

CACCV SURVEY “REAL WORLD” CARDIOVASCULAR SURGERY TRAINING IN ARGENTINA. RESULTS

(*Cardiovascular Surgery, Vascular Surgery and Pediatric Cardiovascular Surgery*)

ABSTRACT

Objective: To identify the needs and demands of cardiovascular surgery trainee population in Argentina in order to enhance quality of learning. **Methods:** A voluntary, anonymous survey was created by Argentinian College of Cardiovascular Surgeons and distributed to members and non-members enrolled in different accredited cardiovascular surgery training pathways across Argentine. **Results:** A total of 83 trainees completed the survey (56.6% male). Fifty-one per cent chose for a combined training in cardiac and vascular surgery (cardiovascular), 34.9% only vascular and 14.5% pediatric cardiovascular surgery. The majority was part of an accredited training residency (59%). Most of respondents belonged to a public education system (49%). Prior general surgery training was informed by 67 (80.7%) surveyed. Endovascular training experience revealed that 17% performed > 50 annual procedures. However, 39.8% of participants reported not receiving endovascular training. Open surgery experience showed that 40% of responders performed > 50 cases annually (16% > 100 cases). Almost one-third of participants (27.7%) indicated no having academic development time. The choice of specialty and training paradigm option (residence, concurrence or fellowship) was highly considered for employability (47% and 60.2% respectively). The majority expressed to be pleased with overall training. **Conclusions:** More academic development time, increasing the number of endovascular procedures and assessing mentoring must be seriously considered. An independent, not-for profit, physician-led organization that sets and monitors standards for successful training programs is necessary.

Keywords: Cardiovascular surgery, medical education, surgical training, residency programs

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INTRODUCTION

Cardiac and vascular surgery training has undergone tremendous changes in the last years. The advent of endovascular therapies and minimally invasive techniques have led to redefine educational programs to better meet the evolving needs of young vascular specialists as they prepare to enter practice in a rapidly changing field^(1,2,3).

In Argentina, there are various training pathways⁽⁴⁻⁶⁾ with the goal of providing to graduated doctors the knowledge and essential practical skills to function as qualified practitioners with clinical judgment for the management of cardiovascular surgical patients. However, the level of education obtained is quite heterogeneous.

The purpose of this survey leading by the Argentinian College of Cardiovascular Surgeons (CACCv) was to know "real-world" cardiovascular surgery training in Argentina, identify the critical issues, demands and level of satisfaction of current trainee population.

METHODS

A 22 - electronic, voluntary, anonymous, multiple choice survey created by Google Form was distributed to CACCv members and nonmembers enrolled in a cardiovascular training programs (cardiac, vascular and pediatric) across Argentine Republic. The survey was available from July 11, 2020 through October 11, 2020 (Figure 1. https://raccv.com.ar/uploads/encuesta_residentes_formacion_cirugia_vascular-formularios_Google.pdf).

The responses were compiled and then analyzed. Data will be presented as a descriptive and not by statistical analysis.

RESULTS

The survey was answered by 83 trainees from different training paradigms (56.6%: male). Of the total of respondents, 49% belonged to a public education system. Fifty-one point six per cent chose for a combined training in cardiac and vascular surgery (cardiovascular), 34.9% only vascular and 14.5% pediatric cardiovascular surgery. Among all the respondents, 59% was part of an accredited training residency and 26.5% of a fellowship. An alternative training pathway called "Concurrence" (with a variation of workload and no financial remuneration) was reported in a 14.5% of surveyed.

Prior training in general surgery (GS) was reported in 80.7% of cases. The majority (90%) chose a GS residency pathway. The length of training was between 4 and 5 years (69.8%) and only 14.5%

were trained 1 year or less. Almost two-thirds of the surveyed reported they felt their previous GS training provided an advantage on performing future vascular procedures.

Looking at the overall cardiovascular operative experience and case volume recorded annually, our study revealed that a 39.8% of participants do not receive endovascular training. Among those who may access any endovascular teaching, the majority (67.8%) trained within own educational institution and during a period longer than 12 months. Seventeen per cent (n=14) performed > 50 annual procedures but only 3.8% (n=3) recorded > 100 cases.

Experience with open surgery was slightly better, with 40% (n=33) of responders reporting having performed up to 50 or greater than 100 cases annually.

Of all participants, 72.3% reported having research protected time and education including teaching conferences, vascular lab interpretation, hands-on or meeting participation. No academic development provided by educational institution was informed in 27.7% of surveyed.

As regards overall satisfaction, most of them stated that the impact of current trainings was positive. More than 70% expressed to be pleased with it. Only 10% answered to be unsatisfied.

The majority of learners reported that the choice of specialty as well training paradigm options were seriously taken into account for employability and future job opportunities (47% and 60.2% respectively). It was not considered in only 14.4% and 6.1% respectively.

When asked what could enhance their current trainings, the top responses included: increased cases volume (mainly endovascular procedures), simulation programs and external rotations in specialized centers, structured academic development time, assigned mentoring and supervised of training programs by accredited colleges or universities to assure an appropriate learning curve and met the specific educational goals and requirements for board certification exam.

The results of the survey are summarized in *Table I*.

ANALYSIS / CONCLUSIONS

Teaching and learning cardiovascular surgery undoubtedly are going through a transition. The endovascular revolution of the last years has created the need for additional specific training for the next generation of surgeons. The advent of new technologies and minimally invasive techniques (EVAR, TEVAR, TAVR or hybrid procedures) have led to restructure classical training programs^(1,2,3).

TABLE 1. Results of the survey.

QUESTIONS	OPTIONS	RESULTS (%)
GENDER	MALE	56.6
	FEMALE	43.4
SPECIALITY	CARDIOVASCULAR	63.9
	VASCULAR	34.9
	PEDIATRIC	14.5
GENERAL SURGERY TRAINING	YES	80.7
	RESIDENCY	90.1
	CONCURRENCE	9.9
	NO	19.3
YEARS OF GENERAL SURGERY TRAINING	1	14.5
	2	5.2
	3	10.5
	4	47.4
	5	22.4
CONSIDER A PRIOR GENERAL SURGERY TRAINING NEEDED?	YES	68.7
	NO	16.9
	INDIFFERENT	14.4
REQUIREMENT OF GS IN CURRENT VASCULAR TRAINING INSTITUTION?	YES	79.5
	NO	20.5
TYPE OF VASCULAR TRAINING INSTITUTION	PUBLIC	51.8
	PRIVATE	54.2
TRAINING PATHWAY	RESIDENCY (1/2+3)	59
	CONCURRENCE (1+4)	14.5
	FELLOWSHIP (5+2/3)	26.5
YEARS OF VASCULAR TRAINING	1	0
	2	8.4
	3	25.3
	4	45.8
	5	20.5
ENDOVASCULAR TRAINING	YES	60.2
	NO	39.8
LENGTH OF ENDOVASCULAR TRAINING	< 6 months	39.2
	6 - 12 months	13.7
	> 12 months	47.1
ENDOVASCULAR ROTATIONS	Inside own educational institution	67.5
	Outside own educational institution	32.5

OPEN VASCULAR CASE VOLUME	< 30	39.7
	30 - 50	20.4
	50 - 100	24
	> 100	15.9
ENDOVASCULAR CASE VOLUME	< 30	62.6
	30 - 50	20.4
	50 - 100	13.2
	> 100	3.8
ACADEMIC DEVELOPMENT	YES	72.3
	NO	27.7
DEGRE OF SATISFACTION WITH ACADEMIC DEVELOPMENT	VERY SATISFIED	10.8
	SATISFIED	59
	LESS SATISFIED	22.9
	UNSATISFIED	7.3
DEGREE OF SATISFACTION WITH OPERATIVE EXPERIENCE	VERY SATISFIED	25.3
	SATISFIED	48.2
	LESS SATISFIED	22.9
	UNSATISFIED	3.6
JOB SEARCH - SPECIALITY	HIGHLY CONSIDERED	47
	LESS CONSIDERED	38.6
	NO CONSIDERED	14.4
JOB SEARCH - TRAINING PATHWAY	HIGHLY CONSIDERED	60.2
	LESS CONSIDERED	33.7
	NO CONSIDERED	6.1

In Argentina, independent educational institutions (public or private) and regional medical associations offer diverse cardiovascular training programs and certification application conformed to own considered requirements⁽⁴⁻⁷⁾.

Nowadays, various pathways to become a board certified cardiovascular or vascular surgeon in our country exist.

We may cite:

- 1-2+3: 1 or 2 years of core surgery training followed by 3 years of advanced cardiovascular or vascular training.

- 1+4: An alternative pathway called "Concurrence" which involves less workload without financial remuneration and include 1 year of core general surgery followed by 4 years of advanced cardiovascular or vascular training.

- 5+2/3: Another paradigm is to complete general surgery training (5 years) followed by 2-3 year of cardiovascular surgery. Board certification in general

surgery is required. Nevertheless, this pathway is less and less offered by institutions.

In pediatric cardiovascular surgery, although training programs are very heterogeneous, most of them are grouped as residencies or fellowships. We may cite:

- 0+4: 5 years (4 years of pediatric cardiovascular surgery + 1year Chief-of-Resident).

- 2+4: 2 years of pediatric general surgery + 4 years of pediatric cardiovascular surgery.

- 4/5+4: 4 or 5 years of core surgery training followed by 4 years of advanced pediatric cardiovascular fellowship. Board certification in core surgery is required.

The results of our survey yielded several important findings regarding current cardiovascular training in our country. First of all, it is clear from our survey that prior core surgery training is not debatable to get basic surgical skills. But the question is: How should general surgery training be integrated

into the cardiovascular career? Although, all current training programs include one or two year on learning core surgery, perhaps the topic of discussion should not be the duration of such training but how do we focus on teaching the necessary requirements for qualification to a cardiovascular specialization in a shorter period of time.

This survey also demonstrated that operative experience seems to be limited. Overall volume of procedures performed annually by trainees are quite low and even a significant number of students do not have access to endovascular training. Besides, most of them are obliged to rotate outside of own institutions.

In Argentina operative experience for cardiovascular, vascular or pediatric trainees is highly variable in terms of overall case requirements. There is not specific number of major cases defined for each year/training. Only operative requirements may be determined at individual training centers. Stablishing and performing minimum numbers of cases should be necessary for appropriate competency. A comprehensive and standardized protocol would allow documenting the level of training among students and comparing results between training centers.

Simulation has emerged as a radical innovation in the traditional medical teaching methods in the last years. These new training models assure the trainees the acquisition of elemental surgical skills allowing them to achieve mastery and sufficient confidence prior to contact with the patient. Since these advantages, including competence assessment, it is desirable that this method be used to teach and evaluate resident doctors with the aim to improve the quality of learning. In our country, some training and teaching centres have already started to use this educational tool.

As regards academic development, an alarming 30% of respondents indicated that their training programs have not dedicated research and educational time. This is a matter of big concern. Comprehensive clinical learning of the global cardiovascular system, guided research development and lessons learned to manage complex cases are fundamental to acquire an appropriate surgical judgment and become a well-rounded and a proficient specialist. These results illustrate a greatly opportunity for educators to enhance academic quality and research time for young trainees. The validation of the educational programs should be approved and supervised by a government and academic entity.

The CACCV was born in 1975 with the aim of promoting and improving the dissemination of

knowledge concerning all aspects of cardiovascular diseases and becoming the primary source of cardiovascular surgeon advice and advocacy in social, economic, ethical and legal issues related to their specialty^(8,9). Together with the Ministry of Health, CACCV provides Board Certification in Cardiovascular, Vascular or Pediatric cardiovascular surgery to those trainees who have met the basic set of standards (requirements), skills, knowledge and attitudes necessary to take personal responsibility for the individual care of patients.

Futhermore, our College actively participates teaching trainees doctors. Various training courses on either cardiac, vascular or pediatric surgery including "Hands-on" focussed on surgical skills devel-opment are offered. However, due to these are non-mandatory activities, a great diversity and heterogeneity of levels of education and training may be noted.

In 3 years (2017, 2018 y 2019), CACCV provided 44 Board Certifications in cardiovascular (27) and vascular surgery (17). However, we have appreciated a continuous decrease in the amount of applicants.

Finally, we may conclude that the development of a structured theoretical-academic program associated with a further access to surgical procedures and rotations in specialized centers especially in endovascular techniques are the key points to examine and improve in order to meet young surgeons `s demands and improve cardiovascular surgery teaching.

It seems to be relevant the creation of an independent, not-for profit, physicianled organization that sets and monitors the minimum and uniform standards to ensure the best practice in the field achieving an equal educational level around our country.

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Conflicts of interest

The authors have no disclosures to declare.

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