**Adult Cardiology**

Adult cardiology deals with the evaluation and management of disorders of the cardiovascular system. These include coronary artery disease, valvular heart disease, heart failure, adult congenital heart disease, myocardial/pericardial diseases, arrhythmias and systemic hypertension.

Adult cardiology service began as soon as the University Hospital opened and by 1993 had evolved into a separate section within the Department of Internal Medicine. In 1997 a CPSP approved residency programme was initiated. Since then the programme has graduated 23 cardiologists who are currently serving as faculty not only within Aga Khan University Hospital but also at other premier institutions throughout the country and abroad.

It is the most comprehensive training programme of its kind in Pakistan. It aims at providing training in all aspects of clinical and investigational cardiology including echocardiography, nuclear cardiology, invasive cardiology, cardiac electrophysiology as well as exposure to paediatric cardiology and cardiac surgery, thereby leading to development of independent, academically qualified and clinically competent cardiologists.

The nature of this specialty is such that it demands a great deal of time and effort in terms of patient care both on the part of faculty as well as the trainees. However, the training programme has been structured in such a way that it has a very strong academic and research component.

With the astronomical increase in the incidence and prevalence of cardiac diseases in our country, there is an ever growing need for well-trained cardiologists. In recent years several new institutions have opened throughout the country where graduates of our residency programme have been eagerly accepted. Moreover, some of our graduates have had the opportunity of further sub-specialized training in reputable institutions abroad.

**Objective**

The main objective of Cardiology Residency Programme is to produce knowledgeable and skilled cardiologists, who at the end of their training are able to:

- Independently manage routine and complex acute and chronic adult cardiac problems
- Diagnose routine paediatric cardiac problems and start initial management
- Manage ambulatory cardiac patients independently
- Teach students, interns and residents
- Manage pre- and post-operative cardiac and hemodynamic complications in cardiac and non-cardiac surgical patients
- Independently perform and interpret non-invasive cardiac diagnostic procedures, e.g. ETT, Echo, Doppler studies, ambulatory blood pressure (ABPM), ECG monitoring (Holter monitor) and nuclear cardiac imaging
- Independently perform central line insertion with bedside hemodynamic monitoring, temporary pacemaker insertion, and pericardiocentesis
- Independently perform right and left cardiac catheterization
- Observe and assist in coronary, valvular interventions, electrophysiological studies/ablations and device implantation
- Understand the basic principles of research; design and conduct a study to the final stages of manuscript writing and publication
- Devote extended (elective) time in area of interest, acquiring in-depth skills in nuclear cardiology, stress echo, trans-esophageal echo, cardiac electrophysiology and cardiac intervention at AKU and other centers of excellence.

**Duration of training**

The selected candidates are required to undergo a comprehensive training for a period of three years.
Eligibility

- MBBS or equivalent degree approved by PM&DC
- One year of house job or internship, of which six months should be in medicine and six months in surgery and allied fields
- Two years training in Internal Medicine
- Eligible to appear in Medicine Intermediate examination (MCPS) or FCPS (Medicine) examination conducted by CPSP. Candidates holding FCPS (Medicine) or equivalent diploma may have preference.

The selection process is based purely on merit.

Scope and content

The programme follows the recommendations of the College of Physicians and Surgeons, Pakistan (CPSP) and also incorporates the guidelines established by the American College of Cardiology (ACC) for training in Adult Cardiovascular Medicine.

Direct patient management
Inpatient consult service (6 months), inpatient CCU service (6 months) and outpatient weekly clinic over three years will be utilised for clinical bedside teaching under the supervision of faculty.

Non-invasive (8 months)
Stress testing, EKG interpretation, echocardiography (including stress echocardiograms and transesophageal echocardiograms) and cardiac nuclear studies will be performed and interpreted by the resident under supervision.

Cardiac catheterization (6 months)
The resident will perform left and right heart catheterization under supervision. At the end of the residency, they will have had adequate training to perform these procedures independently. There will also be additional exposure to cardiac interventions.

Clinical electrophysiology and arrhythmias (6 months)
The resident will participate in invasive electrophysiology studies, ablations and pacemaker/device implantations. S/he will also participate in a weekly pacemaker clinic.

Paediatric cardiology
In-patient and outpatient clinics (1 month), pediatric echocardiography (6 months simultaneously with the echo rotation) and invasive pediatric cardiology (6 months simultaneously with cardiac catheterisation rotation).

Cardiothoracic surgery (1 month)
Apart from a dedicated one-month rotation through cardiothoracic surgery, residents continuously learn about management of cardiac surgery patients through regular interaction during their inpatient/consultation and cath lab rotations.

Research (3 months)
Strong emphasis is placed on research; protected time for research activities and teaching in research methodology will be provided. All residents are expected to produce papers that would be considered for publication in peer-reviewed journals.

Electives (2 months)
Residents are encouraged to spend time at other centers of excellence to enable them to get a broader experience.

Leave

Three months, with one month per year.
Structured academic/teaching activities

Apart from the above mentioned rotations, cardiology residents are expected to attend the following teaching sessions organized by the department of medicine and the section of cardiology

Department of Medicine

- Medicine Grand Rounds
- Clinical practice guidelines presentation
- Journal club
- Mortality and morbidity meeting
- Professor's lecture
- Clinical quality indicators
- Residents Grand Round

Section of Cardiology

Weekly

- Weekly audit
- EKG rounds
- Resident presentation

Monthly

- Echocardiography conference
- Resident presentation – core curriculum topics
- Cardiac cath conference
- Journal club
- Cardiac imaging conference
- Cardiac EP and device rounds (once in 3 months)

On-call duties

The resident will take call once every fourth night in the hospital.

Positions available

Three residents are recruited each year.

Administrative set-up

The Cardiology section is an independent functioning unit within the Department of Medicine. It has eight full-time faculty and 7 non full-time faculty members. Dr Khawar Kazmi, Associate Professor is the Head of Cardiology section and Dr Aamir Hameed Khan, Assistant Professor is the programme director of the Cardiology Residency programme.
Full-time Faculty

Professors

Dr Mohammad Ataullah Khan
MBBS Sindh, FRCP London, FACP USA

Dr. Khawar Kazmi
MBBS (Punjab); FCPS (Medicine); Fellowship in Cardiology (UK)

Associate Professors

Dr Aamir Hameed Khan
MBBS (Punjab); FCPS (Internal Medicine and Cardiology) Pakistan, FACC
Programme Director

Dr Fatehali Tipoo Sultan
MBBS Karachi; FCPS (Internal Medicine and Cardiology) Pakistan;
Diploma (Clinical Cardiology)

Assistant Professors

Dr Javed Majid Tai
MBBS Karachi; FCPS (Medicine and Cardiology) Pakistan

Dr. Nasir Rehman
MBBS (Punjab); FCPS (Medicine and Cardiology) Pakistan

Senior instructors

Dr Fariha Sadiq Ali
MBBS; MRCP (UK); FCPS (Cardiology) Pakistan

Dr. Sadia Arshad
MBBS (Karachi); FCPS (Medicine and Cardiology), MSc. Pakistan

Dr. Saira Bukhari
MBBS (Karachi); FCPS (Cardiology) Pakistan

Part-time Faculty

Dr Sajid H. Dhakam
MBBS AKU, FACC, FSCAI
Diplomate American Boards of Internal Medicine, Cardiovascular Diseases and Interventional Cardiology

Dr Abu Bakr Shaikh
MBBS Karachi
Diplomate American Boards of Internal Medicine and Cardiovascular Diseases

Dr Mohammad Ishaq
MBBS Peshawar; FRCP Edinburgh, Glasgow and London; FACC USA

Dr Mohammad Sharif
MBBS Karachi; FRCP Edinburgh and Glasgow; FCPS Pakistan
Dr Nageeb Basir
MBBS Peshawar; FRCP Ireland; Diploma in Cardiology, London