

Ghana

Cardiovascular Diseases



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MedCOI

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The report has been reviewed by International SOS and EUAA.





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Disclaimer

This report was written according to the EUAA COI Report Methodology (2023). The report is based on publicly available sources of information, as well as oral anonymised sources who are based in Ghana. All sources used are referenced.

The information contained in this report has been researched, evaluated and analysed with utmost care. However, this document does not claim to be exhaustive. If a particular event, person or organisation is not mentioned in the report, this does not mean that the event has not taken place or that the person or organisation does not exist.

Furthermore, this report is not conclusive as to the determination or merit of any particular application for international protection. Terminology used should not be regarded as indicative of a particular legal position.

'Refugee', 'risk' and similar terminology are used as generic terminology and not in the legal sense as applied in the EU Asylum Acquis, the 1951 Refugee Convention and the 1967 Protocol relating to the Status of Refugees.

Neither the EUAA, nor any person acting on its behalf, may be held responsible for the use which may be made of the information contained in this report.

On 19 January 2022 the European Asylum Support Office (EASO) became the European Union Agency for Asylum (EUAA). All references to EASO, EASO products and bodies should be understood as references to the EUAA.

The drafting of this report was finalised on 27 March 2024. Any event taking place after this date is not included in this report. More information on the reference period for this report can be found in the methodology section of the Introduction.





Glossary and abbreviations

Term	Definition
AF	Atrial Fibrillation
AFL	Atrial Flutter
CABG	Coronary Artery Bypass Grafting
ComHIP	Community-Based Hypertension Improvement Project
CHPS	Community-Based Health Planning and Services
CK-MB	Creatine Kinase - Myoglobin Binding
CVD	Cardiovascular Disease
DHIMS	District Health Information Management System
ECG	Electrocardiogram
FDA	Food and Drugs Authority
GAR	Greater Accra Region
GHI	Ghana Heart Initiative
GHS	Ghanaian Cedi
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
HDL	High-Density Lipoprotein





Term	Definition
HHA	Healthy Heart Africa
HF	Heart Failure
ICD	Implantable Cardioverter Defibrillator
IHD	Ischaemic Heart Disease
KATH	Komfo Anokye Teaching Hospital
KBTH	Korle Bu Teaching Hospital
LDL	Low-Density Lipoprotein
MI	Myocardial Infarction
MOH	Ministry of Health
NGO	Non-Government Organisation
NHIS	National Health Insurance Scheme
PCI	Percutaneous Coronary Intervention
PHC	Primary Healthcare
PTCA	Percutaneous Transluminal Coronary Angioplasty
TEE	Transoesophageal Echocardiogram
USD	United States Dollar





Introduction

Methodology

The purpose of the report is to provide information on access to cardiovascular diseases treatment in Ghana. This information is relevant to the application of international protection status determination (refugee status and subsidiary protection) and migration legislation in EU+ countries.

Terms of reference

The terms of reference for this Medical Country of Origin Information Report were developed by EUAA.

The terms of reference for this Medical Country of Origin Information Report can be found in Annex 2: Terms of Reference (ToR). The initial drafting period was finalised on 9 November 2023, peer review occurred between 10 November – 22 December 2023, and additional information was added to the report as a result of the quality review process during the review implementation up until 27 March 2024. The report was internally reviewed subsequently.

Collecting information

EUAA contracted International SOS (Intl.SOS) to manage the report delivery including data collection. Intl.SOS recruited and managed a local consultant to write the report and a public health expert to edit the report. These were selected from Intl.SOS' existing pool of consultants. The consultant was selected based on their experience in leading comparable projects and their experience of working on public health issues in Ghana.

This report is based on publicly available information in electronic and paper-based sources gathered through desk-based research. This report also contains information from multiple oral sources with ground-level knowledge of the healthcare situation in Ghana who were interviewed specifically for this report. For security reasons, all oral sources are anonymised.

Quality control

This report was written by Intl.SOS in line with the European Union Agency for Asylum (EUAA) COI Report Methodology (2023),¹ the EUAA Country of Origin Information (COI) Reports Writing and Referencing Guide (2023)² and the EUAA Writing Guide (2022).³ Quality control of the report was carried out both on content and form. Form and content were reviewed by Intl.SOS and EUAA.

¹ EUAA, Country of Origin Information (COI) Report Methodology, February 2023, [url](#)

² EUAA, Country of Origin Information (COI) Reports Writing and Referencing Guide, February 2023, [url](#)

³ EUAA, The EUAA Writing Guide, April 2022, [url](#)





The accuracy of information included in the report was reviewed, to the extent possible, based on the quality of the sources and citations provided by the consultants. All the comments from reviewers were reviewed and were implemented to the extent possible, under time constraints.

Sources

In accordance with EUAA COI methodology, a range of different published sources have been consulted on relevant topics for this report. These include governmental publications, academic publications, and reports by non-governmental organisations. All sources that are used in this report are outlined in Annex 1: Bibliography.

Key informant interviews were carried out in September 2023. Interviews were conducted mainly with officers who work within organisations of Ghana's healthcare system. A complete anonymised list of interviewees can be found in the Annex 1: Bibliography.



1. Incidence and prevalence of cardiovascular diseases

Cardiovascular diseases (CVDs) are increasingly emerging as a major health problem in sub-Saharan Africa (including Ghana), but the information on the epidemiology, clinical characteristics and spectrum of the diseases is scanty.⁴

In a retrospective study looking at trends in CVD admissions and outcomes over the period January 2004 to December 2015, in central Ghana, the following observations were made: more women presented with CVD than men; there was an increase in the percentage of CVD admissions from 4.6 % to 8.2 %; the top 3 causes of CVD admissions were heart failure (HF; 88.3 %), ischaemic heart disease (IHD; 7.2 %), and dysrhythmias (1.9 %). Of all HF admissions, 52 % were associated with hypertension; IHD prevalence rose by 250 % between 2005 and 2015; and the fatality rate was 23 % with an increase in the percentage of all hospital deaths that were cardiovascular in nature from 3.6 % to 7.3 %. Cardiac disease admissions and mortality have increased progressively over the past decade, with HF as the most common cause of admission. Once rare, IHD is emerging as a significant contributor to the CVD burden in sub-Saharan Africa.⁵

1.1. Hypertension

The disease burden of hypertension in Ghana is considerable, with a high prevalence and increasing incidence.⁶ Hypertension is a significant public health concern in Ghana, and a leading cause of admissions and deaths in the country.⁷ The prevalence of hypertension in the general population of Ghana has been estimated to range from 19 % to 48 % in various studies.⁸ In one systematic review and meta-analysis, it estimated the pooled prevalence of hypertension in Ghana to be 30.3 %.⁹ This estimate is higher than the prevalence reported at the beginning of the last decade, indicating a worsening epidemic of hypertension in the country.¹⁰

⁴ Owusu, I.K. and Acheamfuor-Akowuah, Pattern of Cardiovascular Diseases as Seen in an Out-Patient Cardiac Clinic in Ghana. *World Journal of Cardiovascular Diseases*, January 2018, p. 1

⁵ Appiah, L. T., et al., Current trends in admissions and outcomes of cardiac diseases in Ghana, July 2017, p. 783

⁶ Atibila, F., et al., Prevalence of hypertension in Ghanaian society: a systematic review, meta-analysis, and GRADE assessment, August 2021, [url](#), p. 2

⁷ Bosu, W. K. and Bosu, D. K., Prevalence, awareness, and control of hypertension in Ghana: A systematic review and meta-analysis, March 2021, [url](#), p. 1

⁸ Atibila, F., et al., Prevalence of hypertension in Ghanaian society: a systematic review, meta-analysis, and GRADE assessment, August 2021, [url](#), p. 11

⁹ Atibila, F., et al., Prevalence of hypertension in Ghanaian society: a systematic review, meta-analysis, and GRADE assessment, August 2021, [url](#), p. 7

¹⁰ Atibila, F., et al., Prevalence of hypertension in Ghanaian society: a systematic review, meta-analysis, and GRADE assessment, August 2021, [url](#), p. 11



In another systemic review and meta-analysis study, the pooled prevalence was 27 % for the country, with the coastal (28 %), and middle geo-ecological belts (29 %) experiencing twice the prevalence compared to the northern belt (13 %). The prevalence was similar by sex and urban-rural residence. The study found that only 35 % of persons with hypertension know their status, 22 % are on treatment and 6 % had their blood pressure controlled.¹¹

1.2. Myocardial infarction (MI)

There is insufficient population-based data describing the prevalence and incidence of MI in sub-Saharan Africa.¹² A systematic review of studies conducted in sub-Saharan Africa, including Ghana, found that the prevalence of acute MI ranged from 0.1 % to 10.4 % among the included studies.¹³

1.3. Heart failure (HF)

HF has been found to account for 88.3 % of cardiovascular admissions to the medical ward of Komfo Anokye Teaching Hospital (KATH) in Kumasi.¹⁴

In a study at the teaching hospital, the commonest cardiovascular risk factors observed for HF were hypertension (46.5 %), history of previous HF (40.7 %), excessive alcohol use (38.6 %) and family history of heart disease (29.3 %), predominantly hypertension (68.3 %). The major underlying aetiology of HF was dilated cardiomyopathy (38.6 %), hypertensive heart disease (21.4 %), IHD (13.6 %) and valvular heart disease (12.9 %). These underlying aetiologies of HF were more common in patients aged 40 years and above and those presenting with multiple risk factors.¹⁵

1.4. Heart rhythm disorders

A systematic review of the spectrum of cardiac arrhythmias in sub-Saharan Africa, which included some studies from Ghana, found that the prevalence of atrial fibrillation/atrial flutter (AF/AFL) was 16 % to 22 % in HF, 10 % to 28 % in rheumatic heart disease, and 3 % to 7 % in cardiology admissions.¹⁶

A study conducted at the Emergency Department of Korle Bu Teaching Hospital (KBTH) in Accra, Ghana, found that haemodynamically unstable tachyarrhythmias were the most common arrhythmias found among the patients (66.7 %). Approximately 52 % of patients had

¹¹ Bosu, W. K. and Bosu, D. K., Prevalence, awareness, and control of hypertension in Ghana: A systematic review and meta-analysis, March 2021, [url](#), p. 1

¹² Hertz, J. T., et al., Acute myocardial infarction in sub-Saharan Africa: The Need for Data, May 2014, [url](#), p. 1

¹³ Hertz, J. T., et al., Acute myocardial infarction in sub-Saharan Africa: The Need for Data, May 2014, [url](#), p. 1

¹⁴ Appiah, L. T., et al., Current trends in admissions and outcomes of cardiac diseases in Ghana, July 2017, [url](#), p. 783

¹⁵ Agyekum, F., et al., Contemporary aetiology of acute heart failure in a teaching hospital in Ghana, February 2023, [url](#), p. 1

¹⁶ Yuyun, M. F., et al. A Systematic Review of the Spectrum of Cardiac Arrhythmias in Sub-Saharan Africa, 2020, [url](#), p. 1



structural heart diseases, whereas 26.2 % had no apparent underlying cause or predisposing factor. Cardioversion (52.4 %), commonly electrical (63.6 %), and transvenous pacemaker implantation (23.8 %) were the common initial interventions. The majority of the patients (88.1 %) survived and were discharged home.¹⁷

2. Access to treatment

Ghana has a pluralistic health sector in terms of ownership (public and private) and in terms of healthcare models (orthodox, traditional and alternative medicine).¹⁸ Healthcare services are provided by the public sector, as well as by private sector service providers made up of for-profit providers and non-profit faith-based health facilities.¹⁹ The health system is organised in three levels: the primary level, with a focus on primary healthcare (PHC) services, includes the community-based health planning and services (CHPS) compound, the sub-district health centre/clinic and the district hospital. The secondary and tertiary levels have regional and teaching hospitals, respectively.²⁰

Public and private facilities, at all levels of the health system, can provide care within limits set by the Standard Treatment Guidelines 2017.²¹ The primary level of care has the capacity to identify and make differential diagnosis of some of the conditions. This capacity is mostly at the district hospital level where they can make more definitive diagnosis, commence basic care and continue to refer the client to the appropriate secondary or tertiary facility for definitive case management. All patients can access care at the nearest point of service to them at any level of the health system. Based on the severity of the condition and the capacity of the point of service to manage the condition, care will be continued, or the patient will be referred to the next higher level of care for further case management. Patients can however walk into any emergency room in any secondary or tertiary facility and will be attended to.²²

Cardiac care can be received at several places in Ghana, including specialised hospitals and clinics, primary care centres, and CHPS programmes. Specialised hospitals and clinics, such as KBTH, KATH, and the National Cardiothoracic Centre provide specialised care for HF patients in Ghana.²³ These hospitals have specialised teams of cardiologists, cardiac surgeons and other healthcare professionals who are trained to diagnose and treat HF and other CVDs. Primary care centres and CHPS programmes also provide general preventive and primary care in rural areas, but they may not have the specialised resources and expertise to manage

¹⁷ Doku, A., et al., Outcome of life-threatening arrhythmias among patients presenting in an emergency setting at a tertiary hospital in Accra-Ghana, August 2022, [url](#), p. 1

¹⁸ Ghana, MOH, National Health Policy: Ensuring healthy lives for all (Revised Edition), January 2020, [url](#), p. 23

¹⁹ Ghana, MOH, Health Sector Medium Term Development Plan 2022-2025, December 2021, [url](#), p. 11

²⁰ Ghana, MOH, Health Sector Medium Term Development Plan 2022-2025, December 2021, [url](#), p. 11

²¹ Ghana, MOH, GNDP, Standard Treatment Guidelines, Seventh Edition, 2017, [url](#), pp. 134,146,156

²² CCdKII101, Consultant Cardiologist, Interview, September 2023

²³ CCdKII101, Consultant Cardiologist, Interview, September 2023



complex cardiac conditions.²⁴ The Ghana Heart Initiative (GHI) is an ongoing national programme since 2018, aimed at improving CVD care and reducing the death rates of CVDs.²⁵

A study looking at the capacity of the healthcare system in Ghana to manage CVDs found that a total of 83 % of the newly diagnosed hypertensives were put on treatment, 56.3 %, continued treatment during the study period and less than 10 % had their blood pressure controlled at the end of the study (in March 2020). Challenges to access treatment were found to include suboptimal health worker knowledge in CVD management, lack of equipment for prompt CVD emergency diagnosis, poor management and monitoring of CVD care across all levels of healthcare, lack of standardised protocol on CVD management, and limited number of indicators on CVD in the National Database for CVD monitoring.²⁶ Other barriers to access to treatment include poor patient knowledge and understanding of hypertension, inadequate understating of the medication and poor adherence to medication; human resource constraints; and the health system not adequately focused on hypertension.²⁷

The most significant challenge faced by the cardiothoracic surgery programme in Ghana is funding of patient care, expanding the existing infrastructure and improving on the standard of care. The cost of heart surgery is beyond the reach of more than 90 % of the patients. This has directly and indirectly affected the growth of the cardiothoracic programme.²⁸

2.1. Insurance and national programmes

The public National Health Insurance Scheme (NHIS) and private health insurance schemes cover both inpatient and outpatient cost of care to different degrees, with the private schemes generally providing more cover than the NHIS.²⁹ The NHIS covers the consultation fees for all general and specialist clinic attendances, as well as hospital admission (bed and food), are covered. A limited number of laboratory tests (mostly routine general laboratory tests such as Full blood Counts, Routine Urine and Stool tests, Liver Function Tests and Random/Fasting blood sugars) are covered but the cost of specialised laboratory and diagnostic imaging investigations and treatment for CVDs are not covered by the NHIS and may be paid for by private insurance schemes or out of pocket.³⁰

As of 2019, the NHIS had a membership of over 12 million Ghanaians.³¹ The NHIS is available for registration to all individuals living in Ghana.³²

²⁴ CCdKII101, Consultant Cardiologist, Interview, September 2023

²⁵ Ghanaian Society of Cardiology, Launch Of Ghana Heart Initiative (GHI) Project, August 2019, [url](#) ; GIZ, Ghana Heart Initiative, Ghana: For Strong Hearts, 2021, [url](#);

²⁶ Doku, A., et al., A multilevel and multicenter assessment of health care system capacity to manage cardiovascular diseases in Africa: a baseline study of the Ghana Heart Initiative, August 2023, [url](#), p. 1

²⁷ Laar, A. K., et al., Health system challenges to hypertension and related non-communicable diseases prevention and treatment: perspectives from Ghanaian stakeholders, 2019, , pp. 5-11

²⁸ Tettey, M., et al., Cardiothoracic surgical experience in Ghana, October 2016, , p. S70

²⁹ CCdKII101, Consultant Cardiologist, Interview, September 2023

³⁰ CCdKII101 Consultant Cardiologist, Interview, September 2023, Accra

³¹ NHIS, NHIS active membership soars, July 2020, [url](#)

³² CCdKII101, Consultant Cardiologist, Interview, September 2023, Accra



2.2. Non-government organisations (NGOs)

There is the Community-Based Hypertension Improvement Project (ComHIP), supported by Novartis, a comprehensive intervention aimed at scaling up hypertension treatment services at the community level in Ghana. The programme aims to provide cost-effective and accessible care to individuals with hypertension, which can help reduce the financial burden on patients.³³

AstraZeneca is since 2019 supporting the Healthy Heart Africa (HHA) Programme expansion into Ghana in partnership with the Ghana Health Service. The programme contributes to the prevention and control of CVDs in Ghana with emphasis on hypertension. The charity PATH in Ghana is the HHA implementing partner.³⁴

There is also the GHI initiated in September 2018, and officially launched on 9 January 2019, introduced an innovative health system intervention to strengthen early detection, and management of hypertension and CVDs across health facilities in the Greater Accra Region (GAR). The initiative was implemented as a collaborative effort by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, the Ministry of Health (MOH) and the Ghana Health Services.³⁵

The Arrhythmia Alliance Hearts of Ghana Mission performs heart surgeries and supports pacing and angiography. It also performs surgeries on those who would not otherwise be able to afford it.³⁶

3. Cost of treatment

The cost of treatment in the public sector is primarily regulated by the NHIS. The NHIS tariffs are expected to be the official fees and charges in public facilities. This is often not adhered to because the public insurance tariffs are below market prices, so facilities, mainly the teaching hospitals, will go on to secure parliamentary approval for higher rates for fees and charges that the NHIS tariffs are unable to fully cover. These additional fees and charges are paid out of pocket by patients. Other public facilities will have instances where staff request for unofficial fees and charges for services rendered.³⁷

The cost of treatment in the private sector is not regulated and different service providers set different fees and charges that enable them to, at least, fully recover their costs. These fees

³³ Novartis Foundation, Community-based Hypertension Improvement Project (ComHIP), 2023, [url](#)

³⁴ AstraZeneca, Healthy Heart Africa, Strengthening health systems, 2023, [url](#)

³⁵ Singh, K., et al., Evaluation of the Ghana Heart Initiative - Design and Rationale of a Pragmatic Mixed-Methods Study from Diverse Perspectives: A Study Protocol, May 2023, p. 4

³⁶ Dunning, J., et al., The Edwards Every Heartbeat Matters, Arrhythmia Alliance Hearts of Ghana Mission, May 2022, [url](#)

³⁷ CCdKII101, Consultant Cardiologist, Interview, September 2023, Accra



and charges may be revised at any time, and the revisions are primarily influenced by foreign exchange rates and market forces.³⁸

In Table 1 and Table 2, the prices in public facilities prices are based on NHIS prices,³⁹ while the prices for the private sector, as well as reimbursement and insurance information are provided by interviewee CCdKII102, an administrator at a private hospital.⁴⁰

Concerning the coverage and reimbursement of the treatment prices in the tables 1 and 2 below, the following principles apply to all listed treatments, unless explained otherwise:

1. Public and some private sector facility treatment prices are covered by NHIS and sometimes private insurance.
2. If insured, on presentation of one's insurance card, whether NHIS or private, no payment is made by the patient, as the insurance company re-imburses the facility at a later date on submission of claims.
3. In public facilities, any price difference between the listed NHIS tariffs and the price asked by the facility is borne by the patient (some facilities obtain parliamentary approval to increase their prices). In private facilities where NHIS coverage is accepted, the price difference between the NHIS tariffs and the private price is borne by the patient.
4. Uninsured patients pay out of pocket for all services at public and private facilities.

Table 1. Cost of cardiology specialist consultations in public tertiary and private health facilities

Specialist	Public outpatient treatment price in GHS	Public inpatient treatment price in GHS	Private outpatient treatment price in GHS	Private inpatient treatment price in GHS
Cardiologist	147	128 (cost of admission, not including consultation fee)	280 to 400	600 to 1 000
Cardiac surgeon	147	128 (cost of admission, not including consultation fee)	280 to 400	600 to 1 000

³⁸ CCdKII102, Administrator of a Private Hospital, Interview, September 2023, Accra

³⁹ Ghana, NHIS, Tariffs for Tertiary Hospitals, February 2023

⁴⁰ CCdKII102, Administrator of a Private Hospital, Interview, September 2023, Accra



Table 2. Cost of cardiology laboratory, diagnostic imaging and specialist treatment interventions in public tertiary and private health facilities

Note: In the following table, as per market practices, the cost of some interventions is quoted in United States dollar (USD) and the client is billed in the Ghanaian cedi (GHS) equivalent at the time of accessing the service.⁴¹

Treatments	Public treatment price	Private treatment price
Laboratory research of blood; INR, e.g. in case of acenocoumarol anticlotting	GHS 86	GHS 100 to 130
Laboratory research for cardiac biomarker; creatine kinase MB (CK-MB)	GHS 35	GHS 80 to 100
Laboratory research for cardiac biomarker; troponin	GHS 180	GHS 120 to 150
Laboratory test: lipid profile (total cholesterol, HDL cholesterol, LDL cholesterol, triglycerides)	GHS 39	GHS 100 to 130
Angiography (= arteriography)	GHS 1 000	GHS 2 500 to 4 500
Cardiac stress test	GHS 400	GHS 550 to 950
ECG (electro cardiogram; cardiology)	GHS 112	GHS 150 to 250
Holter monitor/ ambulatory ECG device (cardiology)	GHS 400	GHS 500 to 950
Ultrasound of the heart (= echocardiography = echocardiogram = TTE)	GHS 400	GHS 450 to 600
Diagnostic imaging: transesophageal echocardiogram (TEE)	GHS 600	Not found

⁴¹ CCdKII101, Consultant Cardiologist, Interview, September 2023, Accra



Treatments	Public treatment price	Private treatment price
Clinical admittance in cardiology department (daily rates)	GHS 128	GHS 375 to 500
Clinical admittance in cardiac surgery department (daily rates)	GHS 128	GHS 375 to 500
Cardiac surgery; cardiac catheterisation *	USD 1 750	Not found
Cardiac surgery; coronary artery bypass grafting (CABG), bypass	USD 10 000	Not found
Cardiac surgery; PTCA/PCI; coronary angioplasty, incl. follow-up	USD 2 000	Not found
Cardiology, placement of pacemaker	USD 5 000	Not found
Cardiology, maintenance and follow up of pacemaker	GHS 240	Not found
Cardiology, placement of ICD (Implantable Cardioverter Defibrillator)	USD 8 000	Not found
Cardiology, follow-up of ICD by cardiologist	GHS 240	Not found

* This treatment is not covered by NHIS, but some private insurance schemes do. If no insurance, then the patient has to pay out-of-pocket.

4. Cost of medication

The cost of medication in the public sector is regulated by the NHIS medicines list.⁴² The NHIS medicines' list is expected to include the official charges for medicines in public facilities. This is often not adhered to because the prices of NHIS' medicines are below market prices, so facilities, mainly the teaching hospitals, will go on to secure parliamentary approval for higher fees and charges to ensure they are able to recover the cost of services and medicines that

⁴² NHIS, Medicine List, February 2023, [url](#)



the NHIS may not fully cover. These additional fees and charges are paid out of pocket by patients.⁴³

The cost of medicines in the private sector is not regulated, and different service providers set different fees and charges that enable them to, at least, fully recover their costs. These fees and charges may be revised at any time and the revisions are primarily influenced by foreign exchange rates. The cost of medication is generally higher in private as compared to public facilities, and also increases from primary to tertiary level of care.⁴⁴

Most medicines are available countrywide. The private sector pharmacies maintain a more complete stock of medicines than public facilities and medicines are more readily available in urban versus rural communities.⁴⁵

As far as possible, medicines found in the country are registered by the Food and Drugs Authority (FDA) for use. The implication of this is that the quality of the medicines can be assured, to a large extent. For a product to be registered, it has gone through and passed the rigorous testing and product source verification processes carried out by the FDA of Ghana. However non-registered, as well as fake, medicines are also found in the country. Some of the medicines are on the Essential Medicines List and the National Health Insurance Medicines List. Their inclusion on the list encourages pharmacies and health facilities to stock them, reducing situations when stocks run out. Public facilities prices as available in the NHIS medicines' list.⁴⁶

In situations where medicines are not available in the country, citizens may make arrangements for friends and family living abroad to purchase and send to them these medicines or they may seek the support of pharmacies to order the medicines for them. These scarce medicines may or may not be registered by the FDA. These medications are often prescription-only medications and often need to be accompanied by the prescription.⁴⁷

In Table 3, '*Pharmacy*' refers to the private sector and '*Hospital*' refers to the public sector.

Public facilities prices are as listed in the NHIS medicines' list.⁴⁸ No brand names are covered under the medicines' list.⁴⁹ Prices in private facilities and information on insurance and reimbursement are provided by interviewee CCdKII103.⁵⁰

Concerning the coverage and reimbursement of the medication prices in the table below, the following principles apply:

1. Both public and private sector prices can be covered by NHIS or/and private insurance.

⁴³ CCdKII101, Consultant Cardiologist, Interview, September 2023, Accra

⁴⁴ CCdKII101, Consultant Cardiologist, Interview, September 2023, Accra

⁴⁵ CCdKII101, Consultant Cardiologist, Interview, September 2023, Accra, Accra

⁴⁶ CCdKII103, Pharmacist of a Private Hospital, Interview, September 2023, Accra

⁴⁷ CCdKII103, Pharmacist of a Private Hospital, Interview, September 2023, Accra

⁴⁸ Ghana, NHIS, Medicine List, February 2023, [url](#)

⁴⁹ CCdKII103, Pharmacist of a Private Hospital, Interview, September 2023, Accra

⁵⁰ CCdKII103, Pharmacist of a Private Hospital, Interview, September 2023, Accra



2. If insured, on presentation of one's insurance card, whether NHIS or private, no payment is made by the patient, as the insurance company re-imburses the facility at a later date on submission of claims.
3. In private facilities, where NHIS coverage is accepted, the price difference between the NHIS tariffs and the private price is borne by the patient.
4. Uninsured patients pay out-of-pocket for all medications at public and private facilities.

Table 3. Cost of medicines in both public and private sector

Generic Name	Brand name	Strength of unit	Form	Number of units in the container	Price per box in GHS	Place (pharmacy, hospital,...)
Amlodipine	Norvasc™	10 mg	tablet	28	784	Pharmacy
	Amlodipine (Teva)	10 mg	tablet	28	408.8	Hospital
Amlodipine + valsartan + hydrochlorothiazide	Exforge HCT™	5 mg/ 16 mg/ 12.5 mg	tablet	28	406	Pharmacy
Atenolol	Gensis™	25 mg	tablet	28	35.6	Pharmacy
	Atenolol	50 mg	tablet	28	9.8	Hospital
Bisoprolol	Bisoprolol Sandox®	20 mg	tablet	28	35	Pharmacy
Candesartan	Atacand®	8 mg	tablet	28	319	Pharmacy
Carvedilol	Dilatrend™	12.5 mg	tablet	28	327	Pharmacy
	Carvedilol	12.5 mg	tablet	28	52.64	Hospital
Doxazosin	Doxazosin	2 mg	tablet	28	22.4	Pharmacy
Enalapril	Enalapril	5 mg	tablet	28	47.6	Pharmacy
Eplerenone	Eprnone	25 mg	tablet	30	459	Hospital
Furosemide	Furosemide	20 mg	tablet	28	16.8	Pharmacy
		20 mg	tablet	28	6.72	Hospital
Hydrochlorothiazide	Hydrochlorothiazide	25 mg	tablet	30	52	Pharmacy
Indapamide	Natrilix®	1.5 mg	tablet	30	69	Pharmacy



Generic Name	Brand name	Strength of unit	Form	Number of units in the container	Price per box in GHS	Place (pharmacy, hospital,...)
Irbesartan	Approvil®	150 mg	tablet	28	257.6	Pharmacy
Lisinopril	Zestril®	10 mg	tablet	28	299.6	Pharmacy
	Lisinopril (vega)	10 mg	tablet		117.60	Hospital
Lisinopril + hydrochlorothiazide (combination)	Zestoretil®	20 mg/ 12.5 mg	tablet	28	574	Pharmacy
Losartan	Losartan	50 mg	tablet	28	53.2	Pharmacy
		100 mg	tablet	28	12.88	Hospital
Metoprolol	Metoprolol	100 mg	tablet	28	168	Pharmacy
Nifedipine	Adalat®	30 mg	tablet	30	267.3	Pharmacy
Perindopril	Coversyl™	5 mg	tablet	28	468.6	Pharmacy
Propranolol	Propranolol	40 mg	tablet	28	22.3	Pharmacy
Spironolactone	Spironolactone	25 mg	tablet	100	80.8	Pharmacy
Telmisartan	Teletal	40 mg	tablet	30	73.50	Hospital
Torsemide	Torsemide	5 mg	tablet	28	128.7	Pharmacy
Valsartan	Diovan™	160 mg	tablet	28	247.2	Pharmacy
Isosorbide dinitrate	Isosorbide dinitrate	10 mg	tablet	50	60	Pharmacy
Nitroglycerin	Nitroglycerin	600 mcg/ spray	aerosol	1	81.2	Pharmacy
Acetylsalicylic acid	Acetylsalicylic acid	75 mg	tablet	100	41	Pharmacy
Clopidogrel	Clopidogrel	75 mg	tablet	28	47	Pharmacy
	Frelet	0.2 ml	ampoule	10	36	Hospital
Dalteparin	Fragmin®	5 000 iu	ampoule	10	109.9	Pharmacy



Generic Name	Brand name	Strength of unit	Form	Number of units in the container	Price per box in GHS	Place (pharmacy, hospital,...)
Enoxaparin	Clexane™	40mg	injection	1	50	Pharmacy
	Enoxaparin sodium	40 mg/ 0.4ml	injection	2	74.57	Hospital
Heparin	Heparin	5 000 iu	ampoule	1	121.3	Hospital
Dipyridamole	Dipyridamole	200 mg	tablet	28	528	Pharmacy
Prasugrel	Prasugrel	5 mg	tablet	30	55	Pharmacy
Ticagrelor	Brilinta™	90 mg	tablet	50	2 050	Pharmacy



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Annex 2: Terms of Reference (ToR)

Cardiovascular diseases; hypertension, myocardial infarction, heart failure and heart rhythm disorders

Note for drafters: These are guidelines on the information to be included. If one aspect is not relevant, e.g., there is no national institute to treat this disease or no international donor programme, there is no need to mention it. Keep the focus on treating medicine – preventive care can be mentioned but is of less interest to the target group.

General information

- Briefly describe prevalence and incidence of cardiovascular diseases (hypertension, myocardial infarction, heart failure and heart rhythm disorders)/ types of these diseases (epidemiologic data).
- How is the health care organized for cardiovascular diseases?
- How are cardiovascular diseases treated – at specific centres, in primary health care centres, secondary care / hospitals, tertiary care etc.?
- Which kinds of facilities can treat cardiovascular diseases [public, private not for profit (e.g., hospitals run by the church), private for-profit sector]? Include links to facilities' websites if possible.
- How are the resources organized in general to treat patients with cardiovascular diseases? Are there sufficient resources available to treat all patients?
- Is there a particular type of cardiovascular diseases for which no (or only partial) treatment exists in the country?
- Is there a (national) institute specialised in treating cardiovascular diseases?
- Are there any national or international plans or (donor) programmes for certain diseases; if yes, could you elaborate on such programme(s) and what it entails?

Access to treatment

- Are there specific treatment programmes for cardiovascular diseases? If so, what are the eligibility criteria to gain access to it and what they contain?
- Are there specific government (e.g., insurance or tax) covered programmes for cardiovascular diseases? If so, what are the eligibility criteria to gain access to it?
- Are there any factors limiting the access to healthcare for patients? If so, are they economic, cultural, geographical, etc.? Are there any policies to improve access to healthcare and/or to reduce the cost of treatments and/or medication? What is the number of people having access to treatment? Keep focus on e.g., waiting times rather than the exact number of specialists in the field.
- If different from information provided in the general section; is the treatment geographically accessible in all regions?



- What is the ‘typical route’ for a patient with cardiovascular diseases (after being diagnosed with the disease)? In other words: for any necessary treatment, where can the patient find help and/or specific information? Where can s/he receive follow-up treatment? Are there waiting times for treatments (e.g., surgery, investigations, etc)?
- What must the patient pay and when?
- Is it the same scenario for a citizen returning to the country after having spent a number of years abroad?
- What financial support can a patient expect from the government, social security or a public or private institution? Is treatment covered by social protection or an additional / communal health insurance? If not, how can the patient gain access to a treatment?
- Any occurrences of healthcare discrimination for people with cardiovascular diseases?

Insurance and national programmes

- National coverage (state insurance).
- Programmes funded by international donor programmes
- Include any insurance information that is specific for patients with cardiovascular diseases.

Cost of treatment

Guidance / methodology on how to complete the tables related to treatments:

- Do not delete any treatments from the tables. Instead state that they are not available or information could not be found if that is the case.
- In the table, indicate the price for inpatient and outpatient treatments in public and private facilities and if the treatments are covered by any insurance or by the state.
- For inpatient, indicate what is included in the cost (bed / daily rate for admittance, investigations, consultations...). For outpatient treatment, indicate follow up or consultation cost.
- Is there a difference in respect to prices between the private and public facilities?
- Are there any geographical disparities?
- Are the official prices adhered to in practice?
- Include links to online resources used, if applicable (e.g., hospital websites).

Note: a standardised list of treatments was also included in the original ToR, as can be viewed in the report. Any treatment without a found price was removed at the editorial stage.

Cost of medication

Guidance / methodology on how to complete the tables related to medications:



- Do not delete any medicines from the tables. Instead, state that they are not available or information could not be found if that is the case.
- Are the available medicines in general accessible in the whole country or are there limitations?
- Are the medicines registered in the country? If yes, what are the implications of them being registered?
- Indicate in the tables: generic name, brand name, dosage, form, pills per package, official prices, source, insurance coverage.
- Are (some of the) medicines mentioned on any drug lists like national lists, insurance lists, essential drug lists, hospital lists, pharmacy lists etc.? If so, what does such a list mean specifically in relation to coverage?
- Are there other kinds of coverage, e.g., from national donor programmes or other actors?
- Include links to online resources used, if applicable (e.g., online pharmacies).

Note: a standardised list of medication was also included in the original ToR, as can be viewed in the report. Any medication without a found price was removed at the editorial stage.

NGOs

- Are any NGOs or international organisations active for patients with cardiovascular diseases? What are the conditions to obtain help from these organisations? What help or support can they offer?
- Which services are free of charge and which ones are at a cost? Is access provided to all patients or access is restricted for some (e.g., in case of faith-based institutions or in case of NGOs providing care only to children for instance).



