

Undergraduate Research, Medical Residency and Clinical Investigation

Max Grinberg and Antonio Carlos Bacelar Nunes Filho

Instituto do Coração - InCor HC FMUSP, São Paulo, SP - Brazil

“Dangerous knowledge is the one that accumulates much faster than the wisdom to manage it,”

Van Rensselaer Potter, 1967

Sense of observation is a condition-attribute that the physician develops and uses to recognize complexities and variabilities. Getting strong from health care shapes up links with research. In this context, clinical investigations are conducted with a more interdisciplinary vision and a smaller reductionist methodological bias.

Acquiring the vision of a good observer is favored in medical training by the synergy of traditional health care with the so-called undergraduate research. This combination highlights the benefit of a medical student engaging with both the production and the application of knowledge, avoiding behaving according to a predetermined hierarchy of knowledge. Many will follow the route of the bedside, others will be attracted to the bench, not a few will travel both ways, in a transient or permanent manner.

Undergraduate Research in Brazil, which started with the creation of the Institutional Program for Undergraduate Research Scholarships (PIBIC)¹, is an opportunity for the students to be close to “one-to-one” lessons from their advisors, which is key to learn how to obtain and analyze data and facts, whether voluntary or not². This complement to health care practice qualifies human resources in the field of Health.

Just like “native languages”, practicing early the dialect of health care and research bridges the gap between sending and receiving experiences from projects formulated and spontaneous experiences of health care. Those who are trained this way in undergraduate courses gain professional advantage, because living with the tension between both activities strengthens the ability to do simultaneous translations - or rather, consecutive translation - between provocative questions from the bedside and meaningful responses from the lab. It is valuable to learn to give prominence to strategic research, one that pushes the boundaries of knowledge by

gaining practical application. However, academic sustainability difficulties lead to heterogeneity between the programs for undergraduate scientific studies available in higher education institutions in Brazil.

The affairs of a resident bear a gap with research activities; however, the course of these tasks is the time to examine closely certain features of the hidden curriculum of well-qualified programs. They provide foundations for the option of continuing post-graduate studies upon completion of the Medical Residency. These foundations should be embedded in the organizational structure of the Health Services, because without any meaningful connections, the subsequent use of the memory of past events for chaining purposes would be detrimental.

In Cardiology, Valvular Heart Disease Clinic has a natural reduction of accents between health care and research. The reason is that, over time, the ratings for sizing the effect and estimating the guarantee of conduct guidelines on valvular disease derived mainly from observations of experts and case studies, which brings a notable overlap between the laboratory and the bedside. In fact, three out of four recommendations of the Guidelines on ACC/AHA-2006 on Valvular Diseases^{3,4} present a C level of evidence (expert opinion), especially because they are associated with high rates of reproduction of usefulness and effectiveness.

As a result, the valvular disease internship in the Cardiology Residency Program is an example of a traditional observatory that stands out for a perfect combination of scientific merit with clinical expertise, so that residents being trained in the Brazilian Health System, more mature in devising strategies (mental level) and in making decisions (concrete act), can grasp the assumptions of keeping on learning two languages. The vision offered contributes to the enhancement of awareness about the benefits of intersectoral work between health care and research by the same hands, in the real world of Medicine to become a safe cardiologist. From the perspective of Health Service, it opens the eyes to the scientific value of a systematic observation that drives the doctors “into the test tube” with the patient. And, most importantly, they “make each and every experience their own”, which is essential to grow, mature and believe in their work. Not less important, these convictions should be adapted to their personality, because young doctors, while adjusting individuality, integrity and achievement, often block certain inner spontaneities in order to become a true copy of the model of professional commitments accepted as more determinant for the patients’ safety.

If a resident believes that all of this is worthwhile^{5,6}, working as a practitioner (the purpose of the Medical Residency) with an interest in further dives into the foundations of innovation in science (post-residency clinical investigator), there is value

Keywords

Internship and residency; fellowships and scholarships; clinical clerkship; research.

Mailing address: Max Grinberg •

Rua Manoel Antonio Pinto, 04/21A - Paraisópolis - 05663-020 - São Paulo, SP - Brazil

E-mail: max@cardiol.br, grinberg@incor.usp.br

Manuscript received September 18, 2010; revised manuscript received January 11, 2010; accepted January 11, 2011.

in a hybrid Health Care Service that gives teaching priority to patient care while developing clinical research. The value is in instilling in their minds how essential it is to combine four routes: a) focus; b) advisor; c) method; d) practice⁷.

Focus is the area of interest attracted while residents go through several stages, which encourages them to connect to a line of research that could bring scientific merit, literature exhibition and respect from peers. Goals need to be clear and the participatory role, well defined. Selecting a subspecialty within the extensive scientific interest of Cardiology is multifactorial, including tastes, admiration for an advisor/Health Care Service, opportunity of inclusion and prominence in the literature of the time. A view of the current distribution of the focus can be obtained by analyzing the titles of doctoral theses defended by former residents. From 2004 to 2010, the doctoral theses of 39 former residents of InCor's Cardiology Residency Program dealt with the following fields of interest: Coronary Artery Disease 15 (37%), Valvopathy 5 (13%), Hypertensive Disease 5 (13%), Heart Failure 4 (10%), Arrhythmia 3 (8%), Dyslipidemia 3 (8%), Basic Research 2 (7%), Congenital Disease 1 (2%) and General Practice 1 (2%).

The advisor represents to the resident a selection of affinities with a more experienced colleague, who is trained and inserted into an organized system, including the empathy that promotes inclusion, admiration for the ability to straighten contradictory inclinations and see beyond the obvious, appreciation for the support when it seems that "nothing is going right," ensuring reliability to provide definitions to the quartet represented by task/limits/excellence/deadlines.

Thus, the advisor should ideally express certain attributes: 1 - be someone whom the resident respects and trusts, included in the concept that good leadership stems from good knowledge; 2 - reciprocate this trust, establish goodwill with the interaction by providing a sense of affiliation rather than prioritizing his own interests; 3 - get involved in recognizing the residents' flaws and help them overcome these flaws, improve ideas and plans and suggest additions, bring latencies to surface, help shaping up a style, respecting individual

potentialities for managing needs; 4 - passionate enthusiasm for the specialty, which gives vivacity to the performance of tasks; 5 - he should be the flag of the shortcomings of the specialty since the cases under discussion; 6 - he should reveal the secrets of the balance between practice and research and the value of teamwork; 7 - he should herald the most common operational difficulties in project design, ethical and scientific approval subsidies to research; 8 - ethical stance.

Training on certain methods is superficial during the Residency; however, some expected interest may lead the resident to pay attention to what it refers, in line with the need to care for their patient. Regarding practice, the period of Residency provides signs of critical requirements, including attitudes towards people, whether volunteers or the researchers involved, ways to focus on clinical and scientific issues, defining goals, qualifying methods, multidisciplinary involvement and reasons arising from the Literature. Reflections prompted by the daily routine of Residency on these two attributes help those residents wishing to conduct clinical research to build safeguards against ethical-scientific deviations that could turn pro-life claims into life threats. In this aspect of *why do that* and *how to do that*, it is important that the "Belmont scenario"⁸, which gather principles of beneficence, respect for humanity and justice, underpinning ethics in research on volunteers, also provide protection to the patients assisted by residents.

Potential Conflict of Interest

No potential conflict of interest relevant to this article was reported.

Sources of Funding

There were no external funding sources for this study.

Study Association

This study is not associated with any post-graduation program.

References

1. Programa Institucional de Bolsas de Iniciação Científica (PIBIC). Manual do Usuário (baseado na Resolução Normativa 019/2001). [Acessado em 2010 set 3]. Disponível em: <http://www.iac.sp.gov.br/pibic/Manual%20do%20PIBIC>.
2. Montes GS - Da implantação de uma disciplina de Iniciação Científica ao currículo nuclear na graduação em medicina na USP. Revista Brasileira de Cardiologia. 2000;2(2):70-7.
3. Bonow RO, Carabello BA, Chatterjee K, de Leon AC Jr, Faxon DP, Freed MD, et al - ACC/AHA 2006 guidelines for the management of patients with valvular heart disease: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines (writing Committee to Revise the 1998 guidelines for the management of patients with valvular heart disease) developed in collaboration with the Society of Cardiovascular Anesthesiologists endorsed by the Society for Cardiovascular Angiography and Interventions and the Society of Thoracic Surgeons. J Am Coll Cardiol. 2006;48(3):e1-148.
4. Grinberg M. E(TI)cossistema da cardiologia diretriz, mecenas do estado da arte. Arq. Bras. Cardiol. 2007;89(5):e136-e62.
5. Grinberg M, Accorsi TAD. Residente formado no instituto da vontade: os requisitos desejo, movimento e superação. Arq Bras Cardiol. 2009;93(2):e42-4.
6. De Mets DL, Califf RM. Lessons learned from recent cardiovascular clinical trials: part II. Circulation. 2002;106(7):880-6.
7. Lyketsos CG. Research training during psychiatric residency: a personal reflection. Acad Psychiatry. 2001;25:31-3.
8. Lebazqz K. Reflections on the Belmont Report 30 years later. Monitor. 2008;22(5):67-8.