

## Priorities for the aspiring clinician-scientist

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Clinician-scientists provide a bridge between the laboratory and the clinic.

Although the roles of clinician and scientists, who sit at either end of the bridge are well defined, the territory in the middle can be a grey area. Structured training programs for clinician–scientists, although improving in some countries, are not well developed in most. And even where they are well developed, their outcomes are not assured. This means that many clinical-scientists have an ad hoc early experience, largely learning through their mentors and supervisors, and their success is uncertain.

In the clinician-scientist symposium at the recent World Glaucoma Congress in Paris, we were asked to discuss priorities for clinician-scientists, particularly aspiring clinician-scientists in the early stages of their career. The transcript below \* is based on our personal views and anecdotal evidence rather than any solid science. Nonetheless, we hope it will provide some useful pointers to clinician-scientists embarking on this rewarding career path.



### **A strong foot in both camps**

Although the proportion of time spent conducting research can vary widely, it is clear that to be successful in this role, clinician-scientists need to be strong in both the clinic and their research. They also need to be able to communicate lucidly, work effectively and gain respect from both peers in clinical medicine as well as full time researchers.

This can be challenging as in most instances clinician-scientists spend proportionately less time in each role when compared to colleagues who are full time clinicians or researchers. That said, a major advantage is that clinician-scientists are ideally placed to identify and address the most important issues in clinical practice and also translate research discovery into the clinic.

Leadership positions in clinical organizations, particularly academic units, can be a real asset as it not only makes it easier to organize and conduct clinical research activities and acquisition of clinical materials, but it also helps put in place (and keep) necessary research infrastructure. The quality and productivity of our research also need to be competitive in order to secure funding from competitive grants, attract good students and generate effective collaborations.

## **You and your team**

Sound training in both clinical practice and research techniques and methodologies are the cornerstones upon which careers are founded, with many clinician-scientists gaining both MD and PhD degrees. Although the latter is not critical, a PhD provides a formal route for acquiring key skills in the various aspects of research methodology. Whether one has earned a PhD or not, postdoctoral studies are invaluable for the success of the clinician-scientist. They are to research training what subspecialty fellowships are to clinical training.

A good clinician-scientist needs to be able to translate knowledge and should therefore aim to be proficient in their writing and presentations skills. Although there are courses to acquire these skills, for most individuals they are best learned and mastered by regular clinical case presentations, lab meeting presentations to your peers or more formal presentations at large meetings. Time keeping and the ability to secure research funding are also key talents and will be covered later. Above all a clinician-scientist needs to be passionate about their work with an unrelenting intellectual curiosity to address key questions that arise in clinical practice and never tire of asking 'why and how'.

Few clinician-scientists operate as individuals, but rather build teams of clinicians and researchers. Team management is a key skill. New principal investigators can gain much by attending appropriate courses. Individual management coaching for clinician-researchers who are beginning to build a team also can be invaluable. Building a team requires significant planning, but in truth one also needs a bit of luck. Having a clear focus as to what skills are required and how your laboratory and clinical teams interact can make or break the culture within your team. Strong team members allow you to delegate with confidence and can make a major difference to your workload. Collegial team members minimize the internal politics and team chemistry; they will optimize the likelihood of the "whole being greater than the sum of the parts." Wherever possible try to recruit people who can write well as this too can lead to significant time saving. Do not be afraid to be critically selective - it is always worth seeking and waiting for the ideal candidate.

We all need mentors and developing a strong mentor relationship can take years to crystalize, but will often last a lifetime. New mentors can be gained through mentorship programs, which may be offered through your institution. In many cases however, some of the best mentorships arise outside of any formal structures. Established clinician-scientists should consider it a responsibility to mentor younger clinicians, who may be interested in pursuing academic careers. This is not only important in developing the next generation but it can be extremely rewarding to pass on the benefits that you have derived from your mentor onto your mentees. Nurturing career development within your team is also important. Although it is sometimes difficult to encourage a stellar PhD student or outstanding postdoctoral student to move on to another institution, this may be the best for them and their career.

## **Working in a supportive environment**

In addition to obtaining the best clinical and research training, the likelihood for success as a clinician-scientist is optimized by involvement in a highly support academic community. It is no surprise that Centres of Excellence with established clinicians-scientists, clinicians and scientists are more likely to attract excellent clinicians, researchers and students. A department chair that supports research activities among clinicians is invaluable. In addition, an infrastructure designed to encourage interaction between clinicians and research staff is key to driving a productive research culture in a clinical setting.

Ophthalmology clinics need to have sufficient numbers of patients and the right patient mix to support the intended research activities. In addition, databases of prospectively followed patient cohorts and bio banks are now becoming commonplace in many ophthalmic centres. Close access to laboratories is a major advantage and reduces time spent in traveling or transferring clinical specimens.

As ophthalmology departments are generally smaller than other disciplines, they may not have sufficient critical mass to support cutting edge research technologies and so it is important that clinician-scientists in ophthalmology can collaborate with and/ or gain easy access to these technologies through collaboration or access to core facilities within larger universities or research institutes. Access to students is also an important avenue for recruiting the next generations of clinician-scientists.

## **Knowing your funding environment**

Research funding can be drawn from many sources including competitive granting bodies, philanthropy and industry. It is important that clinician-scientists familiarize themselves with their local funding environment. It can be very helpful for departments to draw up 'Grant Calendars' that track the funding cycle with grant submission deadlines and dates when research reports are required. Developing schedules that allow adequate planning of major grant submissions ensures that grant preparation, writing and submission are not left to the last minute and sufficient time is allowed for internal and external peer review, which can significantly improve grant success.

Investigators should know what constitutes a competitive track record in their funding environment. Participation in grant review panels is an excellent way to learn the art of grant writing and what differentiates successful from non-successful grants.

## **Time management**

Time management can be a major challenge for the busy clinician-scientist who is often required to juggle a number of different roles in a given day. With an increasingly busy calendar, it is important that clinician-scientists are able to protect their research time. Weekly laboratory meetings are efficient vehicles for keeping up to date with developments in your group and excellent opportunities for your students to present their work.

Strategic planning and research retreats are often seen as a luxury, but good planning can ultimately save many research hours and preserve research funds. The principal investigator is frequently the most 'time poor' member of the team. A common trap is that work is held up by the PI, either because other researchers are waiting for manuscripts or grants to be reviewed and returned or are held up waiting to ask questions about planned experiments or in need of troubleshooting or other advice. It is therefore important that you perform timely and critical review of manuscripts or grants that you have received. Moreover, you should remain accessible to your team to avoid delays as a two minute conversation may save valuable time.

Effective delegation is an art, but significantly easier when you have the right people to whom to delegate. This cannot only reduce the clinician-scientist's workload but also ensures that the clinic and research activities are not interrupted significantly by the PIs absence. Training your team to critique manuscripts is not only important for their development but also means that you get to read more refined submissions.

A busy schedule often requires that you prioritize requests for your time. Give priority to activities that are productive and where possible try to minimize time spent in passive committee meetings. Face to face meetings can be kept shorter by standing rather than sitting and visiting the other person's office rather than them visiting you, so that you can control when the meeting is completed.

A potentially useful tip for time management is to learn to say "no". This may be harder than it sounds. An esteemed colleague has recommended that one should practice by repeatedly saying "no" at least 20 times every morning at the beginning of the work day to make saying "no" significantly easier during the day.

Finally, it is always important to remember the value of a healthy work-life balance. Our families and friends are after all the most important members of our team and healthy eating combined with regular exercise will ensure that as clinician-scientists we optimize the length of time that we contribute to our profession.

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\*The slides from the presentation can be found at <http://www.cera.org.au/publications/reports-monographs>.