal and environmental—that it is unlikely that a single strategy (*mentoring* in this case) will have a huge influence.

It is not easy to measure the success of a mentor–mentee relationship, but there are some good guidelines that may be used. In the research field, for example, by the end of the *mentoring* period the mentee should have presented a research project at some session (preferably a competitive one), first on the local level, then on the regional, and then, ideally, on the national or international levels. The mentee should also have written a scientific article and submitted it for publication (if possible to a journal that has an international reach).

The existence of leaders in the future depends on identifying and promoting mentees in the present. If we want science to keep going forward, we need leaders to exceed us and to be more successful than we have been.⁵³ Developing and maintaining the mentor–mentee relationship is the most efficient way to go from one generation to another and thus allow this relationship, so useful and rewarding to our profession, to survive. It is both a great responsibility and a

stimulus to know that, in a way, the future of medicine is in our hands.

External obstacles to mentoring programmes and potential solutions

Successful *mentoring* requires the setting within the institution (usually the hospital) to be favourable.^{2,54} The value of *mentoring* must be explicitly recognised and integrated into the hospital's or university's organisational structure as an integral part of the continuing medical education required. Thus, ideally, the tasks and time spent on *mentoring* functions should be formally recognised—officially—as part of routine work. Otherwise, *mentoring* becomes a *hobby*, rather than being seen as an activity inherent in the teaching and research activities of the medical profession. In this sense there are many who think that this activity should be remunerated. For example, in a recent survey carried out in the USA on the experience of mentors in Internal Medicine, it was observed that approximately half of the mentors received remuneration for this activity.³⁹

Despite the relevance of mentors, in general they do not receive specific education or training; instead they learn by way of example from their own mentors or peers, through ‘‘trial and error’’.⁴⁴ Official and, ideally, national *mentoring* programmes should be put in place to facilitate mentees' access to mentors (especially in cases where it is more difficult to find a mentor locally).^{55–57} It is therefore clear that a change in the culture is needed to recognise the true importance of *mentoring*, and consequently, to support it with the necessary organisational and economic means. For these purposes it is necessary to make the health and university authorities aware of the importance of *mentoring* and give it the leading role it deserves.

In some American university hospitals there is a *mentoring* programme focused on research, which includes, for example: support in preparing protocols and developing databases; support in conducting statistical studies; writing workshops for scientific articles; courses on how to give presentations to the public; or seminars on how to look for funding for research projects. Unfortunately, this *mentoring* programme is still an exception in the USA, and it is currently non-existent in Spain. Recently, the Spanish Working Group on Crohn's Disease and Ulcerative Colitis (Grupo Español de Trabajo en Enfermedad de Crohn y Colitis Ulcerosa—GETECCU) developed a complete *mentoring* programme focused on inflammatory bowel disease, a first in Spain (at least in Gastroenterology).

Conclusions

Mentoring is an effective educational tool and represents one of the basic pillars of medical training and professional development, both in academia and in research. A mentor must play many roles, but the most important is to act as an echo chamber capable of guiding the mentee towards finding their own answers for problems.⁵⁸ The mentor is not a magician who can make all obstacles on the mentee's path disappear, but rather a ‘‘facilitator’’ who puts the mentee in the position of a ship's captain, teaching him/her how to navigate choppy waters.⁵⁹ A mentor is someone who has

already been down the path the mentee intends to travel, and can help significantly shorten the path to success.

Medicine is an exciting profession, but also complex and stressful with high levels of professional *burnout*. At times it is not easy to stay positive. Specifically, *mentoring* can be a stimulus for doctors, and make more bearable the inevitable negative aspects that occur in every profession. ‘‘If you think adventure is dangerous, try routine; it is lethal’’ (Paulo Coelho).

Mentoring is a hard job because it requires investing a great deal of time and energy in a personal relationship that usually does not generate immediate results. Being a mentor implies having a vision of the future, planting to reap later. *Mentoring* is a gift we can give to others (or receive from others) that can have a lasting positive impact on a person's life. It is a precious gift that, once received, can be passed on to the next generation as a tradition.⁵⁹

Being a mentor can be an enriching activity and come with a great personal reward, i.e. that of a job well done. Few things provide such a degree of professional and personal satisfaction as finding that one of our young mentees has decided to follow a career path (scientific or academic) similar to ours. Maybe, with a bit of self-adulation, we can conclude that this decision was at least in part the result of our mentees' seeing us as role models. Undoubtedly the success of the mentee is the mentor's best reward. If you are a mentee now, remember that before you know it you may be a mentor.

Conflicts of interest

The author declares that there are no conflicts of interest.

References

1. Yamada T. On mentorship. *Gastroenterology*. 2011;141:13–5.
2. Sambunjak D, Straus SE, Marusic A. A systematic review of qualitative research on the meaning and characteristics of mentoring in academic medicine. *J Gen Intern Med*. 2010;25:72–8.
3. Stoddard A. *The heart of mentoring: ten proven principles*. Navpress: Colorado Springs; 1953.
4. Sharma GV, Freeman AM. Mentoring: why it matters even after training. *J Am Coll Cardiol*. 2014;64:1964–5.
5. Cappell MS. After demonstrating the considerable benefits of mentoring to trainees, how do we promote mentoring? *Am J Gastroenterol*. 2010;105:2505–6, author reply 2506.
6. Lebowhl B, Green P. Mentorship for trainees in gastroenterology. *Gastrointest Endosc*. 2012;76:1021–3.
7. Barondess JA. Cushing and osler: the evolution of a friendship. *Trans Stud Coll Physicians Phila*. 1985;7:79–111.
8. Scharschmidt BF. Mentoring: a personal perspective from academia and industry. *Gastroenterology*. 2015;148:276–9.
9. Singer MV. ‘Look for the right mentor’. An interview with Prof. Manfred v. Singer. *Pancreatol*. 2007;7:3–6.
10. Zachary L. *The mentee's guide*. New York: Jossey-Bass; 2009.

11. Becker PT. Mentorship in scientific writing. *Res Nurs Health*. 2012;35:215–6.
12. Clark RA. Teacher, supervisor, adviser, or mentor? *J Invest Dermatol*. 2011;131:1779–80.
13. Mohammed TL. Mentoring matters. *Curr Probl Diagn Radiol*. 2015;44:295–6.
14. Castell DO. Academic mentoring: a 40-year adventure. *Am J Gastroenterol*. 2011;106:820–2.
15. Carey EC, Weissman DE. Understanding and finding mentorship: a review for junior faculty. *J Palliat Med*. 2010;13:1373–9.
16. Beck IT. Reflections on education—machines or mentors: mentors and mentorship. Education Excellence Lecture 2004. *Can J Gastroenterol*. 2005;19:97–104.
17. Platz J, Hyman N. Mentorship. *Clin Colon Rectal Surg*. 2013;26:218–23.
18. Frey C. 'Mentoring is about inspiring interest and excitement in others'. An interview with Charles Frey, MD, Professor Emeritus, University of California, Davis, Calif., USA. Interview by Martin E. Fernandez-Zapico. *Pancreatol*. 2008;8:415–9.
19. Light RW. Research: why and how to write a paper? *Rev Clin Esp*. 2015;215:401–4.
20. Powell DW. Mentoring: then and now. *Gastroenterology*. 2014;147:550–3.
21. Marks MB, Goldstein R. The mentoring triad: mentee, mentor, and environment. *J Rheumatol*. 2005;32:216–8.
22. Bettmann M. Choosing a research project and a research mentor. *Circulation*. 2009;119:1832–5.
23. DiMugno EP. 'Good mentorship is invaluable'—an interview with Dr. Eugene P. DiMugno. Interview by Martin E. Fernandez-Zapico. *Pancreatol*. 2005;5:5–7.
24. Steer ML. 'The success of the mentee is the mentor's ultimate reward'. An interview with Dr. Michael L. Steer by Martin E. Fernandez-Zapico. *Pancreatol*. 2006;6:507–9.
25. Crowe SE. Personal perspectives on mentoring. *Gastroenterology*. 2013;144:488–91.
26. Straus SE, Chatur F, Taylor M. Issues in the mentor–mentee relationship in academic medicine: a qualitative study. *Acad Med*. 2009;84:135–9.
27. Cruz-Correa M. Personal perspective on mentoring. *Gastroenterology*. 2014;146:331–3.
28. Healy NA, Glynn RW, Malone C, Cantillon P, Kerin MJ. Surgical mentors and role models: prevalence, importance and associated traits. *J Surg Educ*. 2012;69:633–7.
29. Palepu A, Friedman RH, Barnett RC, Carr PL, Ash AS, Szalacha L, et al. Junior faculty members' mentoring relationships and their professional development in US medical schools. *Acad Med*. 1998;73:318–23.
30. Ramanan RA, Phillips RS, Davis RB, Silen W, Reede JY. Mentoring in medicine: keys to satisfaction. *Am J Med*. 2002;112:336–41.
31. Sambunjak D, Straus SE, Marusic A. Mentoring in academic medicine: a systematic review. *JAMA*. 2006;296:1103–15.
32. Travis AC, Katz PO, Kane SV. Mentoring in gastroenterology. *Am J Gastroenterol*. 2010;105:970–2.
33. Steele MM, Fisman S, Davidson B. Mentoring and role models in recruitment and retention: a study of junior medical faculty perceptions. *Med Teach*. 2013;35:e1130–8.
34. Huskins WC, Silet K, Weber-Main AM, Begg MD, Fowler VG Jr, Hamilton J, et al. Identifying and aligning expectations in a mentoring relationship. *Clin Transl Sci*. 2011;4:439–47.
35. Alpert JS. The importance of mentoring and of being mentored. *Am J Med*. 2009;122:1070.
36. Coates WC. Being a mentor: what's in it for me? *Acad Emerg Med*. 2012;19:92–7.
37. Gisbert JP, Panes J. [Scientific publication, bibliometric indicators, and Hirsch's *h*-index]. *Gastroenterol Hepatol*. 2009;32:140–9.
38. Jeang KT. H-index, mentoring-index, highly-cited and highly-accessed: how to evaluate scientists? *Retrovirology*. 2008;5:106.
39. Luckhaupt SE, Chin MH, Mangione CM, Phillips RS, Bell D, Leonard AC, et al. Mentorship in academic general internal medicine. Results of a survey of mentors. *J Gen Intern Med*. 2005;20:1014–8.
40. Cross R, Thomas R. A smarter way to network. *Harv Bus Rev*. 2011;89:149–53.
41. Barkun A. Maximizing the relationship with a mentor. *Gastrointest Endosc*. 2006;64 Suppl.:S4–6.
42. Bland CJ, Schmitz CC. Characteristics of the successful researcher and implications for faculty development. *J Med Educ*. 1986;61:22–31.
43. Rose GL, Rukstalis MR, Schuckit MA. Informal mentoring between faculty and medical students. *Acad Med*. 2005;80:344–8.
44. Pfund C, Spencer KC, Asquith P, House SC, Miller S, Sorkness CA. Building national capacity for research mentor training: an evidence-based approach to training the trainers. *CBE Life Sci Educ*. 2015;14:14, ar24.
45. Jackevicius CA, Le J, Nazer L, Hess K, Wang J, Law AV. A formal mentorship program for faculty development. *Am J Pharm Educ*. 2014;78:100.
46. Ries A, Wingard D, Gamst A, Larsen C, Farrell E, Reznik V. Measuring faculty retention and success in academic medicine. *Acad Med*. 2012;87:1046–51.
47. Frank E, Carrera JS, Rao JK, Anderson LA. Satisfaction with career choice among US medical students. *Arch Intern Med*. 2008;168:1712–6.
48. Levinson W, Kaufman K, Clark B, Tolle SW. Mentors and role models for women in academic medicine. *West J Med*. 1991;154:423–6.
49. Wise MR, Shapiro H, Bodley J, Pittini R, McKay D, Willan A, et al. Factors affecting academic promotion in obstetrics and gynaecology in Canada. *J Obstet Gynaecol Can*. 2004;26:127–36.
50. DeCastro R, Griffith KA, Ubel PA, Stewart A, Jagsi R. Mentoring and the career satisfaction of male and female academic medical faculty. *Acad Med*. 2014;89:301–11.
51. Eby LT, Allen TD, Evans SC, Ng T, Dubois D. Does mentoring matter? A multidisciplinary meta-analysis comparing mentored and non-mentored individuals. *J Vocat Behav*. 2008;72:254–67.
52. Allen TD, Eby LT, Poteet ML, Lentz E, Lima L. Career benefits associated with mentoring for proteges: a meta-analysis. *J Appl Psychol*. 2004;89:127–36.
53. Mannel R. Mentoring future leaders. *J Hum Lact*. 2008;24:367–8.
54. Lakhani M. When I say ... mentoring. *Med Educ*. 2015;49:757–8.
55. Thackeray EW, Pardi DS, Norby SM, Oxentenko AS. Mentorship programs for gastroenterology program directors: is there an unmet need? *J Clin Gastroenterol*. 2011;45:e97–100.

56. Kohn H. A mentoring program to help junior faculty members achieve scholarship success. *Am J Pharm Educ.* 2014;78:29.
57. Kashiwagi DT, Varkey P, Cook DA. Mentoring programs for physicians in academic medicine: a systematic review. *Acad Med.* 2013;88:1029-37.
58. Sarles H. The most important role of the mentor is to guide the mentee in finding own solutions to problems. An interview with Prof. Henri Sarles. Interview by Martin E. Fernandez-Zapico. *Pancreatology.* 2008;8:97-100.
59. Shroff B. The gift of mentorship. *Angle Orthod.* 2015;85:897-8.