



Revista Colombiana de Anestesiología

Colombian Journal of Anesthesiology

www.revcolanest.com.co



Guidelines and consensus

Strategies and obstacles to research development in anesthesiology programs: Consensus document in Colombia[☆]

Jose Andrés Calvache^{a,*}, Luis Enrique Chaparro^b, Alexandra Chaves^c,
Martha Beatriz Delgado^d, Nelson Fonseca^e, Félix Ramón Montes^f,
Jairo Ricardo Moyano^g, Jorge Rubio^h

^a MD., 3rd year Anesthesia Resident, Universidad de Cauca, Master in Clinical Epidemiology, Erasmus University Medical Centre, Rotterdam, The Netherlands

^b MD., Specialist in Anesthesiology and Pain Medicine, Clinical/Research Fellow, Queen's University, Kingston, Canada

^c MD., Specialist in Anesthesiology, Master in Clinical Epidemiology, Pontificia Universidad Javeriana, Bogotá, Colombia

^d MD., Specialist in Anesthesiology, Master in Clinical Epidemiology, Department of Anesthesiology, Pontificia Universidad Javeriana, Bogotá, Colombia

^e MD., Specialist in Anesthesiology and Intensive Care, Critical Medicine and Intensive Care Program, Universidad CES, Medellín, Colombia

^f MD., Specialist in Anesthesiology and Cardiothoracic Anesthesia, Department of Anesthesiology, Fundación Cardioinfantil, Bogotá, Colombia

^g MD., Specialist in Anesthesiology, Pain and Palliative Care, Master in Pharmacoepidemiology, Department of Pain Medicina, Fundación Santa Fe de Bogotá, Bogotá, Colombia

^h MD., Specialist in Anesthesiology and Cardiothoracic Anesthesia, Out-patient Surgery Unit – SURA – Medellín, Department of Anesthesiology, Universidad CES, Medellín, Colombia

ARTICLE INFO

Article history:

Received 7 March 2012

Accepted 23 May 2012

Available online 31 August 2012

Keywords:

Anesthesiology

Research

Latin America

Intensive care

ABSTRACT

Perioperative clinical practice in Latin America is influenced by research developed and published in developed countries. Fortunately, the increasingly favorable economic conditions for science in the developing countries, in addition to the heightened visibility of our scientific publications has triggered greater interest in improving the quality standards of local research and of the graduate theses generated in the course of graduate studies in anesthesiology. This document is the result of the active participation and discussion among the speakers attending the “Symposium on Research in Anesthesia: the path to participation in the society of knowledge”, organized by the Society of Anesthesiology and Resuscitation of Antioquia (SADEA) and the Colombian Society of Anesthesiology and Resuscitation (SCARE) in 2011. The purpose of the document is to discuss the strategies to adjust, plan and improve the research processes, as well as the creation and dissemination of knowledge generated

[☆] Please cite this article as: Calvache JA, et al. Estrategias y obstáculos para el desarrollo de la investigación en programas de anestesiología: documento de consenso en Colombia. Rev Colomb Anestesiología. 2012;40:256-61.

* Corresponding author at: Departamento de Anestesiología, Hospital Universitario San José, Cra 6 10N-142, tercer piso, Popayán, Colombia. E-mail address: jacalvache@gmail.com (J.A. Calvache).

Pain Medicine and Intensive Care in Colombia and other developing countries. Recommendations have been included for graduate programs, health care providers and the societies of anesthesiology.

© 2012 Published by Elsevier España, S.L. on behalf of Sociedad Colombiana de Anestesiología y Reanimación.

Estrategias y obstáculos para el desarrollo de la investigación en programas de anestesiología: documento de consenso en Colombia

R E S U M E N

Palabras clave:

Anestesiología
Investigación
América Latina
Cuidados intensivos

La práctica clínica perioperatoria en Latinoamérica está influenciada por investigación generada y publicada en países desarrollados. Afortunadamente, las condiciones económicas cada vez más favorables para la ciencia en los países en vías de desarrollo, sumado al incremento en la visibilidad de nuestras publicaciones científicas, han desencadenado un incremento en el interés por mejorar los estándares de la calidad de la investigación local y a su vez en los trabajos de grado que se generan durante los estudios de posgrado en anestesiología. El presente documento es el resultado de la participación y discusión activa de los expositores y asistentes al evento: "Simposio de investigaciones en Anestesia: El camino para participar en la sociedad del conocimiento", organizado por la Sociedad Antioqueña de Anestesiología y Reanimación (SADEA) y la Sociedad Colombiana de Anestesiología y Reanimación (SCARE) en el año 2011. El objetivo del documento es plantear estrategias para ajustar, planificar y mejorar los procesos de investigación, así como la creación y la divulgación del conocimiento generado en anestesiología, medicina del dolor y cuidado intensivo para Colombia y países afines. Incluimos recomendaciones para los programas de posgrado, las instituciones prestadoras de salud y sociedades de anestesiología.

© 2012 Publicado por Elsevier España, S.L. en nombre de Sociedad Colombiana de Anestesiología y Reanimación.

Introduction

Anesthesiology congresses, symposia and workshops have been characterized by the dissemination of research and knowledge generated, usually in developed countries, that may be useful in our everyday health care activities¹; unfortunately, the opportunities to learn about the practical aspects of the research process² and publication³ are limited in our region, in contrast to the increasing interest to globalize research efforts⁴ and generate projects that meet high quality standards.

This document is the result of the participation and active discussion of the speakers and participants in the meeting: "Symposium on Research in Anesthesia: the path to participation in the society of knowledge", organized by the Society of Anesthesiology and Resuscitation of Antioquia – SADEA – and the Colombian Society of Anesthesiology and Resuscitation –SCARE – in 2011 in Medellín, Colombia.

Objectives

The meeting focused on research experiences in Anesthesiology and the following objectives were set:

- Define the guidelines and strategies that SCARE will include in its 2012 action plan in scientific research related matters through outside peers.
- Structure and discuss the necessary recommendations for developing research projects in the anesthesiology graduate programs in Colombia.
- Contribute to the development of professional anesthesia communities for improving the quality and the number of scientific publications generated in Colombia, with a view to enhancing the international visibility of our scientific societies.

Methodology

All the presentations during the event were recorded and live broadcasted via the SCARE TV system (<http://www.livestream.com/scare.tv>) and are available for your consultation over the Internet. At the end of the meeting, a group discussion took place, which SCARE defined as "Consensus Conference" and included the participation of speakers, participants and attendees to the symposium and ended with an outline of draft recommendations.

This document was coordinated by the authors (JAC and LEC); they revised the audiovisual material of the event and wrote a "draft" document that served as a guide for the transcription of the final recommendations.

During a three-month period, the draft recommendations were evaluated and complemented by each author. The addendum was adapted to the format of the initial recommendations. Following each evaluation, the document was forwarded to the next author.

To conclude, the group made a final evaluation of the document. The whole preparation process was performed using virtual communication strategies. The result of this initiative was a set of recommendations divided into four sections, each one with subtitles designed on the basis of the most relevant topics of the event and the discussion:

1. Recommendations to graduate anesthesia students.
2. Recommendations for professors and programs of Anesthesiology.
3. Recommendations for the Colombian Society of Anesthesiology and Resuscitation SCARE.
4. Other recommendations.

Recommendations

Recommendations for graduate students of Anesthesiology

Promote academic spaces

The anesthesiology curricula should promote academic spaces so that the resident may choose a research question that is not just of scientific interest, but also responds to the needs of our society.⁵ Such selection should be facilitated by previously exposing the resident to the various options available in the anesthesiology department and its corresponding professors. Ideally, the research topic should be developed in the course of the first six months of the fellowship and under the constant counsel of the research group.

Commitment to the research process

The commitment to research projects includes the preparation of a feasible clinical question, a protocol, approval by the local ethics committee, sample collection, analysis and publication.⁶ This commitment must be shared among the professor in charge and the graduate students.⁷

Strategies for completion and continuity

If anesthesiology student is unable to complete the research project, the program should envisage strategies for the continuation of the project until its final completion and publication, ideally in international indexed journals.⁸ Universities shall reach a preliminary agreement with the graduate students establishing the extent of their participation in the work, making sure that their effort is significant enough to be considered as candidates for the specialization.

Promote the habit of academic writing

With a view to promote the habit of academic writing, the anesthesiology programs shall consider the possibility of including alternatives to research projects such as the production of book chapters or descriptive review articles accepted for publication.⁹ In those special cases, universities shall be

free to require that the review topic responds to a local or regional need; in as much as possible, the revision of the topic should be systematic; this means, asking a clinical question,¹⁰ a systematic literature search, evaluation and synthesis.¹¹ This process requires tutors who have been previously trained in the development of systematic literature and/or meta-analyses.¹²

The role of observational studies

Observational studies are the foundation for formulating experimental research hypothesis.¹³ We must emphasize that reports of case studies, case series,¹⁴ cross section, cases and controls and cohorts¹⁵⁻¹⁸ era designs that probably require less logistics and less human resources than clinical trials; however, they are more feasible and entail lower costs for the programs; analytical designs in anesthesia are particularly useful for selected populations¹⁹⁻²¹ and some, like cases and controls, allow for the evaluation of rare events.^{22,23}

Staffing

The human resources needed for developing a research project may be as large as the design and expectations require. Thus project managers must consider the involvement of other undergraduate or graduate students interested in participating.²⁴ The recommendation is to include nursing professionals or trainees interested in research processes.²⁵⁻²⁷ These strategies facilitate the success of the project by sharing the work load and specifying responsibilities in the project.

Recommendations for professors and anesthesiology programs

Professors' commitment

Anesthesiology professor should be familiar with the various processes of a research project since they are responsible for the continuity of the process.²⁸ In that regards, a constant follow-up of the graduate student is fundamental and will yield experience for future projects.²⁹ Anesthesiology programs should not only have professors specifically assigned to training students to respond to health care needs, but also formally trained professors in research. Interest and motivation of professors encourages the establishment of research ideas according to the guidelines of the department and facilitate the inflow of new students to such initiatives.³⁰ Anesthesiology programs are responsible for implementing strategies that guarantee that the research professor will enjoy time on his own to do his job.^{28,31}

Agenda planning

Every Anesthesia program shall manage a research agenda jointly with the students, that defines the practical³² and research²⁹ competencies in accordance with the year of training. There have to be clear goals to be achieved within the appropriate time frame of the fellowship. Formal commitments in this regard will not only avoid "last minute projects", but also will improve the academic performance of the various departments.

Research funding

High impact research projects require budget allocations, usually with outside support from the pharmaceutical industry or the national, regional, or local government.⁵ Anesthesiology programs should suggest training in developing protocols to universities that could eventually be sponsored by State agencies and the pharmaceutical industry. Hence the Departments may set up funds devoted for remunerating the staff that assists during sensitive stages of the trial, such as outcome recording and evaluation. Universities may not demand high impact research in the absence of policies designed to strengthening the budget allocations from outside agencies or from the University itself. It is imperative that hospitals, universities and even SCARE provide guidance to their students and associates regarding the various potential sources of financing.

Continuity of the research

Anesthesiology departments must take upon themselves the task of involving new graduate students for long-term projects, so that several students may be recruited, regardless of their year of training, to ensure continuity of the project and give graduate students the chance to be part of various initiatives simultaneously. Furthermore, participating in several projects will encourage collaboration among students who have to do tiring jobs such as sample collection. As already mentioned, anesthesiology programs must strive for multidisciplinary participation,⁵ meaning developing projects with the participation of graduate students from different specialties and professional nurses or trainees.

Allocation of professionals

In order to comply with the research agenda of quality and high-impact projects, ensuring their continuity, the recommendation is that each academic program formally assigns one anesthesiologist, or conditions permitting, a research section overseeing the progress of the projects and checking on the achievement of the proposed goals.³³ It is also suggested that this staff interrelates with the various committees of the research process (i.e., the ethics committee on research, among others), with a view to expediting the corresponding formalities.

Flexibility of academic curricula

The participation of numerous residents in a common project, the ease for evaluating their skills and the opportunities to generate and present knowledge, demand flexibility from the anesthesiology programs. Each program must adopt the necessary measures to adapt to the typical changes in the society of knowledge. This is a discussion that should take place inside the departments and universities. Thus, it should be a policy that each department regularly evaluates the curricular contents and exhibit the flexibility required to respond to the needs of our society, not just in terms of research, but also with regards to the health care, education, and extension activities in the community.

Recommendations for the Colombian Society of Anesthesiology and Resuscitation – SCARE

Organization of the methodological support group

A large number of projects by anesthesia graduate students are missing a specialized methodological support. SCARE could foster the creation of groups of experts in clinical epidemiology, methodology and biostatistics to support, provide guidance and actively participate in the various initiatives. This group will create links that facilitate the procurement of resources.

Setting up a web site

In order to take advantage of the potential of social networks and virtual communications, just as in other SCARE initiatives, setting up a Web site for sharing research experiences, relevant methodological documents, posting of notices for obtaining resources and on line courses with emphasis on academic writing, is strongly encouraged. Such site may promote the implementation of national and/or international networks to encourage multicenter research.

Promoting the research process

SCARE shall encourage the development of anesthesiology research through the organization of regional symposia and the creation of a taskforce devoted to research and publication within the framework of the national congress of Anesthesiology.³⁴ Anesthesiologists acknowledge the positive impact of the contests organized by SCARE within the context of the national congress, with regards to the inputs of its associates to publish in the Colombian Journal of Anesthesiology.³⁵ The recommendation is that in the future, not just all the papers accepted for presentation by speakers during the congress be published, but also the posters presented, either as a supplement to the journal or a separate issue. It is very important to develop the feedback mechanisms to the authors of these papers, with a view to improving the quality on the papers submitted for publication.

Incentive funds

Generating knowledge is not an easy task in our environment. For this reason, the interest of the anesthesiology students in generating high impact projects is commendable. To create visibility and motivation, strategies could be implemented to provide economic assistance to those students who have completed excellent papers so that they may be presented at international meetings.

Other recommendations

University hospitals have the responsibility to foster good relationships between the departments of anesthesiology and the local research ethics committees, so that the protocol is not unnecessarily delayed for approval, which is the case in many instances due to poor communications between the department and the ethics committee. The various health care providers (public or private) shall promote the establishment of their respective research ethics committee, in order

to consider, approve and do the necessary follow up to any initiative.

The impact of research should be measured, beginning with the center where the research took place and determining whether the results of the research resulted in any changes in everyday practice.

Funding

Department of Education of the Sociedad Colombiana de Anestesiología y Reanimación SCARE and the Sociedad Antioqueña de Anestesiología SADEA.

Conflict of interest

The authors have no conflicts of interest to declare.

Acknowledgements

To the Society of Anesthesiology and Resuscitation of Antioquia – SADEA – and the Colombian Society of Anesthesiology and Resuscitation – SCARE – for their valuable contribution to the organization and sponsorship of this event. To Dr. Gustavo Reyes, Scientific Deputy Director of SCARE, for his interest in the development of this initiative at the national level.

REFERENCES

- Mazmanian PE, Davis DA. Continuing medical education and the physician as a learner: guide to the evidence. *J Am Med Assoc.* 2002;288:1057–60.
- Mbuagbaw L, Thabane L, Ongolo-Zogo P, Lang T. The challenges and opportunities of conducting a clinical trial in a low resource setting: the case of the Cameroon mobile phone SMS (CAMPS) trial, an investigator initiated trial. *Trials.* 2011;12:145.
- Holmgren M, Schnitzer SA. Science on the rise in developing countries. *PLoS Biol.* 2004;2:E1.
- Glickman SW, McHutchison JG, Peterson ED, Cairns CB, Harrington RA, Califf RM, et al. Ethical and scientific implications of the globalization of clinical research. *N Engl J Med.* 2009;360:816–23.
- Schwinn DA, Balsler JR. Anesthesiology physician scientists in academic medicine: a wake-up call. *Anesthesiology.* 2006;104:170–8.
- Chaves A. Panel experiencia clínica e investigación científica. *Rev Colomb Anestesiología.* 2002;30:113.
- Kapur PA. The impact of new-generation physicians on the function of academic anesthesiology departments. *Curr Opin Anaesthesiol.* 2007;20:564–7.
- Garfield E. The history and meaning of the journal impact factor. *J Am Med Assoc.* 2006;295:90–3.
- Shapiro J, Kasman D, Shafer A. Words and wards: a model of reflective writing and its uses in medical education. *J Med Humanit.* 2006;27:231–44.
- Chaparro Gomez LE, Calvache España JA, Arbelaez Leon LM. Coadjuvant analgesics for cancer pain: using the clinical queries PubMed tool. *Cir Cir.* 2010;78:185–90.
- Choi PT, Halpern SH, Malik N, Jadad AR, Tramer MR, Walder B. Examining the evidence in anesthesia literature: a critical appraisal of systematic reviews. *Anesth Analg.* 2001;92:700–9.
- Delgado M, Moreno S, Gonzalez L. Conocimientos, actitudes y barreras hacia la investigación, las revisiones sistemáticas de la literatura y la colaboración Cochrane. Estudio de corte transversal. *Rev Colomb Anestesiología.* 2006;34:227–31.
- Concato J, Shah N, Horwitz RI. Randomized, controlled trials, observational studies, and the hierarchy of research designs. *N Engl J Med.* 2000;342:1887–92.
- Monsalve GA, Martinez CM, Gallo T, González MV, Arango G, Upegui A, et al. Paciente embarazada con enfermedad cardiaca: Manejo periparto basado en la estratificación del riesgo. Serie de casos 2005-2009. *Rev Colomb Anestesiología.* 2010;38:348–60.
- Chaparro L. Uso de los casos clínicos como estrategia didáctica en la enseñanza de anestesia. *Rev Colomb Anestesiología.* 2004;32:281–4.
- Fonseca Ruiz NJ, Castro DP, Guerra AM, Saldarriaga FM, Hernandez JD. Renal injury study in critical ill patients in accordance with the new definition given by the Acute Kidney Injury Network. *J Crit Care.* 2011;26:206–12.
- Montes FR, Sanchez SI, Giraldo JC, Rincón JD, Rincón IE, Vanegas MV, et al. The lack of benefit of tracheal extubation in the operating room after coronary artery bypass surgery. *Anesth Analg.* 2000;91:776–80.
- Moyano JR, Figueras A. The medical consumption of opioids in Colombia, 1997–2007. *J Pain Palliat Care Pharmacother.* 2010;24:367–73.
- Davidson AJ, Huang GH, Czarniecki C, Gibson MA, Stewart SA, Jansen K, et al. Awareness during anesthesia in children: a prospective cohort study. *Anesth Analg.* 2005;100:653–61.
- DiMaggio C, Sun LS, Kakavouli A, Byrne MW, Li G. A retrospective cohort study of the association of anesthesia and hernia repair surgery with behavioral and developmental disorders in young children. *J Neurosurg Anesthesiol.* 2009;21:286–91.
- Voepel-Lewis T, Malviya S, Tait AR. A prospective cohort study of emergence agitation in the pediatric postanesthesia care unit. *Anesth Analg.* 2003;96:1625–30.
- Macarthur A, Macarthur C, Weeks S. Epidural anaesthesia and low back pain after delivery: a prospective cohort study. *Br Med J.* 1995;311:1336–9.
- Wijeyesundera DN, Beattie WS, Austin PC, Hux JE, Laupacis A. Epidural anaesthesia and survival after intermediate-to-high risk non-cardiac surgery: a population-based cohort study. *Lancet.* 2008;372:562–9.
- Solomon SS, Tom SC, Pichert J, Wasserman D, Powers AC. Impact of medical student research in the development of physician-scientists. *J Investig Med.* 2003;51:149–56.
- Carroll DL, Greenwood R, Lynch KE, Sullivan JK, Ready CH, Fitzmaurice JB. Barriers and facilitators to the utilization of nursing research. *Clin Nurse Spec.* 1997;11:207–12.
- Hodge M, Kochie LD, Larsen L, Santiago M. Clinician-implemented research utilization in critical care. *Am J Crit Care.* 2003;12:361–6.
- Lapierre E, Ritchey K, Newhouse R. Barriers to research use in the PACU. *J Perianesth Nurs.* 2004;19:78–83.
- Reyes G. Perspectivas futuras de los programas de anestesiología. *Rev Colomb Anestesiología.* 2007;35:265–71.
- Knight PR, Wartier DC. Anesthesiology residency programs for physician scientists. *Anesthesiology.* 2006;104:1–4.
- Reves JG. We are what we make: transforming research in anesthesiology: the 45th Rovenstine Lecture. *Anesthesiology.* 2007;106:826–35.
- Abouleish AE, Apfelbaum JL, Prough DS, Williams JP, Roskoph JA, Johnston WE, et al. The prevalence and characteristics of incentive plans for clinical productivity among academic anesthesiology programs. *Anesth Analg.* 2005;100:493–501.

-
32. Reyes G. Formación por competencias en los programas de postgrado de anestesia. *Rev Colomb Anesthesiol.* 2004;32:55-64.
 33. Eslava J. La investigación en las Escuelas de Anestesiología. *Rev Colomb Anesthesiol.* 2003;31:223-5.
 34. Reyes G. Innovación y desarrollo científico. *Rev Colomb Anesthesiol.* 2009;37:98-9.
 35. Eslava J. Estado del arte de la investigación en anestesia. *Rev Colomb Anesthesiol.* 2002;30:53-9.