

Cardiac surgery needs assessment tool

Case report form (CRF)

Person conducting interview:

Date(s) of interview:

Facility Name and Country:

IEC/IRB Approval Number and Date:

Name of persons providing information:

Title:

Email:

Mailing address:

Phone:

Contextual data of the country

- Total population
- Life expectancy M/F
- World Bank Income groups
- Gross domestic product per capita (US\$)
- Gross national income per capita (US\$)
- The Per capita total expenditure on health at average exchange rate
- Percentage of the per capita that the government is paying (%)
- The 5 most common overall causes of death in all age groups
- The 3 most common causes of cardiovascular death in children (5-14 y.o)
- The 3 most common causes of cardiovascular death in adults (15-49 y.o)
- Maternal mortality per 100,000 live births
- Infant mortality per 1,000 live births
- Under-5 mortality rate per 1,000 live births
- Age of cardiac surgery programme (years)

* Those data can be collected a priori on those websites: World Bank and the World Health Organization (WHO), the UNICEF and from cardiovascular disease burden data from the Institute for Health Metrics and Evaluation (GBD 2015 Study) ⁹⁻¹²

Cardiac Surgery facilities and areas

1- What is the total number of the population in your country?

2- How many cardiac surgery centres in your country?

3- Where is/are geographically located the cardiac surgery centres?

4- Facility type where the cardiac surgery services are dispensed:

Please check all that apply:

Public/governmental

Private for-profit
Private not for-profit
Public/Private partnership

5- Service Areas of the cardiac surgery centre

Please check all that apply:

National referral hospital
Regional hospital
District hospital

6- Population served

Please check all that apply

Rural
Urban
Both rural and urban
Other. Please describe

7- What is the proportion of individuals living in the urban versus rural areas?

8- How many national referral hospitals in your country?

9- How many regional hospitals in your country?

10- What is the average distance (km) for access to a secondary or tertiary healthcare facility for the population in your country?

Governance, administration and leadership

11- Do or did you have governmental support for the development of your cardiac surgery programme? Please elaborate.

12- Do you have governmental support for the maintenance of your cardiac surgery programme?

13- If the facility is in the public sector, do you have access to private partnership for monetary support?

14- If the facility is in the private sector, where is your monetary support coming from?

Please select all that apply and describe/name

Philanthropic.
Charity
NGOs
Local organizations
International organizations

15- Does your country have a national health insurance plan? What is the percentage of the population that have access to it?

- 16- How much money do you get per year from the government or private funds to run your **cardiac surgery** programme?
- 17- How much money do you get per year from the government or private funds to run your **cardiology** programme?
- 18- What would be the ideal annual budget to run your **cardiac surgery** programme?
- 19- What would be the ideal annual budget to run your **cardiology** program?
- 20- Is there a co-payment fee paid by the patients that are treated at your institution? If yes, what is the percentage or amount of this fee?
- 21- What is the percentage of those patients that can actually afford paying the co-payment fee?
- 22- If the patients cannot afford the co-payment fee, do you treat them for free?
- 23- How do you determine patient's eligibility for free cardiac healthcare services in the public sector?
- 24- Do you have a dedicated Heart Institute or Heart centre?
- 25- Is your programme affiliated with an University? Which one?
- 26- Do you have a director of the hospital?
- 27- Is the director a physician? *If yes, specify in which specialty?*
- 28- Do you have a chief of cardiac surgery?
- 29- Do you have a chief of cardiology?
- 30- Do you have administrative meetings? *If yes, at which frequency?*
- 31- Do you have morbidities and mortality meetings? *If yes, at which frequency?*
- 32- Do you have multidisciplinary meetings with cardiologists and cardiac surgeons and other allied health professionals? *If yes, at which frequency?*
- 33- Does your cardiac surgery department have **working** agreement (s) with abroad institutions? *Please specify which institutions.* Is (are) this (those) agreement (s) bidirectional or unidirectional?
- 34- Does the cardiac surgery department have **teaching/mentorship** agreement (s) with abroad institutions? *Please specify which institutions.* Is (are) this (those) agreement (s) bidirectional or unidirectional?

- 35- Do humanitarian missions/NGOs come at your institution and at which frequency? Could you please name the missions or NGOs?
- 36- Does the cardiology department have **working** agreement (s) with abroad institutions? *Please specify which institutions.* Is (are) this (those) agreement (s) bidirectional or unidirectional?
- 37- Does the cardiology department have **teaching** agreement (s) with abroad institutions? *Please specify which institutions.* Is (are) this (those) agreement (s) bidirectional or unidirectional?
- 38- Do you have to send patients abroad for complex surgical or interventional procedures?
- 39- With who do you have this (those) agreement(s) to send complex cases abroad? *Please name the institutions and specify criteria to send patient abroad.*
- 40- Does the government pay for the totality of the care of the patients sent abroad? If the government is not paying for the totality of the cost of the care, please explain who and how the costs are shared.
- 41- Do you have a medical school in the city or in the country? Since when? *Please specify the date.*
- 42- Do you have a postgraduate **cardiac surgery** training programme at your institution?
If not, where do you send your trainees for specialized training?
- 43- Do you have a postgraduate **cardiology** training programme at your institution?
If not, where do you send your trainees for specialized training?
- 44- Do you have a postgraduate interventional cardiology training programme at your institution?
If not, where do you send your trainees for specialized training?
- 45- Does the government have a contractual agreement with local trainees sent abroad for their specialized training in order for them to come back and practice locally for a certain number of years? *Please describe.*
- 46- Does the hospital keep the patients' medical record in archives?
- 47- Are those retrievable when the patient comes back for an appointment or hospitalization?
- 48- Does the patient leave the hospital with his medical record?
- 49- Do you have a computerized system for the patients' medical records?
- 50- Do you have access to patients' death records?

Population access to care

- 51- What is the percentage of the population that has access to cardiac healthcare in the private sector?
- 52- What is the percentage of the population of the country that lives around the area where the cardiac specialized care are dispensed?
- 53- Do the **cardiac surgeons** perform consultations for specialized cardiac cares in outreach clinics or any other satellites clinics? *Please specify where?* If yes: do you need to bring your own equipment in those clinics and what kind of equipment?
- 54- Do the **cardiologists** (paediatric or adult) perform consultations for specialized cardiac cares in outreach clinics or any other satellites clinics? *Please specify where?* If yes: do you need to bring your own equipment in those clinics and what kind of equipment?
- 55- Is (are) there cardiologist(s) (paediatric or adult) physically established in satellites clinics or any other hospital settings other than the centre where cardiac surgery is performed?
- 56- How do you transfer the patients living in remote areas to the National Referral Hospital if further cares are needed? *Please describe and explain who is paying for this service.*
- 57- For the totally of the cardiac surgical needs in your country, do you feel that the demand exceeds the offer? *Please explain.*
- 58- What is the percentage of compliance to follow-up of the paediatric patients who had a cardiac surgery?
- 59- What is the percentage of compliance to follow-up of the adult patients who had a cardiac surgery?
- 60- What is the percentage of compliance to follow-up of the paediatric patients seen by cardiologists?
- 61- What is the percentage of compliance to follow-up of the adult patients seen by cardiologists?
- 62- What is the percentage of compliance to cardiac medications in the paediatric population?
- 63- What is the percentage of compliance to cardiac medications in the adult population?
- 64- What is your method for keeping track of the patients that are seen?
- 65- Who is calling the patients to schedule their procedures?

Human Resources

- 66- How many cardiac surgeons actively practice cardiac surgery in the country?

- 67- How many adult cardiologists actively practice cardiology in the country?
- 68- How many paediatric cardiologists actively practice cardiology in the country?
- 69- How many cardiologists performed paediatric interventional cardiology in the country?
- 70- How many cardiologists performed adult interventional cardiology in the country?
- 71- How many surgical assistants do you have in your centre and what was their original training or where did they get trained? *Please describe.*
- 72- How many formerly trained cardiac intensivists (doctor that takes care of the intensive care unit) in the country?
- 73- How many formerly trained perfusionists in the country?
- 74- How many formerly trained cardiac surgery/cardiology nurses in the country?
- 75- How many formerly trained cardiac anaesthesiologists in the country?
- 76- How many formerly trained cardiac technicians in the country (echocardiography, catheterization lab, EKG, pacemaker)?
- 77- How many cardiac surgery registrars in your department?
- 78- How many general surgery registrars in your department?
- 79- How many medical officers in the cardiology department?
- 80- How many medical officers in the cardiac surgery department?
- 81- How many medical officers in the intensive care unit department?
- 82- How many cardiology registrars in your department?
- 83- Do you actually have cardiac surgery trainees abroad for formal training? *Please specify where and how many.*
- 84- Do you actually have adult and paediatric cardiology trainees abroad for formal training? *Please specify where and how many.*
- 85- Do you actually have adult and paediatric interventional cardiology trainees abroad for formal training? *Please specify where and how many.*
- 86- Do you actually have intensive care unit trainees abroad for formal training? *Please specify where and how many.*

87- Do you actually have perfusionist trainees abroad for formal training? *Please specify where and how many.*

88- Do you actually have cardiac anaesthesiologist trainees abroad for formal training? *Please specify where and how many.*

89- Please describe the staffing structure and the distribution of work Public versus Private (Please enter the number **of hours** worked during the week in every sector)

Cardiac Surgeons

Public sector	Cardiac Surgeon 1	Cardiac Surgeon 2	Cardiac Surgeon 3
Full-time:			
Part-time:			
Days worked per week in public sector:			

Private sector	Cardiac Surgeon 1	Cardiac Surgeon 2	Cardiac Surgeon 3
Full-time:			
Part-time:			
Days worked per week in private sector:			

Adult Cardiologists

Public sector	Adult Cardiologist 1	Adult Cardiologist 2	Adult Cardiologist 3
Full-time:			
Part-time:			
Days worked per week in public sector:			

Private sector	Adult Cardiologist 1	Adult Cardiologist 2	Adult Cardiologist 3
Full-time:			
Part-time:			
Days worked per week in private sector:			

Paediatric Cardiologists

Public sector	Paed Cardiologist 1	Paed Cardiologist 2	Paed Cardiologist 3
Full-time:			

Part-time:			
Days worked per week in public sector:			

<i>Private sector</i>	Paed Cardiologist 1	Paed Cardiologist 2	Paed Cardiologist 3
Full-time:			
Part-time:			
Days worked per week in private sector:			

Perfusionists

<i>Public sector</i>	Perfusionist 1	Perfusionist 2	Perfusionist 3
Full-time:			
Part-time:			
Days worked per week in public sector:			

<i>Private sector</i>	Perfusionist 1	Perfusionist 2	Perfusionist 3
Full-time:			
Part-time:			
Days worked per week in private sector:			

Intensivists

<i>Public sector</i>	Intensivist 1	Intensivist 2	Intensivist 3
Full-time:			
Part-time:			
Days worked per week in public sector:			

<i>Private sector</i>	Intensivist 1	Intensivist 2	Intensivist 3
Full-time:			
Part-time:			
Days worked per week in private sector:			

Cardiac Anaesthesiologists

<i>Public sector</i>	Anaesthesiologist 1	Anaesthesiologist 2	Anaesthesiologist 3
Full-time:			
Part-time:			
Days worked per week in public sector:			

<i>Private sector</i>	Anaesthesiologist 1	Anaesthesiologist 2	Anaesthesiologist 3
Full-time:			
Part-time:			
Days worked per week in private sector:			

Cardiac specialized nurses

<i>Public sector</i>	Nurse 1	Nurse 2	Nurse 3
Full-time:			
Part-time:			
Days worked per week in public sector:			

<i>Private sector</i>	Nurse 1	Nurse 2	Nurse 3
Full-time:			
Part-time:			
Days worked per week in private sector:			

Cardiology technicians

<i>Public sector</i>	Technician 1	Technician 2	Technician 3
Full-time:			
Part-time:			
Days worked per week in public sector:			

<i>Private sector</i>	Technician 1	Technician 2	Technician 3
Full-time:			
Part-time:			

Days worked per week in private sector:			
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90- Do you have dedicated physical therapist for the cardiac surgery service?

91- Do you have dedicated occupational therapist for the cardiac surgery service?

92- Do you have dedicated respiratory therapist for the cardiac surgery service?

93- Do you have dedicated dietician for the cardiac surgery service?

Physicians' training

Please describe.

94- Where has been done the cardiac surgeons' training? How many years total?

95- Where has been done the cardiologists' training? How many years total?

96- Where has been done the interventional cardiologists' training? How many years total?

Physicians' Practice

97- How many days do the cardiac surgeons work per week?

98- How many clinics per week do the cardiac surgeons? How many patients do they see per clinic?

99- Do they have pre-surgical clinics to prepare and schedule patients? How many per months?

100- How many days do the cardiologists work per week?

101- How many days do the interventional cardiologists work per week?

102- How many calls do the cardiac surgeons take per week?

103- How many calls do the cardiologist take per week?

104- How many calls do the interventional cardiologist take per week?

105- How many paediatric congenital cardiac surgery cases are done per year (until 18 years old)?

106- How many adult congenital cardiac surgery cases are done per year?

107- How many cardiac surgery cases of valvular rheumatic heart diseases (RHD) are done per year?

108- How many valvular cases other than for rheumatic heart disease are done per year?

109- How many coronary artery bypass grafts cases are done per year?

110- How many cases of aortic aneurysm, aortic dissection, pericardectomy, exploration for tamponade, transplantation or any other cases are done per year?

111- Give a percentage for the distribution of cases that you see at your institutions. (*Please include RHD, congenital, valvular not RHD, ischemic and other*) (*Total should be 100%*)

Congenital	Adult congenital	RHD	Valvular not RHD	Ischemic	Other

112- How many paediatric cardiac surgery emergency cases do you do per year?

113- How many adult cardiac surgery emergency cases do you do per year?

114- How many patients are on the cardiac surgery waiting list for rheumatic heart pathology?

115- How many patients are on the cardiac surgery waiting list for congenital heart pathology?

116- How many patients are on the cardiac surgery waiting list for ischemic heart pathology?

117- How many patients are on the cardiac surgery waiting list for structural heart pathology excluding rheumatic?

118- What is the average time spent on the waiting list?

119- What is the percentage of patients that die on the waiting list per year?

120- Do you know the perioperative mortality rate related to congenital cardiac surgery in your centre in the last year? Where does this data come from? (personal logbook, impression, database?)

121. Do you know the perioperative mortality rate related to adult cardiac surgery (including RHD) in your centre in the last year? Where does this data come from? (personal logbook, impression, database?)

122. What are the main reasons for the patients' death? *Please select all that apply.*

No intensive care unit support

Lack of intraoperative material to support and treat the patients

No access to proper cardiac medications

No access to proper blood products

Lack of surgical expertise to perform the cases
Infections
Insidious findings during the surgery
Other. Please describe.

123. Please describe how the selection of surgical patients is done and how you prioritize them?

124. Please select all the cardiac surgery cases that are performed at your institution

Atrial septal defect
Ventricular septal defect
Complete atrio-ventricular canal defect
Partial atrio-ventricular canal defect
Surgical patent ductus arteriosus ligation or closure
Blalock-Taussig shunts
Fontan operation
Hypoplastic left heart-Norwood procedure
Partial anomalous pulmonary venous repair
Aorto-pulmonary window repair
Absent pulmonary valve repair
Tetralogy of Fallot repair
Surgical repair of coarctation of the aorta
Surgical repair of great vessels transposition
Pulmonary atresia repair
Aortic valve repair or replacement
Mitral valve repair or replacement
Tricuspid valve repair or replacement
Pulmonary valve repair or replacement
Coronary artery bypass grafts
Ebstein's anomaly repair
Anomalous origin of the coronary arteries
Septal myectomy
Interrupted aortic arch repair
Vascular ring repair
Ross procedure
Kawasaki disease treatment
Replacement of aortic root/ascending aorta/arch/descending
Tamponade exploration/pericardial windows
Pericardiectomy
Resection of cardiac tumors
Implantation of right or left ventricular assisted devices
Heart transplantation
MAZE surgery for atrial fibrillation
Implantation of pacemaker, defibrillator
Hypertension, pulmonary treatment
Hypertension, systemic treatment
Other. Please specify.

125. How many paediatric patients are seen in cardiology clinic per year?
126. How many adult patients are seen in cardiology clinic per year?
127. How many echocardiographies are performed per year in the paediatric population?
128. How many echocardiographies are performed per year in the adult population?
129. How many congenital interventional cardiology cases are done per year?
130. How many adult interventional cardiology cases are done per year?
131. Who is involved in the interventional procedures? *Please select all that apply.*
- Cardiologist only
 - Cardiac surgery only
 - Cardiology and cardiac surgery actively working together
 - Cardiology actively working and cardiac surgery as a back up
132. For what kind of procedures do you need a surgical backup? *Please name.*
133. How many interventional cardiology emergencies are done per year?
134. Please select all the interventional cardiology cases that are performed at your institution:
- Atrial septal defect closure
 - Ventricular septal defect closure
 - Patent ductus arteriosus closure, coiling
 - Pulmonary valve replacement
 - Pulmonary valve balloon valvuloplasty
 - Mitral valve balloon valvuloplasty
 - Transcatheter repair of aortic coarctation
 - Percutaneous aortic valve replacement
 - Rashkind procedure/Balloon septostomy
 - IVC filter
 - Aortic endoprosthesis
 - Diagnostic left heart cath
 - Diagnostic right heart cath
 - Diagnostic/interventional angiographies (cerebral)
 - Diagnostic/interventional angiographies (renal)
 - Diagnostic/interventional angiographies (coronary)
 - Diagnostic/interventional angiographies (carotids)
 - Pacemaker/ICD/BIV implantation
 - Catheter interventions for hypertension
135. How many paediatric patients are on the interventional cardiology waiting list for diagnostic or interventional catheterization procedures?

136. How many adult patients are on the interventional cardiology waiting list for diagnostic or interventional catheterization procedures?

137. What is the average time spent on the waiting list for an interventional catheterization procedure?

138. What is the percentage of the patients that die on the waiting list per year (for procedure mentioned in question 137)?

139. How many cardiac surgery cases are cancelled per year?

140. What are the reasons for cancellation? *Please check all that apply:*

No consumables

Lack of human resources

Lack of funding

Power outage

Water sanitation issues

Hospital renovations

Equipment defect

No access to blood products

Patient is too sick or refused

Patient never showed up

Other. Please specify

141. How many interventional cardiology cases are cancelled per year?

142. What are the reasons for cancellation? *Please check all that apply:*

No consumables

Lack of human resources

Lack of funding

Power outage

Water sanitation issues

Hospital renovations

Equipment defect

No access to blood products

Patient is too sick or refused

Patient never showed up

Other. Please specify

143. Is (are) the cardiologist(s) at your institution trained in transthoracic echocardiography?

144. Is (are) the cardiologist(s) at your institution trained in transesophageal echocardiography?

145. Is (are) the cardiac anaesthesiologist(s) at your institution trained in transesophageal echocardiography?

146. Do the cardiologists and cardiac surgeons participate in training of the local staff? *Please specify which allied professionals are trained (nurses, medical officers, perfusionists, registrars, medical students)?*
147. Do the cardiologists and cardiac surgeons participate in research? What kind of research? *Please describe.*
148. Do you have a local database for congenital patients?
149. Do you have a local database for rheumatic heart disease patients?
150. Do you have a local database for adults' patients excluding rheumatic heart disease?
151. Do you participate in a national or international registry(ies)? *If yes, please name it (them)*
152. Do the cardiologists and cardiac surgeons have time to participate in national and international conferences? How many per year and which ones?

Material resources

153. How many cardiac operating rooms do you have at your institution?
154. How many catheterization labs do you have at your institution? Do you have a biplane imaging?
155. Is the catheterization lab only used for cardiac procedures? (If not name other specialties that use the catheterization lab)
156. How many functional cardiopulmonary bypass pump do you have at your institution?
157. How many kits of surgical instruments do you have access at your institution?
158. Is sterilization of the instruments an issue?
159. Do you have easy access to a variety of sutures/stitches?
160. Approximately how many biological valve prostheses do you have access per year?
161. Approximately how many mechanical valve prostheses do you have access per year?
162. Do you have access to aortic or pulmonary homografts? How many per year?
163. Do you have access to a variety of valve sizes prostheses when you need one?
164. Do you have easy access to bovine autologous pericardial patches and dacron tubes?
165. Do you have access to appropriate lead aprons?

166. Is the blood bank at proximity or in your institution?
167. Do you have easy and safe access to blood products (24/7)? *Please specify.*
168. Do you have easy access to a haematology lab (24/7)? *Please specify.*
169. Do you have easy access to a biochemical lab (24/7)? *Please specify.*
170. Do you have easy access to a pathological lab (24/7)? *Please specify.*
171. Do you have easy access to a microbiological lab (24/7)? *Please specify.*
172. Do you have access to continuous renal replacement therapy (CRRT)/dialysis machines?
173. Do you have access to transcatheter aortic valve replacement? How many per year?
174. Do you have access to transcatheter pulmonary valve replacement? How many per year?
175. Do you have access to pacemaker? How many per year?
176. Do you have access to implantable cardioverter defibrillator (ICD) device? How many per year?
177. Do you have access to biventricular pacemaker? How many per year?
178. Do you have easy access to catheters and guidewires?
179. Do you have easy access to coronary stents of different sizes?
180. Do you have easy access to closure devices (coils and amplatzer) for paediatric congenital cases?
181. Do you have easy access to balloon valvuloplasty kit for the mitral valve?
182. Do you have easy access to balloon valvuloplasty kit for the aortic valve?
183. Do you have easy access to balloon valvuloplasty kit for the pulmonary valve?
184. Do you have access to swan ganz/pulmonary artery catheter?
185. Do you have access to invasive blood pressure monitoring?
186. Do you have access to cerebral oxymetry/ near infrared spectroscopy (NIRS)?
187. Did it happen that you had to use expired equipment?

188. Do you have easy access to IV inotropes and vasopressors and other cardiac medications intra-operatively and post-operatively?

Please specify which of them do you have easy access to:

- Norepinephrine
- Epinephrine
- Milrinone
- Phenylephrine
- Isoproterenol
- Dobutamine
- Dopamine
- Vasopressin
- Methylene Blue
- Calcium
- Atropine
- Amiodarone
- Lidocaine
- Other. *Please specify*

189. Do you have easy access to those blood products and hemostatic products?

Please check all the ones that you have access to:

- Packed red blood cells
- Whole blood
- Platelets
- Cryoprecipitates
- Fresh frozen plasma
- Albumin
- Factor VII
- Fibrinogen concentrates
- Mechanical Sealant hemostatic products
- Flowable hemostatic products (gelatin or gelatin matrix and thrombin)
- Fibrin/Synthetic sealants (fibrinogen and thrombin)
- Active sealants (bovine thrombin or recombinant thrombin)
- Other. *Please specify*

190. Do you have access to thrombolytic agents (alteplase, reteplase, tenecteplase, streptokinase, urokinase)?

191. Do you have access to cardiac medications, antiplatelets and anticoagulants?

Please check all the ones you have access:

- Aspirin
- Angiotensin Converting-Enzyme inhibitor (ACEi)
- Angiotensin receptor blockers (ARB)
- Beta-blocker
- Spirolactone
- Furosemide
- Digoxin

Adenosine diphosphate (ADP) receptor inhibitors (Clopidogrel, prasugrel, ticagrelor, ticlopidine)
Coumadin
GPIIb/IIIa inhibitors (abciximab, eptifibatide, tirofiban)
New oral anticoagulants/direct thrombin and factor Xa inhibitors (dabigatran, apixaban, rivaroxaban)
Vitamin K
Low molecular weight heparin
IV heparin
Other. *Please specify*

192. Is access to penicillin an issue in your country?
193. How many transesophageal echocardiography machines do you have at your institution?
194. How many transthoracic echocardiography machines do you have at your institution?
195. How many EKG machines do you have at your institution?
196. Do you have access to dobutamine stress echocardiography?
197. Do you have access to treadmill stress test?
198. Do you have access to Holter monitoring?
199. How many intra-aortic balloon pump do you have at your institution?
200. How many cell-savers do you have at your institution?
201. How many ECMO machine do you have at your institution?
202. How many cardiac intensive care unit beds for cardiac surgery and cardiology do you have at your institution?
203. How many cardiac unit/floor beds for cardiac surgery and cardiology do you have at your institution?
204. How many coronary care unit beds do you have at your institution?
205. How many computed tomography (CT) scans do you have at your institution?
206. Do they have a cardiac CT protocol?
207. How many magnetic resonance imaging (MRI) do you have at your institution?
208. Do they have a cardiac MRI protocol?

209. Where can your patients get their International normalized ratio (INR) checked?

Please select all that apply

National referral hospital

Regional hospital

District hospital

Local Pharmacy

Local clinic

Local laboratory

Only in secondary or tertiary settings

Other. *Please specify*

210. How many INR check points total in the country?

211. How many point of care INR machines total in the country?

212. Where are the INR samples coming from?

Please select all that apply

Venous blood samples

Finger prick point of care machines

Other. *Please specify*

213. How many days does it take for the results to come back?

214. Who is getting the INR result? (*patients, physicians, pharmacist*)

215. Who is responsible for altering the dose of warfarin?

216. Is there a patient or physician's record book of INR results?

217. Do patient keep their own copy of INR records?

218. Do patients pay for INR testing? How much does it cost?

219. Approximately how often for stable patients have their INR checked per year?

220. Do you have access to telemedicine at your institution?

221. Do you have access at Internet at your institution?

Prevention

222. Are there prevention programmes for RHD at your institution or in the country? *Please describe.*

223. Are there echocardiography-screening programs in the schools for rheumatic heart disease or any other congenital heart diseases? *Please describe.*

224. Are there prevention programmes for risk factors for ischemic heart diseases at your institution or in the country (tobacco and alcohol cessation programs, hypertension, obesity, diabetes, physical activity)? *Please specify which ones? Please describe.*
225. Do you provide post-operative care (e.g. for wound infection) for patients who have received cardiac procedures?
226. Do you provide education about modification of risk factor or any other instructions or advices to patients who have received cardiac procedures?
227. Do the patients have a contact person/phone number to contact if they are worried about their post procedural course and if they have any questions?
228. Who is educating the patient at your institution post cardiac procedure or post hospitalization for cardiac pathology?
Please select all that apply:
- Nurses
 - Social worker
 - Physicians
 - Trainees
 - Other. *Please specify*
229. Is (are) there any cardiac rehabilitative programme(s) at your institution? In your country?

Service delivery

230. What are the main challenges to service delivery and sustainability of cardiovascular specialized care?
Please choose all that apply.
- Lack of governmental support
 - Lack of funding
 - Procurement delays
 - Lack of human resources (nurses, perfusionists, cardiac technicians)
 - No leader to run the program
 - Improper equipment/materials
 - Incomplete equipment/materials
 - No mentorship
 - Incomplete training for more complex cases
 - Environmental hazards
 - No team collaboration
 - No international collaboration
 - No support from the industry
 - No intensive care unit support
 - No anaesthesiology support
 - Late diagnoses, late presentation of patients, no therapeutic option to offer to patients other than palliative ones.

No specialized care offered in remote clinics
No prevention programs
The demand exceeds the offer
Not enough intensive care unit beds
Not enough operating room priorities
Difficult access to blood products
Other. *Please specify.*