

Developing the Core Pillars of Training Global Cardiovascular Health Researchers

Companionship, Light, and Fuel

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Developing early career investigators who have completed their terminal degrees in each region of the world is crucial to capacity building to tackle the global and regional health challenges. This effort includes developing the capacity for sustained high-quality research at academic institutions around the world. In this era of global interconnectedness, training early career investigators in global health research is not something that can be done solely through the interactions between 1 supervisor and 1 trainee. Rather, it often needs significant resources and takes involvement of several experts at different institutions based in different countries. While occupying full-time jobs and with competing demands, early career investigators face numerous constraints and challenges that interfere with their ability to undertake significant research activities. Therefore, attraction, development, and retention of early career investigators is an important priority to improving global health through developing the capacity for global health research.

We are investigators and mentors who have organized 3 recent global cardiovascular health programs (see [Online Appendix](#) for details): 1) the Global Health Initiative supported by the National Heart, Lung, and Blood Institute of the U.S. National Institutes of Health and the United Health Group, involving 11 Centers of Excellence on noncommunicable diseases (cardiovascular and lung diseases) in 10 low- and middle-income countries [1]; 2) the World Heart Federation Salim Yusuf Emerging Leaders program, aiming to create a global cadre of promising early to midcareer individuals who will contribute to improving global cardiovascular health [2]; and 3) Hypertension Outcomes for Translational Research within Lower Middle-Income Countries and T4 Translation Research Capacity Building Initiative in Low-Income Countries (TREIN) sponsored by the National Heart, Lung, and Blood Institute [3]. In addition to supporting specific research projects, these programs aim to build a cadre of early career investigators with the ultimate goal of increasing research capacity. Whereas these programs are primarily focused on cardiovascular disease and related conditions and risk factors, the lessons learned are also applicable to various other health themes. Based on our collective experiences,

we have identified 3 key pillars for supporting the next generation of global cardiovascular health researchers (also called early career investigators, trainees, or mentees in this paper): companionship, light, and fuel.

PILLAR I: COMPANIONSHIP

We envision the research training process as a long-term journey, and as such, having companionship from peers and senior colleagues is essential. A popular proverb says, “if you want to go fast, go alone; if you want to go far, go together.” For instance, the World Heart Federation’s Salim Yusuf Emerging Leaders program creates small groups of trainees, approximately 8 to 10 individuals per group from different countries, to work on a common project. This approach has proven to be effective in mutual learning—group members share experiences and perspectives from different settings, facilitating learning and completion of specific proposals and projects. In addition, these groups have continued to collaborate and mutually support each other for several years beyond the initial formal training experience. For longer-term training programs, a pairing mechanism or a smaller group of a few trainees may be more effective rather than a larger group. A number of factors need to be considered to guarantee effective compatibility between members of the group including complementarity of disciplines, temperaments, skills, diversity of experiences, and versatility in approaching problems and overcoming obstacles.

Companionship provides a value that “we are in it together,” binding all individuals travelling along a similar journey and toward a common goal. Companionship may take the form of simply being present, serving as a sounding board for discussions, and providing mutual support to work together. Peer collaborators can share information, resources, skills, and best practices with each other while also tackling common issues together. Mutual support and dedication also bring encouragement when the going gets tough for 1 person or 1 team. Importantly, companionship also means accountability and responsibility to each other. It has often been stated that to work together, you must be friends first, which also means

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that the team members care about each other's success. The results for all parties involved—whatever the goals—are usually better than the alternative of working alone.

PILLAR II: LIGHT

Almost all training programs emphasize the importance of mentorship, and all 3 programs have strong mentoring components. Using the analogy of a journey, good mentors provide light along the way whose successes can serve as lighthouses and beacons while illuminating the paths of early career investigators. They can also provide guidance and share wisdom for the trainees on specific issues, whether technical, directional, or personal. Being a good mentor is not always easy and requires a caring and empathetic personality. Mentors can be demanding but also need to share credit, opportunities, and often also resources and funds. To be academically experienced and competent are not the only essentials of a good mentor. Equally or more importantly, good mentors have the best interests of their mentees in mind and will act through persuasion without forcing their opinions on mentees. Good mentors are good listeners and will be prepared to learn from the mentees and will be prepared to change their positions if justified through interactions with their mentees. Good mentors will not only bring the best out of mentees, but will also work with the mentee so that both mentor and mentee can achieve more than what each of them alone can achieve. Through the process, both will grow and derive mutual satisfaction and greater success [4].

Interactions between mentors and trainees in global health training programs are often limited by time and distance. Therefore, selecting the right mentors and having clearly defined roles, responsibilities, and incentives are important for the mentoring to achieve or surpass their common objectives. Incentives may not be monetary—in fact they usually are not—but may instead take the form of joint publications, collaborations, and the inherent reward of mentorship such as altruistic satisfaction and lifelong friendship or simply the joy of sharing a young person's growth and success. In long-term mentorships, mentors enable trainees to become independent, which includes cultivating resilience to work through disappointments, rejections, failures, and difficulties. A good mentor provides a protective shade and is never a stifling presence. Equally important is to develop a career strategy for the mentee, based on personal aptitude and circumstances, inculcating the values of scientific excellence and prioritizing high-quality and impactful research that can reliably answer important hypothesis-driven questions. This process often takes several years and sometimes even decades, and thus the ability and the support to be successful over the long haul are more important than short-term gains [5]. Besides mentorship on the design and implementation of research per se, it is beneficial to have mentors—different ones, if necessary—to help disseminate and

translate research findings into practice and policies that will result in larger global impacts.

Despite constraints of time and space, regular contacts between mentors and mentees are vital for the success of the mentorship. These contacts can be through various channels such as e-mails, teleconferences, and other virtual means—but periodic in-person meetings remain necessary even in our contemporary digital age. When feasible, it can be advantageous to also link the mentors from both high-income countries and from low- and middle-income countries, just like linking trainees. These mentors from diverse backgrounds may have complementary research experiences, expertise, and strategies to share and adopt. Additionally, they may also enjoy the potential collaborations, benefits, and rewards arising from joint mentorship. For example, the TREIN program in Nepal assigns both in-country and international mentors to their 16 trainees.

PILLAR III: FUEL

Seed grants provide the fuel needed to keep going. For research capacity building, there is nothing that works better than actually doing research, preferably in a learning-by-doing fashion. Provision of seed grants to early career investigators through a competitive process is a key lesson learned in the Global Health Initiative program [1], and also a key factor contributing to the success of the Emerging Leaders training program, which has trained 125 trainees from 49 countries over its first 5 years [6]. Without a mechanism for the trainees to actually work concretely on collaborative research activities, it is hard not only to keep the momentum going during the time between didactic or mixed-methods training workshops but also hard to put newly learned skills into practice. The skills gained in the process such as discussing and arguing through different options for study designs are critical to proposal writing. In addition, the operational aspects of ethics board submissions, dealing with regulatory submission processes, protocol and forms development, standardization, project management, data analyses and interpretation, and manuscript writing are essential skills for working on larger projects in the future.

The amount of seed grants should typically be large enough to carry out a meaningful pilot study but not too large to be unaffordable for the training programs. Seed grants should be seen as a foundation on which the trainees apply and obtain additional grants from local, national, and international sources. This approach helps projects start and allows people and teams to gain practical experiences. Completing pilot studies helps identify problems and generate preliminary data for competitive funding from independent sources for larger studies.

These 3 facets—companionship, light, and fuel—represent 3 pillars that we have found effective in improving trainee performance and retention among busy early career investigators. We have not included foundational requirements to conduct research, such as strong

support and guidance and protected time for research trainees from their own home institutions, the availability of basic resources in the home institutions, or the need to have a fair nondiscriminatory research environment in low- and middle-income countries [7]. These 3 approaches certainly are not the only ones that work, nor are they inclusive of all lessons from these training programs. Nevertheless, these pillars consist of practices that can enhance success of research training programs, in terms of improving the quality of research conducted, academic presentations, scientific publications, and writing larger collaborative grant applications to improve global health. These mechanisms are useful for long-term engagement of trainees and mentors and will be key to training future generations of leaders in research who can tackle local, national, and global health challenges. In that sense, developing, training, and sustaining early career investigators with diverse skills is the cornerstone to improving global health.

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