

## Cardiac Surgery Training in Pakistan

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**Keywords:** FCPS Cardiac Surgery; CPSP recognised centres; FCPS-Examinations; Fellowship training

Cardiac Surgery is fast expanding clinical specialty in Pakistan. There is a well-established structured fellowship training program (FCPS) for this super-specialty [1]. However, there are differences and concerns regarding the safety & quality of cardiac surgery training in different recognized centers across Pakistan. For entry into the clinical fellowship program passing FCPS-I examination is mandatory. Most of the civil training centers have adopted a 05 years intense training curriculum, with 02 years in General Surgery & Allied specialties, followed by intermediate examination (IMM), and then 03 years in Cardiac Surgery discipline ending at exit examination (FCPS-II). However, for in-service military officers there is a longer path comprising of 04 years in General Surgery & Allied specialties with exit exam (FCPS-II) in general surgery, followed by entry into Cardiac Surgery discipline as 2nd fellowship for 03 years, then completed by exit (FCPS-II) examination in Cardiac Surgery subjects. The same examination (FCPS-II Cardiac Surgery) is held for all the civil and military candidates in various CPSP designated centers throughout Pakistan. Similar differences and concerns exist in other countries across the globe. Clinical training for cardiac surgery discipline in Germany has undergone a series of changes. Integrated curriculum extending through 06 years, has been created in Germany which is based on acquisition of specific expertise rather than a rigid time frame. As a result, the competency-based training paradigm is created. At the successful completion and compliance with the curricular requirements of exit examination, the Federal Medical Chamber grants the status of a licensed specialist (“Facharzt”) by issuing a certificate, which is required for independent clinical practice. No further recertification is needed during later course of the physicians’ professional career. In Germany, the educational curriculum for specialized training in Cardiac Surgery is prepared by the National Medical Chamber in cooperation with the respective surgical societies and approved by the German Medical Assembly [2]. There is an ominous need for the development and validation of a procedure-specific, objective assessment tool for cardiac surgical operations having consistency among evaluators with different experience. Some researchers have tried to develop a platform for quantifying and accurately evaluating performance, which will be exceedingly useful in training and developing the newer generations of heart surgeons [3]. Simulation models have been strongly advocated for the full range of cardiac surgery procedures to facilitate the evolution to competency-based training program. This inevitable paradigm shift in residency training, has already been established in other procedural specialties. Simulation models-based approach can yield better and faster competency acquisition for the cardiac surgery trainees, as well as improved quality of care and patient safety [4]. “Competence by Design initiative” term is used for the pathway of cardiac surgery training that was desired to be effective as of 2018 in Canada. The objectives of this competency-based curriculum were to improve training and competence acquisition as opposed to a time-based rationale model in the past. Out of the

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**Citation:** Muhammad Aasim. Cardiac Surgery Training in Pakistan. Archives of Clinical and Medical Case Reports 6 (2022): 622-623.

**Received:** July 28, 2022

**Accepted:** August 23, 2022

**Published:** September 05, 2022

major innovations in this program, it is suggested that the last year of the training will become a transition period between residency status and attending practice [5]. Cardiac surgery training programs and cardiovascular surgery practices are structured in Colombia based on characteristics adapted from North American cardiac surgical education and practices. In Colombia, cardiovascular surgery practice and training are shaped by following the footsteps of North American and European standards [6]. Training the Cardiac Surgeons through accredited residency programs in the United States of America (USA) are restricted by 80 hours per week timings, while German residents' working hours are restricted to 42 hours per week with additional hours (averaging 4-8 on call nights) per month [7]. In Pakistan, although there are certain defined working hours for the training programs; however, the working hours, quality of work and competency acquisition largely depend upon the training centers, program directors/supervisors and most importantly the attitude of the incumbent trainee. Currently, there are 04 different pathways to become a board-certified cardiothoracic surgeon in the USA. The "most common pathway" comprises of 05 years training in general surgery, followed by additional 02 to 03 years of dedicated cardiothoracic surgery fellowship, while board certification in general surgery is not mandatory. The "4/3 joint training pathway" covers 04 years of general surgery residency training followed by 02 years of cardiothoracic surgery fellowship, both parts of the training have to be completed at the same institution. Despite the name, total duration of the training is not shortened, it only provides somewhat increased exposure to cardiothoracic surgery compared to the most common pathway. The "integrated pathway", is constituted by six years of dedicated training in cardiothoracic surgery with related surgical and non-surgical specialties. It does include 24 months of core general surgery training, however board certification in general surgery is not allowed. The other pathway to become a cardiothoracic surgeon is to complete integrated vascular surgery residency (05 years) followed by regular 02 to 03 years cardiothoracic surgery fellowship. Board certification in vascular surgery is required to enter cardiothoracic surgery fellowship [7]. To

conclude, there is a severe shortage of properly trained and properly certified Cardiac Surgeons in Pakistan as compared to the contemporary Cardiology Physicians. We need to study the experience of the developed world and then to design a goal-oriented training program for resident doctors of Cardiac Surgery in Pakistan, in order to improve appropriate guidelines-based therapies for cardiac patients in Pakistan.

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