

The cost of health
services delivered at
primary care facilities in

BAHRAIN



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Executive summary

Scope of the Study:

Strong primary healthcare (PHC) is the key to more efficient health systems with lower health spending and better health outcomes. This report estimates the cost of selected clinical services provided at the primary care level in Bahrain to further promote preventative and close-to-client services in the country. The cost of a total of 116 public sector primary level clinical outpatient services was estimated based on costs of the health workforce as well as drugs and supplies. Importantly, additional PHC provisions, such as systemic PHC resources (e.g., infrastructure or policy development), multisectoral policies and health prevention, as well as PHC delivered by the private sector, were not costed in this study. Note that the costs of selected primary care services modelled in this study are therefore not directly comparable to health expenditure.

This report also highlights the role PHC can play in addressing the growing non-communicable disease (NCD) burden experienced across the region. Primary health care services support screening, prevention and treatment for NCDs and can achieve better health outcomes with lower health spending for NCD management. Finally, this study provides recommendations to improve future resource allocations for public PHC to meet evolving population health needs.

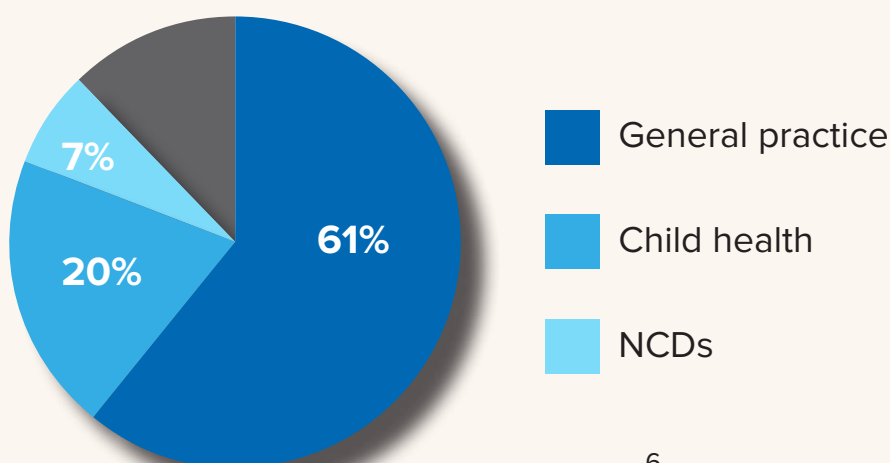
Cost of primary health clinical services

Primary care clinical services cost Bahrain

US\$160 million

in 2019. This is equivalent to US\$108 per capita.

Main drivers for primary care clinical service costs





Key findings from the analysis of a set of clinical services provided at the primary care level in Bahrain:

- **The total cost for the set of clinical services provided at the primary care level in Bahrain in 2019 was US\$160 million.** This is equivalent to US\$107.6 per capita for the set of clinical services costed.
- **The main drivers for the cost of clinical services were general practice, child health, and NCDs.** The programmes contributing the most to the total cost were general practice with 61 percent and child health with 20 percent. Non-communicable diseases (NCDs) made up only 7 percent of the total costs, and this was mainly driven by diabetes, chronic respiratory diseases and cardiovascular disease services.
- **NCD services received a low level of spending indicating that coverage rates and screening services could be scaled up in public primary care.** Indeed, screening services for cancer, risk of cardiovascular disease and diabetes as well as diabetes complications only accounted for less than 1 percent of the total costs. Based on current coverage rates, it is estimated that more than 1 million people did not receive NCD screening and more than 284,406 people did not receive the NCD clinical services they needed at the public primary care level in 2019.
- **Mental health services at PHC level could be strengthened.** The mental health programme makes up less than 0.1 percent of the total costs, driven by a low coverage rate rather than a lack of need for services, with an estimated 206,100 people not receiving the necessary mental health services they needed at the public primary level in Bahrain in 2019. Note these individuals may have sought out care in private or secondary/tertiary public healthcare.

Recommendations

1	Scale-up NCD clinical and screening services delivered at primary care level.
2	Shift more mental health services to the primary care level.
3	Increase the health workforce with an emphasis on expanding the number of family physicians.
4	Leverage the modelling in this study to further improve primary care efficiencies and health outcomes.



Introduction

The 1978 Alma-Ata Declaration was a landmark event in health history calling for health systems to be orientated towards primary healthcare. In 2018, 40 years later, the Astana Declaration reaffirmed global commitment to PHC as an essential approach to attaining universal health coverage and health-related sustainable development goals. PHC is an approach to healthcare based upon three components: multisector policy and action, empowered people and communities, and primary healthcare as the core of integrated health services within a country.¹ While definitions of PHC vary (see **Box 1**), it generally not only refers to the first point of contact for medical care but also encompasses health education, prevention and promotion.

Efficient PHC has health and economic benefits. A strong PHC system can improve health system efficiency, reduce health costs, increase patient satisfaction and tackle inequalities by improving health outcomes across socio-economic indicators.^{2,3,4} Ultimately, investing in PHC can lead to healthier and more productive populations with an association between PHC and lower mortality rates found across high, middle, and low-income countries.^{5,6}

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- 1 Operational framework for primary healthcare: transforming vision into action. Geneva: World Health Organization and the United Nations Children's Fund (UNICEF), 2020. Licence: CC BY-NC-SA 3.0 IGO.
 - 2 Organisation for Economic Cooperation and Development (OECD). (2020), Realising the Potential of Primary Healthcare, OECD Health Policy Studies, OECD Publishing, Paris,. Available at <https://doi.org/10.1787/a92adee4-en>.
 - 3 Starfield B. (1994). Is primary care essential?. *Lancet* (London, England), 344(8930), 1129–1133. Available at [https://doi.org/10.1016/s0140-6736\(94\)90634-3](https://doi.org/10.1016/s0140-6736(94)90634-3)
 - Starfield, B., Shi, L., & Macinko, J. (2005). Contribution of primary care to health systems and health. *The Milbank quarterly*, 83(3), 457–502. Available at <https://doi.org/10.1111/j.1468-0009.2005.00409.x>
 - 4 Macinko, J., Starfield, B., & Shi, L. (2003). The contribution of primary care systems to health outcomes within Organization for Economic Cooperation and Development (OECD) countries, 1970-1998. *Health services research*, 38(3), 831–865. Available at <https://doi.org/10.1111/1475-6773.00149>
 - 5 Macinko, J., Starfield, B. and Shi, L. (2003). The Contribution of Primary Care Systems to Health Outcomes within Organization for Economic Cooperation and Development (OECD) Countries, 1970–1998. *Health Services Research*, 38: 831-865. Available at <https://doi.org/10.1111/1475-6773.00149>
 - 6 Macinko, J., Starfield, B., Erinosho, T. (2009). The impact of primary healthcare on population health in low and middle income countries. *Journal of Ambulatory Care Management*, 32:2;150-171.

Box 1. What is Primary Healthcare?

While long established as a concept, the definition of primary healthcare continues to evolve with many definitions existing. Generally speaking, PHC refers to the first, and main, point of contact with the national healthcare system on both an individual and community level. Hallmarks of PHC include:^{7,8,9,10,11}

- universal accessibility
- person- rather than disease-focused
- continuous across the life span
- comprehensive services, including prevention, diagnosis and treatment

In this report, PHC is defined as per the OECD definition:

*“Primary healthcare is expected to be the first and main point of contact for most people with the healthcare system, focused on the people and their communities. It takes into account the whole person and is patient-focused, as opposed to disease or organ system-focused, and thus recognises not only physical, but also psychological and social dimensions of health and well-being.”*⁷

PHC can improve health system efficiency by reducing hospitalization rates and emergency department visits, thereby reducing healthcare costs.¹² This has been seen in countries where a referral from a general practitioner or family practitioner facilitates hospital admission. PHC serves to be the first point of contact between a patient and the health system, thereby allowing the health system to better manage chronic conditions and to perform preventative measures.¹³ With a better understanding of individual patient and whole family risks, both preventative and chronic care can be provided in a patient-centred way. With these considerations, PHC provides for a healthier population and a more efficient, cost-effective health system.

7 OECD (2020). Realising the Potential of Primary Healthcare, OECD Health Policy Studies, OECD Publishing, Paris. Available at <https://doi.org/10.1787/a92adee4-en>.

8 Operational framework for primary healthcare: transforming vision into action. Geneva: World Health Organization and the United Nations Children’s Fund (UNICEF), 2020. Licence: CC BY-NC-SA 3.0 IGO.

9 Starfield B, Shi L, Macinko J. Contribution of primary care to health systems and health. *Milbank Quarterly*. 2005;83(3): 457–502.

10 Salah, K. & Kidd, M. (2019). Family Practice in the Eastern Mediterranean Region: Universal health coverage and quality primary care. Taylor & Francis Group, Florida, USA.

11 OECD (2019). Deriving preliminary estimates of primary care spending under the SHA 2011 framework. Available at <https://www.oecd.org/health/health-systems/Preliminary-Estimates-of-Primary-Care-Spending-under-SHA-2011-Framework.pdf>

12 OECD (2020). Realising the Potential of Primary Healthcare, OECD Health Policy Studies, OECD Publishing, Paris. Available at <https://doi.org/10.1787/a92adee4-en>.

13 OECD (2020). Realising the Potential of Primary Healthcare, OECD Health Policy Studies, OECD Publishing, Paris,. Available at <https://doi.org/10.1787/a92adee4-en>.



Box 2. Characteristics of strong primary health care^{14, 15}

- Comprehensive and continuous care accessible to all
- Education and training provided mostly within primary care
- Individual healthcare provider associated with each patient or family
- Efficient referral systems to secondary and tertiary care
- System is targeted to the needs of the local population

Globally there is a renewed commitment to PHC in light of changing population and health characteristics. Aging populations, population growth, increasing health literacy and public expectations of health services are increasing demand for healthcare globally and in the Eastern Mediterranean Region (EMR).¹⁶ Changing disease burdens toward non-communicable diseases and increasing access to technology among the general population are further driving changes in PHC. Estimates regarding PHC note that 90 percent of all health needs can be met at the PHC level, giving countries a clear path forward in improving health and health system efficiency.¹⁷

There is a long history of primary healthcare in the Eastern Mediterranean, with the Bahrain Declaration on Primary Healthcare endorsed by all regional countries in 2008.¹⁸ The declaration stands for Member State commitment to achieve better health and wellness through strengthening PHC-based health systems. The region is seeing a growing commitment to family practice (FP) as a way to improve primary healthcare, and ultimately universal health coverage. PHC can be delivered by through general practice and family practice, with the two terms used interchangeably in many circumstances. For the purpose of this report, general practice (GP) will be considered as services delivered by a physician who is qualified to deliver primary healthcare to an individual, their family and their community through general practice medical training. Family practice will refer to services delivered by a family physician who has undergone specialty training to care for the overall health of families and individuals across their lifespan.¹⁹

14 World Health Organization. (2008). The world health report 2008: primary healthcare now more than ever. World Health Organization. Available at: <https://apps.who.int/iris/handle/10665/43949>

15 van Weel, C., & Kidd, M. R. (2018). Why strengthening primary healthcare is essential to achieving universal health coverage. CMAJ: Canadian Medical Association journal = journal de l'Association medicale canadienne, 190(15), E463–E466. Available at: <https://doi.org/10.1503/cmaj.170784>

16 Salah, H. et Kidd, M. (Ed.) (2019). Family Practice in the Eastern Mediterranean Region. CRC Press. Available at: <https://applications.emro.who.int/docs/9781138498587-eng.pdf>

17 World Health Organization, Regional Committee for the Eastern Mediterranean. (2009). Progress report on strengthening primary health care based health systems. Available at: https://applications.emro.who.int/docs/EM_RC56_INF_DOC_4_en.pdf

18 World Health Organization, Regional Committee for the Eastern Mediterranean. (2009). Progress report on strengthening primary health care based health systems. Available at: https://applications.emro.who.int/docs/EM_RC56_INF_DOC_4_en.pdf

19 Salah, H. et Kidd, M. (Ed.) (2019). Family Practice in the Eastern Mediterranean Region. CRC Press. Available at: <https://applications.emro.who.int/docs/9781138498587-eng.pdf>



An example of this would be one family physician, or team, providing comprehensive PHC to all members of a family unit. Family practice therefore delivers the key elements of PHC and will be considered the basis of PHC for this report.

Realising the highest possible rate of universal health coverage is essential to achieving the health-related Sustainable Development Goals. As primary healthcare is the cornerstone of comprehensive health coverage, evidence-based planning is critical to ensuring the continuity of primary healthcare programmes. To support increased investments in PHC programmes and to facilitate progress towards achieving universal health coverage, the United Nations has been invited to assist GCC countries of countries of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the UAE, in undertaking a comparative study on the costs of PHC programmes. Knowing the cost of PHC components and having estimates of programme costs for the coming years will help countries find practical financing and allocative solutions to help direct investments to areas that reduce costs such as the medicine industry, medical supplies and training of health personnel according to country needs. This will also enhance the continuity of health services in GCC countries regarding both efficiency and quality to meet increasing demand.

AIM OF THE STUDY

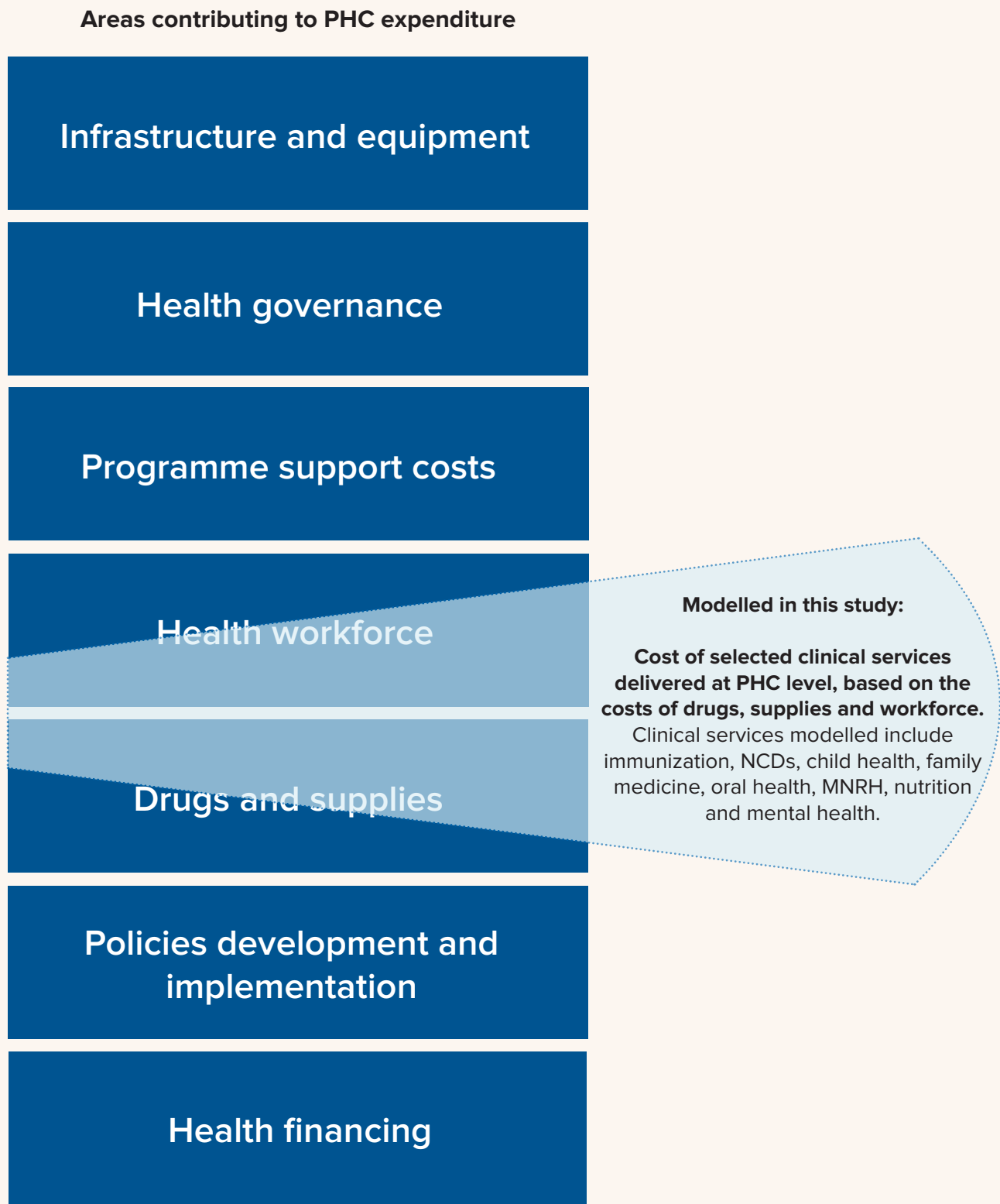
This study aims to estimate the costs of delivering a set of primary care clinical services spread across seven programmes: (1) immunisation, (2) non-communicable diseases, (3) oral and dental care, (4) child health, (5) nutrition, (6) mental health, reproductive, maternal, neonatal and child health, and (7) general practice. The study will use this set of clinical services delivered at the primary care level to represent PHC. However, this set does not include all services, or all costs, associated with PHC.

SCOPE OF THE STUDY

The scope of this study is focused on costing preventive care and general outpatient care (healthcare providers, medicines, diagnostic tests, and supplies) as essential components of PHC in promoting preventive and close-to-client services. The analysis focuses on a set of outpatient clinical services delivered at the PHC level. The clinical services were determined in consultation with experts from the Ministry of Health. The list created does not constitute an exhaustive set of PHC services. The cost of other PHC measures such as multisectoral policies and actions and empowered people and communities were not estimated. In addition, the share of the required resources for information systems, good governance and financing were not estimated. Additionally, only costs incurred by the public sector in Bahrain were estimated. The coverage rates might not reflect the number of services delivered in the private sector (**Figure 1**).



Figure 1: Primary Healthcare service costs modelled in this study





Methods

SELECTION OF CLINICAL SERVICES

A list of clinical services was established based on information available in OneHealth Tool. This choice was justified by the availability of standard regimen treatments, prices and time estimates in the OneHealth Tool Costing Module. The original list was modified by FPs in each country to reflect the range of services delivered at the primary care level.

COSTS AND HEALTH EXPENDITURES

This study estimates the costs of providing a set of clinical services delivered at primary healthcare facilities. We defined total costs as the direct costs (drugs, procedures, supplies, and healthcare providers' time) spent to deliver a particular service. This definition differs from the broader notion of health expenditures, which encompasses all expenditures incurred to provide health services (infrastructure and equipment, governance, etc.). For example, while health expenditures generally include the total cost of the health workforce, this study valorised only the time spent by healthcare providers on delivering the selected clinical services. Therefore, the costing analysis did not include the time spent by healthcare providers on other clinical services or non-clinical activities (coordination, training, etc.). The costs estimated in this study only reflect the fraction of the primary healthcare expenditures directly employed to deliver the selected clinical services. Furthermore, the study was conducted using standard costs developed based on standard treatment regimens and price estimates (WHO-CHOICE, WHO, UNICEF). Using standard costs provides an estimate of the expected costs of clinical services. It may differ from the actual costs, which refer to what was actually spent to deliver these selected services.

CALCULATION OF INTERVENTION COSTS AND NUMBER OF SERVICES

We used an ingredient costing method to estimate the costs of delivering a selected list of clinical services. In this approach, the cost of clinical service is considered the product of the number of clinical services delivered and the cost per service:

$$\text{Intervention cost} = \text{Number of services} \times \text{Cost per service}$$



The number of services delivered was obtained from annual statistical reports published by the Ministries of Health or were directly provided by FPs. When the number of services delivered was unavailable or expressed as a coverage rate, we estimated it as follows:

$$\text{Number of services} = \text{Target population} \times \text{Population in need} \times \text{Coverage rate}$$

To estimate the cost per service, the following formula was used:

$$\text{Cost per service} = \text{Drugs and supply costs} + \text{Healthcare provider time cost}$$

We used treatment, costing, and time staff requirements assumptions from the OneHealth Tool Costing Module. These country-specific assumptions were developed based on standard WHO protocols, expert opinions, and international drug prices (WHO, WHO-CHOICE, UNICEF, MSH International Drug Price Indicator). In addition, we developed specific assumptions for all services not included in the OneHealth Tool Costing Module (see **Annex 1**).

The different components used in the model (target population, population in need, coverage rate, drug and supply cost, and healthcare providers' time cost) are presented below.

TARGET POPULATION

The target population refers to the sub-population eligible for a specific clinical service (i.e., pregnant women, adolescents, total population). When the target population was related to an age group (i.e., children 0-59 months, adults 18+, women 15-49), we defined it from the population census or estimates provided by the Ministry of Health. When it was related to a specific condition, disease or status (i.e., people with diabetes, people with asthma, pregnant women), the target population was estimated from national surveys, statistical reports, international databases or academic literature.

The reference population used in this study was the total population, including nationals and expatriates.

POPULATION IN NEED

The population in need refers to the share of the target population, which requires a specific service per year (see **Annex 1**). It was determined by the incidence or the prevalence of a disease and/or treatment assumptions (e.g. 60 percent of people with diabetes should receive standard glycemic control; 50 percent of women aged 40-70 should receive clinical breast examination every year).

COVERAGE RATE

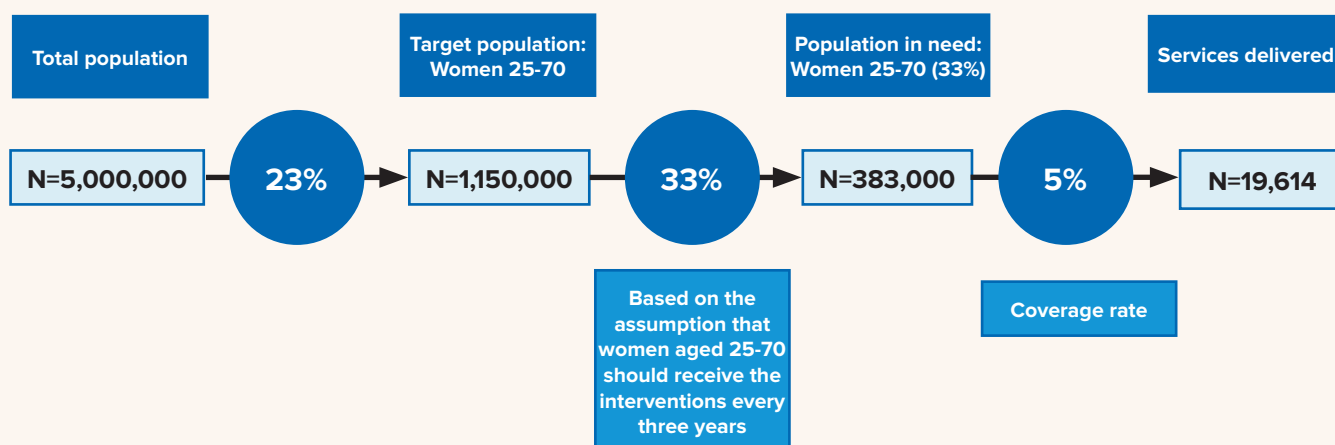
The coverage rate reflects the percentage of the population in need who received a service at the primary healthcare level. The coverage rate was calculated following three steps:

1. We estimated the population in need using prevalence rates, incidence rates or OneHealth Tool treatment assumptions.
2. We determined the number of services delivered in 2019. In the absence of relevant country-specific findings, we developed assumptions based on OHT by-default coverage rates, data from nearby countries or the scientific literature (see **Annex 3**).
3. We divided the number of services delivered by the population in need to obtain the coverage rate.

It is important to note that the coverage rate does not consider the percentage of people who could have received a specific service outside the public primary healthcare level.

The links between the target population, the population in need, the coverage rate, and the number of services delivered are described below (**Figure 2**).

Figure 2: Cost calculation example: Pap smear intervention for women aged 25 to 70



DRUGS AND SUPPLY COSTS

Country-specific estimates extracted from the OneHealth Tool Costing Module were used as a primary reference to determine the unit drugs, vaccines, and supply costs. Assumptions were developed when no estimate was available in OneHealth Tool (see **Annex 1**).



HEALTH PROVIDERS' TIME COSTS

To estimate the cost of health providers' time per service, the following formula was used:

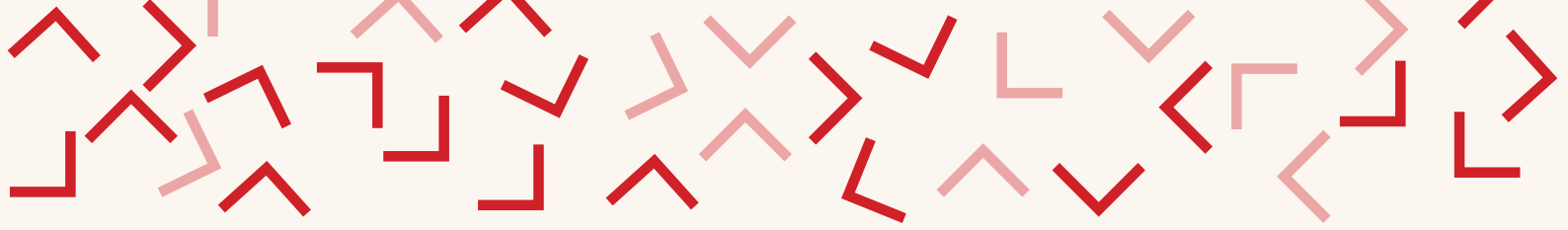
$$\text{Healthcare provider's cost} = \text{Salary per minute} \times \text{Minutes required to deliver the service}$$

The health providers' time costs refer to the time spent by healthcare providers (nurses, general practitioners, specialist doctors, midwives, etc.) for delivering one service, expressed in monetary value. These costs were estimated in two stages. First, we determined the cost of one minute spent by each category of healthcare providers based on their average annual salaries and assumptions on the number of working days per year (222 days) and working hours per day (8 hours). Then, we multiplied the number of minutes spent by health providers for each service by the associated cost per minute. The time spent by the healthcare providers was extracted from the OneHealth Tool or estimated by the research team when data was unavailable (see **Annex 1**).

ASSUMPTIONS AND LIMITATIONS

This analysis had limitations that must be mentioned. The list of clinical services costed does not include all services delivered at the primary care level. The analysis did not estimate health system costs or costs related to other PHC measures. No primary data collection was performed to estimate the drugs and supply costs for each clinical service. Instead, the available information in the OneHealth Tool was used.

Data on intervention coverages were not always available. For interventions without available coverage rates, assumptions were made based on similar interventions or data from nearby countries. When possible, we used the official number of visits related to a programme (i.e. NCDs) or a type of intervention (i.e. diabetes clinics, antenatal care) to estimate services-specific coverage rates and triangulate the results. Coverage rates are particularly uncertain for screening and awareness-related activities since they are not always captured in surveys or health statistics records. Different triangulations and validation methods were used to account for uncertainty, such as consultations with local technical teams, comparing figures with other countries in the region, comparing figures with other similar services, etc. Generally, the coverage rates must be interpreted with caution as they only reflect the quantity of services delivered at the primary care level. As a result, we can assume that some services are also delivered at other levels of the public health system and/or in the private sector. The share of services delivered in the private sector is likely to vary depending on the country's healthcare system and the population structure.



There was no available information about the overhead costs necessary for running the clinical services at primary care (i.e. training, programme management, supervision, monitoring and evaluation, communication, infrastructure and equipment, transportation, and advocacy). Therefore, an estimation of 20 percent of the total costs was used to account for this.





Primary Healthcare in Bahrain

PRIMARY HEALTHCARE GOVERNANCE

In 1960, the government launched a health system to be available and accessible to all residents. Since 1979, Bahrain has adopted a “Health for All” policy through 28 primary healthcare centres, 3 clinics, and 6 government hospitals distributed across the country.²⁰ ²¹ However, a growing population and increased life expectancy, has put pressure on the health system. This has also been exacerbated by the increasing NCD burden. As a result, the Ministry of Health developed the Health Improvement Strategy to better the population’s health through promotion and prevention programmes.²² Primary healthcare is a central focus of the Health Improvement Strategy 2015-2018. The strategy identifies improving the health of the population as a national priority, which is to be achieved by enhancing the capacity of the country’s primary care services.²³ This includes a greater focus on health and screening programs and the reallocation of some resources from curative to preventive services.

Bahrain’s National Health Plan 2016-2025 also includes primary healthcare within several of its strategic priorities. Under the objective of basic health services, the National Health Plan aims to strengthen primary healthcare, reorganize primary healthcare structures, assign each individual a family physician and improve referral systems.²⁴ These initiatives are to be implemented through health centres. The plan also envisions the restructuring of the primary healthcare system to be more autonomous, and the promotion of basic health services at health centres as primary destinations with the use of FPs as ‘gatekeepers’ to the health system.²⁵

Bahrain’s awareness of needing to tailor PHC to the changing disease burden is commendable. Recognizing the ageing population and increasing health needs, the Ministry of Health endorsed a national strategy and executive plan for the older population (2009-2014), which includes the adoption of an age-friendly primary healthcare system as a main strategic direction. There have also been efforts to integrate mental health into primary healthcare, including the establishment of specialized mental health clinics run through the programme ‘Towards a Better Mental Health’ which utilizes visiting physicians from the psychiatric hospital.

20 Information & eGovernment Authority. Kingdom of Bahrain. (2016). Bahrain in Figures. Available at https://www.iga.gov.bh/Media/Pdf-Section/Bahrain_in_figures_Booklet.pdf

21 Salah, K. & Kidd, M. (2019). Family Practice in the Eastern Mediterranean Region: Universal health coverage and quality primary care. Taylor & Francis Group, Florida, USA

22 Salah, K. & Kidd, M. (2019). Family Practice in the Eastern Mediterranean Region: Universal health coverage and quality primary care. Taylor & Francis Group, Florida, USA

23 Kingdom of Bahrain Ministry of Health. Health Improvement Strategy 2015 – 2018. Available at [https://www.moh.gov.bh/Content/Files/Health_Improvement_Strategy\(2015-2018\).pdf](https://www.moh.gov.bh/Content/Files/Health_Improvement_Strategy(2015-2018).pdf)

24 Kingdom of Bahrain Supreme Council of Health. National Health Plan 2016 – 2025. Available at <https://www.sch.org.bh/wp-content/uploads/2020/07/National-Health-Plan-2016-2025.pdf>

25 Kingdom of Bahrain Supreme Council of Health. National Health Plan 2016 – 2025. Available at <https://www.sch.org.bh/wp-content/uploads/2020/07/National-Health-Plan-2016-2025.pdf>



In 2015, a committee was also established to develop a mental health strategy (2016-2020), which also includes integration of mental healthcare into PHC.²⁶

PRIMARY HEALTHCARE SERVICES

In Bahrain, primary health services are provided through 28 health centres and 3 health clinics which are divided across the five health regions.^{27, 28} In 2014, more than 1.3 million people were served by health centres in Bahrain.²⁹

Importantly, Bahrain provides several age and NCD-centered preventive services at PHC level, including elderly care, mental health and chronic disease care, antenatal and child immunization services as well as smoking cessation support.³⁰ Primary healthcare also includes nursing services, oral and dental health services (which are organized into awareness, educational, preventive, and curative services).³¹ Social services are available in some health centres.³²

Bahrain has made improvements to its screening and referral system. Under the Choose Your Doctor Project, patients going to local health centres for treatment receive preventative services, including for cardiovascular disease (CVD) and cancer, and are referred for early management.³³

Another key development is the National Health Information System (I-SEHA programme), which was first introduced in 2014. The system aims to enhance quality healthcare services and patient-centred care through the provision of electronic health service including for patient appointments, laboratory and X-ray results and birth and death registration requests.³⁴

26 World Health Organization Regional Office for the Eastern Mediterranean. Health Profile 2015 Bahrain. Available at https://rho.emro.who.int/sites/default/files/Profiles-briefs-files/EMROPUB_EN_19616-BAH.pdf

27 Information & eGovernment Authority. Kingdom of Bahrain. (2016). Bahrain in Figures. Available at https://www.iga.gov.bh/Media/Pdf-Section/Bahrain_in_figures_Booklet.pdf

28 Salah, K. & Kidd, M. (2019). Family Practice in the Eastern Mediterranean Region: Universal health coverage and quality primary care. Taylor & Francis Group, Florida, USA

29 Kingdom of Bahrain. National Health Plan 2016-2025. Available at <https://www.sch.org.bh/wp-content/uploads/2020/07/National-Health-Plan-2016-2025.pdf>

30 Kingdom of Bahrain- Ministry of Health. Available at <https://www.moh.gov.bh/Services/PrimaryHealthCare>

31 Bahrain. Primary Healthcare. Available at https://www.bahrain.bh/new/en/health-services_en.html

32 Salah, K. & Kidd, M. (2019). Family Practice in the Eastern Mediterranean Region: Universal health coverage and quality primary care. Taylor & Francis Group, Florida, USA

33 Elmusharaf K., Grafton, D., Roberts E., et al. (2021) Prevention and Control of Non-Communicable Diseases in Bahrain: The Case for Investment. Geneva: UNDP, WHO, UNIATF, GHC.

34 World Health Organization for the Eastern Mediterranean. Bahrain Health Profile 2015. Available at https://rho.emro.who.int/sites/default/files/Profiles-briefs-files/EMROPUB_EN_19616-BAH.pdf



PRIMARY HEALTHCARE COVERAGE

Bahrain had a total population of 1.75 million in 2021, with a large proportion of expatriates.³⁵ In 2016 just under 47 percent of the population were Bahraini nationals.³⁶ Bahraini citizens and expatriate domestic workers are entitled to free health coverage provided by the government under the National Social Health Insurance Program (Sehati). Other expatriate employees receive cover from their employers.³⁷ As part of the programme, “Sehati Cards” have been launched which guarantee access to primary healthcare services, facilitate transfer of patients records between public and private sectors and also store key information such as medical history, test results, diagnoses and prescription details.³⁸

The Ministry of Health provides the majority (56 percent) of overall health services, while other government health institutions such as the Military Medical Services Hospital and King Hamad University Hospital provide 15.6 percent, and the private sector provides the remaining 28.1 percent.³⁹

As of 2019, Bahrain has an UHC effective coverage index of 71, demonstrating steady improvement from 54 in 1990.⁴⁰ In comparison with the six GCC countries, Bahrain scores jointly with Oman, below Kuwait and Qatar (with effective coverage indices of 82 and 80 respectively), and higher than the Kingdom of Saudi Arabia and United Arab Emirates (64 and 63 respectively). Bahrain scores above the regional UHC effective coverage index average of 60 for the North Africa and Middle East Region.⁴¹

PRIMARY HEALTHCARE WORKFORCE

The Family Practice Residency Programme (FPRP) started in Bahrain in 1979 to train family physicians. The programme was founded in collaboration with the American University of Beirut and followed with affiliations with both the Irish College of General Practitioners and The Royal College of Surgeons in Ireland. The training programme lasts for four years and intake capacity has increased to more than 18 candidates per annum. Upon graduation, family physicians are mainly deployed to work in Bahrain’s primary healthcare centres.⁴²

Table 1 outlines the number of trained GPs and FPs working in PHC in Bahrain from 2019.

35 World bank. (2022). Data. Available at <https://data.worldbank.org/indicator/SP.POP.TOTL?locations=BH>

36 Information & eGovernment Authority. Kingdom of Bahrain. (2016). Bahrain in Figures. Available at https://www.iga.gov.bh/Media/Pdf-Section/Bahrain_in_figures_Booklet.pdf

37 Kingdom of Bahrain. Health Services Primary Healthcare. Available at https://www.bahrain.bh/new/en/health-services_en.html

38 Bahrain News Agency. Sehati Card roll-out begins. Available at <https://www.bna.bh/en/news?cms=q8FmFJgiscL2fwlzON1%2BDk%2BpswNhh%2B3jLwDmuny6ws%3D>

39 Kingdom of Bahrain. National Health Plan 2016-2025. Available at <https://www.sch.org.bh/wp-content/uploads/2020/07/National-Health-Plan-2016-2025.pdf>

40 IHME. Bahrain. Available at <https://www.healthdata.org/bahrain>

41 Lozano, Rafael, et al (2020). “Measuring universal health coverage based on an index of effective coverage of health services in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019.” *The Lancet* 396:10258 (2020): 1250-1284.

42 Salah, K. & Kidd, M. (2019). *Family Practice in the Eastern Mediterranean Region: Universal health coverage and quality primary care*. Taylor & Francis Group, Florida, USA

Table 2 outlines the workforce for primary and preventative healthcare within the Ministry of Health. From the total Bahraini health workforce, 16 percent of all nurses work in Ministry of Health primary and preventative healthcare, alongside 75 percent of dentists and 35 percent of all physicians in the country.⁴³

Table 1: Bahrain PHC workforce and facilities⁴⁴

Number of general practitioners working in public PHC facilities	98
Number of certified family physicians working in PHC facilities	228
Average number of family physician graduates/year	22
Number of medical schools	2
Number of family medicine departments	1

Table 2: Ministry of Health Primary & Preventative Healthcare Workforce, 2020⁴⁵

Institution	Medical & Para-Medical Workforce				Other manpower (support and admin)	Total
	Allied	Nurses	Dentists	Physicians		
Health Centres						
Health Centres in Health Region I	97	121	22	83	148	471
Health Centres in Health Region II	81	98	12	59	123	373
Health Centres in Health Region III	118	130	19	85	147	499
Health Centres in Health Region IV	87	106	21	65	137	416
Health Centres in Health Region V	64	100	14	61	117	356
Health centres (total)	447	555	88	353	672	2115
School health programme	1	30	0	2	2	35
Elderly care home service	6	18	0	2	12	38
Administration	74	28	1	28	270	401
Primary and Preventive Healthcare Total Workforce	522	613	89	383	944	2551

43 Kingdom of Bahrain. Human Resources Ministry of Health. Available at https://www.moh.gov.bh/Content/Files/Publications/statistics/HS2020/PDF/CH-05-human%20resources_2020.pdf

44 Salah, K. & Kidd, M. (2019). Family Practice in the Eastern Mediterranean Region: Universal health coverage and quality primary care. Taylor & Francis Group, Florida, USA

45 Kingdom of Bahrain. Human Resources Ministry of Health. Available at https://www.moh.gov.bh/Content/Files/Publications/statistics/HS2020/PDF/CH-05-human%20resources_2020.pdf



Bahrain, like its neighbours, has sought to increase the percentage of health services provided by nationals despite being less dependent on expatriate workers compared to other countries in the GCC.⁴⁶ As of 2020, 86 percent of physicians, 90 percent of dentists, 94 percent of pharmacists and technicians are Bahraini. However, just 44 percent of nurses are Bahraini.⁴⁷

MULTISECTORAL PRIMARY HEALTHCARE COORDINATION

In 2017, Bahrain launched the Manama Healthy City project in collaboration with the Ministry of Health and the Capital Governorate. Through this project Um Al Hassam city, a neighbourhood within the capital Manama, received certification as a WHO “Healthy City” in November 2018.⁴⁸

Since 2005, the Ministry of Health and Ministry of Education have worked in collaboration on the health-promoting schools programme to highlight the importance of physical activity.⁴⁹ The ministries also implement programs and activities aimed at promoting healthy lifestyles including combating smoking and obesity. Schools also coordinate with the Department of Primary Health Care Health Centres to ensure completion of the mandatory vaccine schedule, as well as organizing routine vaccination campaigns against tetanus, diphtheria and hepatitis A.⁵⁰ In 2007, school mental health clinics were established in partnership with the Ministry of Health and Ministry of Education. The aims of the clinic include: early detection of learning difficulties, psychological and behavioural disorders, facilitating the access to psychological services, reducing stigma associated with mental health and psychiatry, providing assessment and treatment for speech disorders, focussing attention on preventive mental health and strengthening the partnership between Ministry of Health and the Ministry of Education.⁵¹

Bahrain has also established a multisectoral national coordination mechanism on NCDs which includes representation from 12 sectors, is led by the Ministry of Health and convenes quarterly.⁵²

46 World Health Organization. Country Cooperation Strategy Bahrain. Available at http://apps.who.int/iris/bitstream/handle/10665/136958/ccsbrief_bhr_en.pdf?sequence=1

47 Ministry of Health. Human Resources 2020. Available at https://www.moh.gov.bh/Content/Files/Publications/statistics/HS2020/PDF/CH-05-human%20resources_2020.pdf

48 Elmusharaf K., Grafton, D., Roberts E., et al. (2021) Prevention and Control of Non-Communicable Diseases in Bahrain: The Case for Investment. Geneva: UNDP, WHO, UNIATF, GHC.

49 Elmusharaf K., Grafton, D., Roberts E., et al. (2021) Prevention and Control of Non-Communicable Diseases in Bahrain: The Case for Investment. Geneva: UNDP, WHO, UNIATF, GHC.

50 Ministry of Health. The National School Health Program. Available at <https://www.moh.gov.bh/Services/SchoolHealth?lang=ar>

51 Kingdom of Bahrain Ministry of Health. School Mental Health. Available at <https://www.moh.gov.bh/Services/SchoolMentalHealth>

52 Elmusharaf K., Grafton, D., Roberts E., et al. (2021) Prevention and Control of Non-Communicable Diseases in Bahrain: The Case for Investment. Geneva: UNDP, WHO, UNIATF, GHC.



HEALTH BUDGETING

In 2019, 59 percent of the total health expenditure in Bahrain was provided by the government, a decrease from 66 percent in 2000. Private health expenditure and out-of-pocket health expenditure as proportions of total health expenditure have increased overall, to 41 percent and 30 percent respectively in 2019.⁵³

Of the six GCC countries, Bahrain has the third lowest government health expenditure as percentage of gross domestic product in 2019 at 2.4 percent (from a total health expenditure as percentage of gross domestic product of 4.01 percent). In 2019, Bahrain spent a total of US\$940.4 per capita on health, with 87 percent (or US\$540.06) coming from government expenditure.⁵⁴

In 2018, PHC spending in Bahrain was equivalent to US\$295 per capita. PHC accounted for 27 percent of overall health spending and 22 percent of government health spending. The government accounts for majority of PHC spending (49 percent), followed by households (31 percent) and insurance (20 percent).⁵⁵

DISEASE BURDEN

In Bahrain, like in many countries, the disease burden has shifted over the last 30 years to be predominantly attributed to NCDs. In 1990, 70 percent of the total disease burden in disability-adjusted life-years (DALYs) was caused by NCDs. This has increased rapidly and NCDs now account for 84 percent of DALYs in Bahrain (**Figure 3**).⁵⁶ Across this time period, Bahrain has had a higher NCD burden than the global and regional averages. In 2019, the remaining disease burden included injuries (9.9 percent) and communicable, maternal, neonatal and nutritional diseases (6 percent).⁵⁷

53 World Health Organization Global Health Expenditure Database. Available at <https://apps.who.int/nha/database/ViewData/Indicators/en>

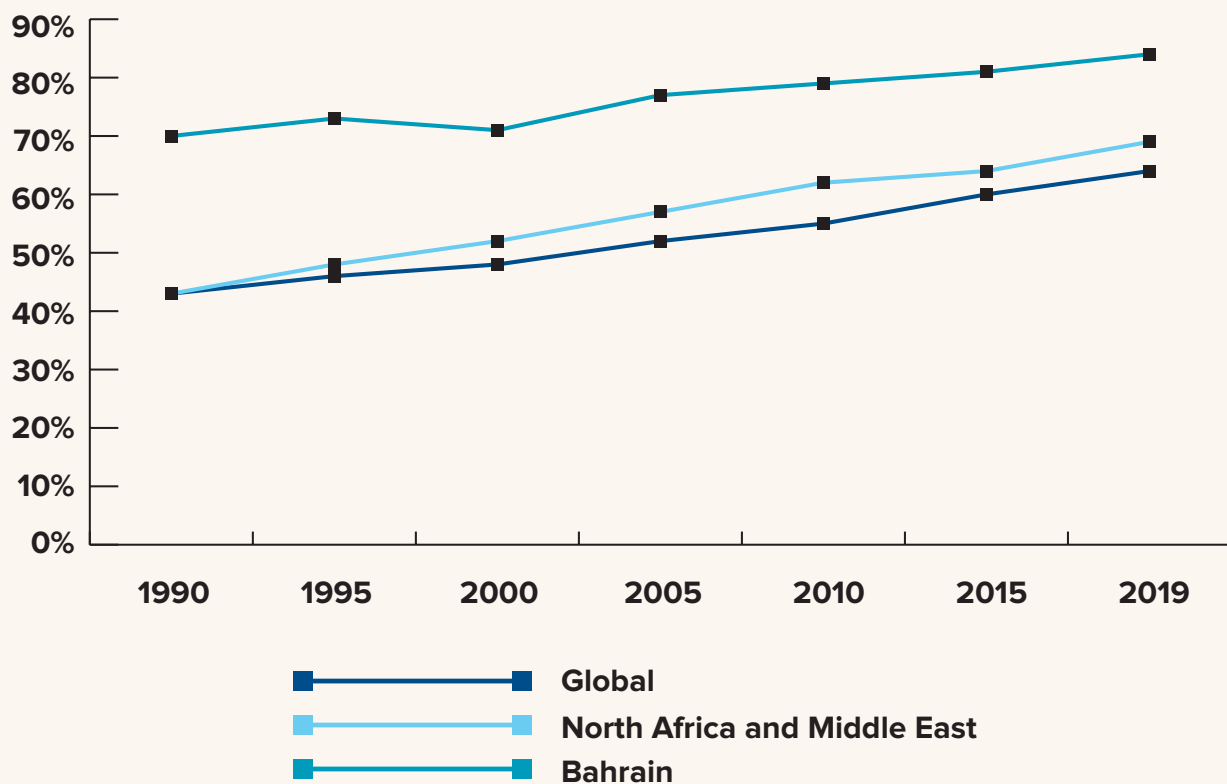
54 World Health Organization Global Health Expenditure Database. Available at <https://apps.who.int/nha/database/ViewData/Indicators/en>

55 World Health Organization Regional Office for the Eastern Mediterranean. Bahrain Primary Health Care Vital Signs Profile.

56 Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2019 (GBD 2019) Results. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2020. Available at <https://vizhub.healthdata.org/gbd-results/>.

57 Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2019 (GBD 2019) Results. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2020. Available at <https://vizhub.healthdata.org/gbd-results/>.

Figure 3: NCDs as percentage of total disease burden (in DALYs) 1990-2019 (Figure source: Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2019 (GBD 2019) Results. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2020. Available from <https://vizhub.healthdata.org/gbd-results/>.)



Indeed, the three leading causes of disease in Bahrain (in DALYs) are diabetes (accounting for 13.5 percent of DALYs), cardiovascular diseases (accounting for 12.8 percent) and mental health disorders (accounting for 11.5 percent).⁵⁸ When looking at causes of death, ischemic heart disease is the leading cause of death in the country, and nine out of the top ten causes of death are NCDs.⁵⁹ Of note, these diseases are well suited to treatment in PHC, requiring consistent access to health services with providers who know their patients' histories to achieve the best outcomes.

⁵⁸ Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2019 (GBD 2019) Results. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2020. Available at <https://vizhub.healthdata.org/gbd-results/>.

⁵⁹ Institute for Health Metrics and Evaluation. (2022). Bahrain. Available at <https://www.healthdata.org/bahrain>



Box 3. The burden of NCDs in Bahrain⁶⁰

Detailed economic modelling for NCD Investment Cases conducted by the Gulf Health Council, UNDP and WHO revealed that the four main NCDs (cancer, cardiovascular diseases, diabetes and chronic respiratory diseases) caused 75 percent of deaths in Bahrain in 2019, and that nearly one in five die from NCDs before the age of 70.

Of the main NCDs, cardiovascular disease causes the most deaths in Bahrain every year (49 percent), followed by cancer (18 percent) and diabetes (3 percent). NCDs cost the Bahrain economy BD 534 (US\$1.4 billion) every year, equivalent to 3.8 percent of its annual GDP. Of these annual costs, 53 percent or 283 million BD (US\$745 million) were government healthcare expenditures.

Of note, the NCD burden above was calculated using a different methodology than the one used in this PHC study, meaning the results are not directly comparable. Indeed, in the NCD Investment Cases, the economic burden of the four main NCDs was calculated considering both direct health expenditure from government and private health providers as well as indirect economic burden from absenteeism, presenteeism and premature mortality. In contrast, this PHC report looks at the costs of a selection of clinical services delivered at public PHC.

Life expectancy has significantly increased in Bahrain, reaching 79 for males and 80 for females in 2017, compared to 69 and 72 in 1990 respectively.⁶¹ As a result, Bahrain has an increasing elderly population with increased and different healthcare needs.

Bahrain's population is exposed to multiple behavioural factors for NCDs which results in high rates of hypertension, diabetes, CVD and obesity. In Bahrain, 34 percent of adults have high blood pressure and 15 percent are diabetic (compared to worldwide diabetes prevalence of 8.5 percent). Bahrain is also among the top five countries in the Middle East and North Africa region with the highest age-adjusted diabetes prevalence, with diabetes prevalence in this region is expected to more than double by 2045.^{62, 63}

60 Elmusharaf K, Chestnov R, Jung JS. et al. (2022) Prevention and Control of Non-Communicable Diseases in Bahrain: The Case for Investment. Geneva: UNDP, WHO, UNIATF, GHC.

61 Institute for Health Metrics and Evaluation. (2022). Bahrain. Available at <https://www.healthdata.org/bahrain>

62 Elmusharaf K., Grafton, D., Roberts E., et al. (2021) Prevention and Control of Non-Communicable Diseases in Bahrain: The Case for Investment. Geneva: UNDP, WHO, UNIATF, GHC.

63 Huang Y, Fernandes JDR, Karuranga S, et al. (2017). Diabetes Prevalence in Middle East and North Africa region (Estimates for 2017 and 2045) International Diabetes Federation.

Results

LIST OF CLINICAL SERVICES

We included 75 clinical services in the modelling. Of these, 10 clinical services relate to the immunization programme, 28 to the NCD programme, four to the child health programme, seven to the nutrition programme, four to the mental health programme, 19 to the reproductive, maternal and child health programme, one to the oral and dental care programme and one to the general practice programme⁶⁴ (see **Annex 2** for a list of clinical services modelled).

COSTS IN 2019 – CLINICAL SERVICES

For 2019, the cost of the selected clinical services delivered at the primary care level in the public sector was estimated at US\$127,751,288 (**Table 4**). The program overhead costs were estimated at US\$31,937,822. The total costs were estimated at US\$159,689,109. These total costs account for 10.3 percent of the total health expenditure (THE), 24.2 percent of the government health expenditure (GHE) and represents a per capita cost of US\$107.62.

Table 4: Costs of the clinical service delivered at the primary care level in Bahrain (2019)

Programme	Cost (US\$)
Immunization	3,730,300
Non-communicable diseases	8,766,417
Child health	25,977,654
Nutrition	4,484,643
Mental health	61,426
Reproductive, maternal and child health	2,488,804
Oral and dental care	4,541,978
General practice	77,700,066
Cost of clinical services	127,751,288
Programme overhead costs (+20%)	31,937,822

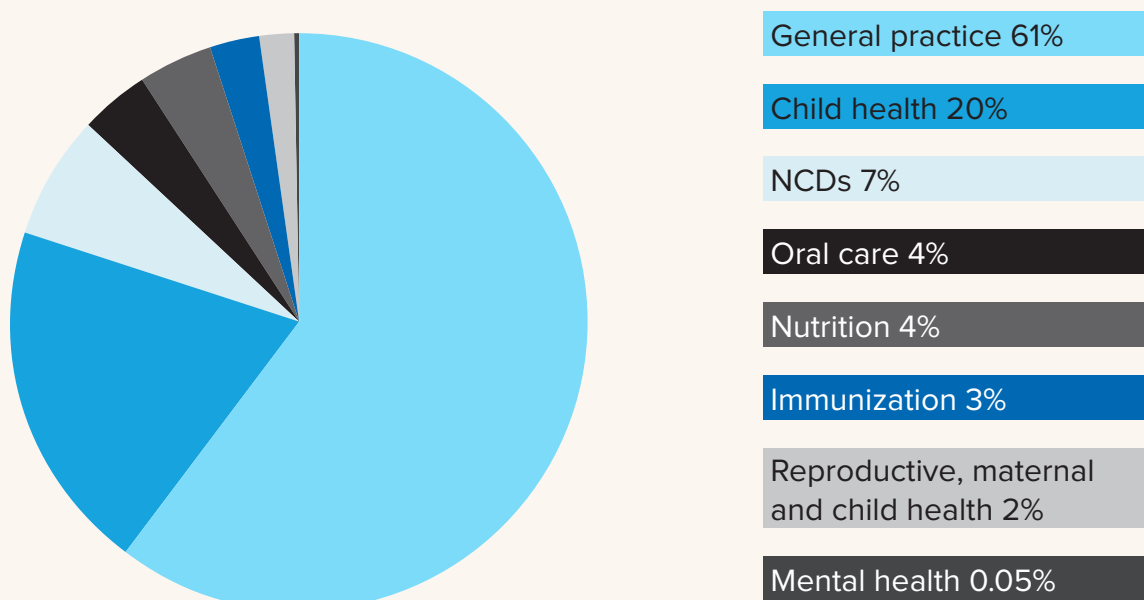
⁶⁴ General Practice refers to general medicine consultations conducted by a General Practitioner (GP). This includes a wide range of preventive and curative medical services. Common cases seen in general medicine consultations may include acute pain management, infectious diseases treatment, health promotion and prevention. In this study, we distinguished between general practice and specialised clinics, which were costed under other programs (maternal care, non-communicable diseases, diabetes, mental health, dental care, vaccinations). The scope of the General Practice Program was defined based on information and data retrieved from the Annual Health Statistics Reports.

TOTAL COSTS	159,689,109
Total costs (% of THE)	10.3
Total costs (% of GHE)	24.2
Total costs per capita (US\$)	107.62

COSTS BY PROGRAMME

General Practice accounted for 61 percent of the clinical service costs modeled, with costs estimated at US\$77,700,066 in 2019 (Figure 4). Child health was the second most expensive programme, with 20 percent of the total costs. NCDs made up just 7 percent of the clinical service costs modeled. With an estimated cost of US\$61,426, the mental health programme generated less than 0.1 percent of the total costs, mainly because of low coverage rate and the fact that most of the clinical services related to mental health are currently conducted at the secondary and tertiary levels in Bahrain. Indeed, an estimated 206,088 individuals did not receive mental health services they needed at primary care level in the public sector in Bahrain in 2019.

Figure 4: Share of total costs by programme, 2019 (Bahrain)



MAIN COST-DRIVING DISEASES

Bahrain's high NCD disease burden indicates that the prevention, treatment or control of diabetes, chronic respiratory diseases and cardiovascular diseases (CVD) should be important sources of expenditure. By itself, treatment of patients with chronic respiratory diseases generates a cost of around US\$3.6 million every year. In total, clinical services for CVD, diabetes and chronic respiratory diseases account for only 5.7 percent of the total cost estimated (**Table 5**). The coverage rates for these services are all well below 40 percent, with over 280,000 patients missing out on clinical services they would have needed at the level of public primary care. Please note that coverage rates and the number of patients who did not receive services needed is reflective of selected primary care level services in the public sector only, meaning patients could have received these services in private or secondary/tertiary care.

Table 5: Main cost-driving disease areas

Non-Communicable Diseases	Cost (US\$)	% of Total Costs	Unique Patients	Patients who did not receive services needed	Coverage Rate
CVD	840,143	0.7%	21,567	114,164	15.9%
Diabetes	2,837,592	2.2%	11,606	154,196	7.0%
Chronic Respiratory Diseases	3,591,934	2.8%	60,157	109,376	35.5%
Total	7,269,668	5.7%	93,330	284,406	24.7%

SCREENING

Taken together, services related to screening of risk of cardiovascular diseases and diabetes, cancers and diabetes complications were estimated at US\$894,059. This represents less than 1 percent of the total costs in 2019 (**Table 6**). In line with low spending on screening, coverage rates for these services are very low. Indeed, over 1 million people in Bahrain have not received needed screening services for these NCDs at the level of public primary care.

Table 6: Costs of top three screening services

Non-Communicable Diseases	Cost (US\$)	% of Total Costs	Unique Patients	Patients who did not receive services needed	Coverage Rate
Screening for risk of CVD/Diabetes	93,614	0.1%	22,423	426,045	5.0%
Screening for Cancer (CBE, Pap Smear, FOBT)	376,629	0.3%	25,645	382,447	6.3%
Screening for Diabetes Complications	423,817	0.3%	16,580	315,024	5.0%
Total	894,059	0.7%	64,648	1,058,867	5.8%



Recommendations

Bahrain recognizes the importance of strong PHC to build an effective, efficient health system and foster a healthy society. In recent years, the country has made commendable progress in strengthening PHC by expanding universal health coverage, developing a national health information system, improving the screening and referral system, and pursuing a multisectoral approach.

In this study, we estimated the costs of a selection of clinical services delivered at public primary care level in Bahrain. These costs were estimated based on the cost of medical supplies as well as salaries of medical professionals needed to deliver the service. This study does not consider other factors contributing to healthcare expenditure such as governance, infrastructure or programme support costs. Further important limitations and considerations are highlighted in the methods section.

The costing analysis included in this report has highlighted a number of areas where PHC services and resource allocation in Bahrain could be further strengthened. The following actions would assist Bahrain to reap significant health and economy benefits across the population:

1

Scale-up NCD clinical and screening services delivered at the primary care level.

NCDs are the leading cause of death in Bahrain, accounting for 75 percent of all deaths in the country.⁶⁵ The modelling in this costing study revealed that NCDs received the third highest spending on a specific health area, only accounting for 7 percent of total costs. Coverage rates for clinical and screening services could be scaled up to address the growing disease burden. Indeed, a significant number of individuals missed out on services they would have required at the public primary care level in Bahrain – this includes more than 284,000 people who did not receive the NCD clinical services and over one million people who did not receive required NCD screening services in 2019. A particularly low coverage rate of clinical services in the public primary sector was observed for diabetes care. Given the comparably high prevalence of diabetes in Bahrain, scaling up diabetes services at the public primary care level through a dedicated family physician that is familiar with the individual's clinical history would improve management and monitoring and eventually health outcomes for affected individuals.

⁶⁵ Elmusharaf K., Grafton, D., Roberts E., et al. (2021) Prevention and Control of Non-Communicable Diseases in Bahrain: The Case for Investment. Geneva: UNDP, WHO, UNIATF, GHC.



Of note, patients missing out on services at the public primary care level may have sought out these services elsewhere, including through secondary or tertiary public as well as private care. Nonetheless, expanding the breadth and coverage of NCD clinical and screening services at the primary care level in Bahrain would provide the opportunity for more coordinated, accessible and cost-effective NCD programmes in the country. Screening programmes in particular could help reduce the disease burden through early intervention as well as reduce long-term associated health costs while increasing population health and wellbeing.

2

Shift mental health services to primary care facilities.

Mental health services at public primary care level in Bahrain currently account for less than 0.1 percent of total costs modeled in this report. This is not driven by a lack of need for services, but rather due to a low coverage rate. Indeed, mental health disorders are the third leading cause of DALYs in Bahrain (11.5 percent of total DALY burden), and an estimated 206,088 people did not receive necessary mental health services at public primary care level in Bahrain in 2019. Of note, these individuals may have sought out and received mental health services in the private sector or in public secondary or tertiary care, where the majority of mental health services are currently delivered in Bahrain. Demand for mental health services is likely to have increased in recent years, as it is well established that the COVID-19 pandemic has had a negative impact on many people's mental health and wellbeing. Evidence from the first year of the pandemic indicated an increase in the global prevalence of anxiety and depression by 25 percent, with young people and women most affected.⁶⁶

While Bahrain has made commendable efforts integrating mental health into primary healthcare, receiving a score of four out of five according to the World Health Organization Mental Health Atlas 2020,⁶⁷ there remains scope to further integrate screening and care services into PHC. Integrating mental health screening and care services into primary care (and in particular general practice) will not only ensure better access to mental healthcare for the population but has also been demonstrated to lead to better health outcomes than treatment in secondary or tertiary care.⁶⁸ Moreover, prominent mental health services in primary care can help provide visibility to mental health disorders and become a platform for

66 65 World Health Organization. COVID-19 pandemic triggers 25% increase in prevalence of anxiety and depression worldwide. Available at <https://www.who.int/news/item/02-03-2022-covid-19-pandemic-triggers-25-increase-in-prevalence-of-anxiety-and-depression-worldwide>

67 66 World Health Organization. Mental Health Atlas 2020. Member State Bahrain. Available at https://cdn.who.int/media/docs/default-source/mental-health/mental-health-atlas-2020-country-profiles/bhr.pdf?sfvrsn=4d74f0b8_7&download=true

68 67 Funk M, Saraceno B, Drew N, Faydi E. Integrating mental health into primary healthcare. *Ment Health Fam Med*. 2008 Mar;5(1):5-8. PMID: 22477840; PMCID: PMC2777555. Available at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2777555/>



education and awareness campaigns to reduce the stigma associated with these conditions. Conceptually, scaling up mental health services in primary care is part and parcel to a people-centred approach to PHC that aims to care for patients and communities in all areas of health and disease.

3

Increase the health workforce with an emphasis on expanding the number of family physicians.

Like other countries in the region, Bahrain has a shortage of primary healthcare workers.⁶⁹ While Bahrain has increased the number of health professionals over the last decade, there remains a gap in the present workforce and the increasing health needs of the population. Bahrain currently has one of the lowest densities of physicians, nurses and midwives in the region.⁷⁰ While Bahrain was the first country in the region to start its residency programme in family medicine and its healthcare workforce doesn't rely on expatriates as much as those of other countries in the region, there remains a shortage of family physicians, and current family physicians are overloaded. Bahrain may consider increasing the number of residency programmes and the intake capacity of existing programmes to close this gap.⁷¹ Scaling up the health workforce, with a focus on the primary health workforce, would incur significant additional health system costs through initial and ongoing training and remuneration. However, these costs must be considered alongside the health and economic gains that improving the primary health workforce would afford the country.

4

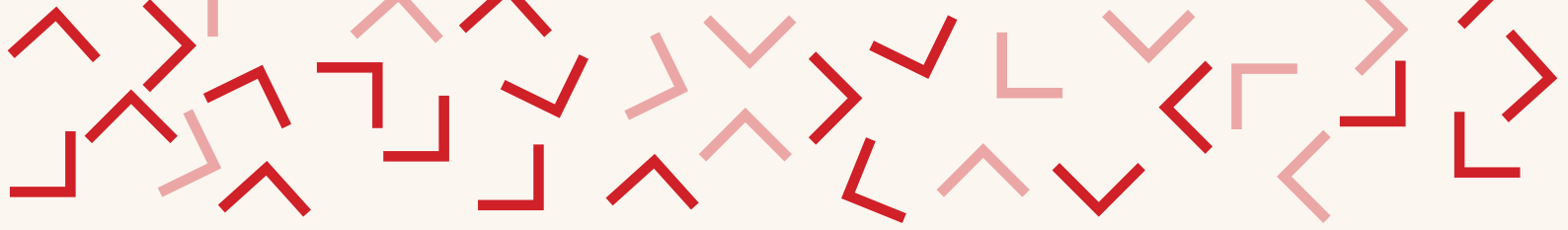
Leverage the modelling in this study to further improve primary care efficiencies and health outcomes.

The detailed costing in this study is a first step towards better understanding the costs associated with clinical services delivered at the primary care level in Bahrain. Understanding these costs, and comparing them to budgets and expenditures, can help identify areas and services that would benefit from more resources or could be run more efficiently. Oman can thus utilise the data and costing model generated in this report to further increase the efficiency of the primary care system, ultimately improving health outcomes.

69 68 Sheikh, J.I., Cheema, S., Chaabna, K., Lowenfels, A.B. and Mamtani, R., 2019. Capacity building in health care professions within the Gulf cooperation council countries: paving the way forward. BMC medical education, 19(1), pp.1-10.

70 69 World Health Organization Regional Office for the Eastern Mediterranean. Health workforce snapshot Bahrain. Available at https://rho.emro.who.int/sites/default/files/Profiles-briefs-files/Bahrain-HWF-Snapshot_2020.pdf

71 70 Salah, K. & Kidd, M. (2019). Family Practice in the Eastern Mediterranean Region: Universal health coverage and quality primary care. Taylor & Francis Group, Florida, USA



It may also be of use to repeat this costing exercise in the near future to assess the impact of any potential changes introduced to primary care service delivery in the country. To this end, it would be beneficial to clearly define the UHC health benefits packages, as this would allow modelling of costs associated with services included in this package.



Photo credit: Omar Chatrivala via Flickr

Annex 1: Assumptions used for population in need, drugs and supplies, and labour costs

Clinical Services	Population in Need	Drugs and Supply Costs	Labour Costs
Varicella vaccine	Children 1 and 5 years old, for the first and the second dose	USD 17.5 for one dose (WHO Review of vaccine price data)	Nurse (4 min) and GP (4 min) for one dose
Influenza vaccine	Children 0-5 + Pregnant women + People 65+	USD 2.39 for one dose (WHO Review of vaccine price data)	Nurse (4 min) and GP (4 min) for one dose
Retinopathy screening	People with diabetes should be screened every year (100%)	-	-
Neuropathy screening	People with diabetes should be screened every year (100%)	-	-
Clinical breast examination	Women aged 40-70 should be screened every 2 years (50%)	-	-
Diagnosis after screened with clinical breast examination	Based on country breast cancer incidence rate (WHO – IARC 2020)	-	-
Pap smear	Women 30-49 should be screened every 3 years (33%)	-	-
Fecal occult blood screening	People 50+ should be screened every 10 years (10%)	-	-
Dental cleaning and preventive care	All population	No costs estimated	Nurse (20 min) and Dentist (15 min) for one visit
General child health	Children 0-14	Cost per outpatient visit (WHO-CHOICE) – Labour costs	GP (15 min) for one visit
Pneumonia treatment	-	-	Nurse (20 min) + GP (20 min) for one visit
Daily iron and folic acid supplementation (anaemic pregnant women)	100% of anaemic pregnant women (World Bank)	-	-
Intermittent iron folic acid supplementation (non anaemic pregnant women)	100% of non anaemic pregnant women (World Bank)	-	-



Daily FAF, postpartum, non anaemic women	Based on number of live births (Annual Health Statistics) and percentage of anaemic women (World Bank)		
Intermittent FAF, postpartum, anaemic women	Based on number of live births (Annual Health Statistics) and percentage of non anaemic women (World Bank)		
Care for adults with low body mass index (BMI)	100% of underweight adults (Global Nutrition Report)	-	-
All mental health clinical services	Based on prevalence rates (Zuberi et al. 2021, GBD 2016 Epilepsy Collaborators, GBD 2016 Dementia Collaborators, WHO-EMRO, Atlas of Substance Disorder).	-	-
Treatment of postpartum haemorrhage (PPH)	Based on incidence rates of PPH	-	-
Identification and management of infertility	Based on regional prevalence (Eldib 2018) among adults 15-49 (3.8%)	-	-
Treatment of syphilis	Based on regional incidence rates (Kenyon et al. 2014) among adults 15-49 (2.2%)	-	-
Treatment of gonorrhea	Based on regional incidence rates (Kenyon et al. 2014) among adults 15-49 (0.9%)	-	-
Treatment of chlamydia	Based on regional incidence rates (Kenyon et al. 2014) among adults 15-49 (1.9%)	-	-
Treatment of trichomoniasis	Based on regional incidence rates (Kenyon et al. 2014) among adults 15-49 (2.8%)	-	-
Treatment of pelvic inflammatory infection	Based on US incidence rate (Kresiel 2021) among adults 15-49 (3.6%)	-	-



General practice	All population	Cost per outpatient visit (WHO-CHOICE) – Labour costs	GP (15 min) for one visit
School health	Children 5-19	No costs estimated	Nurse (10 min) for one visit
All Services	-	-	Community health workers time was allocated to nurses
School health program (ear screening)	Children in grade 1 and 2	No costs estimated	Nurse (10 min) for one visit
Menopause program: screen for urogenital dryness, screen for mood disorders	Women 45-55 (100%)	No costs estimated	GP (15 min) for one visit
Elderly and community care program	People 60+	No costs estimated	Nurse (45 min) for one visit
All Services	-	-	Community health workers time was allocated to nurses
Management of pre-pubertal problems	PIN was not estimated since the number of visits was directly provided by MOH	No costs estimated	Obs/Gyn (15 min) for one visit
Management of polycystic ovary syndrome (PCO), hirsutism, irregular cycles, amenorrhea, abnormal uterine bleeding, management of mild endometriosis, postmenopausal care	PIN was not estimated since the number of visits was directly provided by MOH	No costs estimated	Obs/Gyn (15 min) for one visit
All Services	-	-	Community health workers time was allocated to nurses

Annex 2: Breakdown of costs for clinical services provided at PHC level

Intervention (provided at the primary level)	Drug & Supply Costs (BAD, 2019)	Health Providers Costs (BAD, 2019)	Total Costs (Drugs & Supplies and Providers)
IMMUNIZATION			
Rotavirus vaccine	35,117	83,991	119,108
Measles vaccine	5,429	56,106	61,535
Diphtheria, Tetanus and Pertussis (DPT)vaccine	14,124	28,560	42,684
Hib vaccine	78,260	83,991	162,252
Hepatitis B (Hep B) vaccine	173,263	84,033	257,296
Polio vaccine	4,021	112,213	116,234
BCG vaccine	4,222	28,053	32,276
Pneumococcal vaccine	67,982	108,397	176,379
Varicella vaccine	265,784	56,180	321,964
Influenza vaccine	46,263	71,670	117,933
NON-COMMUNICABLE DISEASES			
CVD and diabetes			
Screening for risk of CVD/Diabetes	20,395	14,931	35,326
Follow-up care for those at low risk of CVD/Diabetes (Absolute Risk: 10-20%)	1,692	1,238	2,930
Treatment for those with very high cholesterol but low absolute risk of CVD/Diabetes (< 20%)	2,695	2,377	5,071
Treatment for those with high blood pressure but low absolute risk of CVD/Diabetes (< 20%)	29,841	43,119	72,961
Treatment for those with absolute risk of CVD/Diabetes 20-30%	38,202	26,892	65,093



Intervention (provided at the primary level)	Drug & Supply Costs (BAD, 2019)	Health Providers Costs (BAD, 2019)	Total Costs (Drugs & Supplies and Providers)
Treatment for those with high absolute risk of CVD/Diabetes (>30%)	57,761	52,399	110,160
Treatment of new cases of acute myocardial infarction (AMI) with aspirin	3,338	1,984	5,323
Treatment of cases with established ischaemic heart disease (IHD)	12,577	5,935	18,512
Treatment for those with established cerebrovascular disease and post stroke	11,364	6,818	18,182
Treatment of cases with rheumatic heart disease (with benzathine penicillin)	2,003	16,802	18,804
Standard Glycemic control	480,735	51,775	532,510
Intensive Glycemic control	474,232	64,047	538,279
Retinopathy screening	3,229	32,200	35,429
Neuropathy screening and preventive foot care	54,736	69,766	124,502
Breast cancer			
Basic breast cancer awareness	0	10,794	10,794
Screening: Clinical Breast Examination	0	81,299	81,299
Cervical cancer			
Papanicolaou test (Pap smear)	7,755	96,053	103,808
Colorectal cancer			
Screening: Fecal occult blood testing	4,609	22,912	27,522
RESPIRATORY DISEASE			
Asthma: Inhaled short acting beta agonist for intermittent asthma	62,651	64,335	126,986

Intervention (provided at the primary level)	Drug & Supply Costs (BAD, 2019)	Health Providers Costs (BAD, 2019)	Total Costs (Drugs & Supplies and Providers)
Asthma: Low dose inhaled beclometasone + short-acting beta-agonists (SABA)	339,454	128,669	468,123
Asthma: High dose inhaled beclometasone + SABA	415,204	96,502	511,706
Chronic obstructive pulmonary disease (COPD): Smoking cessation	0	5,112	5,112
COPD: Inhaled salbutamol	60,323	61,944	122,267
COPD: Low-dose oral theophylline	31,100	27,255	58,355
COPD: Ipratropium inhaler	16,515	9,539	26,054
COPD: Exacerbation treatment with antibiotics	176	17,597	17,772
COPD: Exacerbation treatment with oral prednisolone	1,474	17,597	19,071
Emergency care			
Average annual emergency care needs	146,132	NR	146,132
CHILD HEALTH			
General health			
Child General Health	7,264,738	2,508,856	9,773,593
General Health			
School Health	0	329	329
Deworming			
Deworming	52	0	52
Diarrhea management			
ORS	0	13,826	13,826
Pneumonia			
Pneumonia treatment (children)	0	15,088	15,088

Intervention (provided at the primary level)	Drug & Supply Costs (BAD, 2019)	Health Providers Costs (BAD, 2019)	Total Costs (Drugs & Supplies and Providers)
NUTRITION			
Women of reproductive age and adolescent girls			
Intermittent iron-folic acid supplementation	165	21,919	22,083
Pregnant and lactating women			
Daily iron and folic acid supplementation (pregnant women)	2,955	14,308	17,262
Intermittent iron and folic acid supplementation (non-anemic pregnant women)	800	28,402	29,202
Adults			
Care for adults with low BMI	27,075	27,992	55,067
Children			
Breastfeeding counselling and support	0	141,152	141,152
Complementary feeding counselling and support	0	1,019,180	1,019,180
Intermittent iron supplementation in children	1,415	406,957	408,372
MENTAL HEALTH			
Anxiety disorders			
Basic psychological treatment for anxiety disorders (mild cases).	0	8,601	8,601
Basic psychosocial treatment and anti-depressant medication for anxiety disorders (moderate-severe cases)	460	3,158	3,618
Depression			
Basic psychosocial treatment for mild depression	0	8,901	8,901
Basic psychosocial treatment and anti-depressant medication of first episode moderate-severe cases	262	1,797	2,059



Intervention (provided at the primary level)	Drug & Supply Costs (BAD, 2019)	Health Providers Costs (BAD, 2019)	Total Costs (Drugs & Supplies and Providers)
MATERNAL NEONATE AND REPRODUCTIVE HEALTH			
Family planning			
Pill - Progestin only	35,130	81,011	116,141
Injectable - 3 month (Depo Provera)	357	1,657	2,014
Other contraceptives	0	12,888	12,888
IUCD follow-up care (checking for misplace, removal, treating related infection)	116	2,350	2,466
Pregnancy care			
Tetanus toxoid (pregnant women)	1,010	63,896	64,905
Syphilis detection and treatment (pregnant women)	2,211	67,147	69,358
Basic ANC	0	144,048	144,048
Breast feeding education and advices	0	24,385	24,385
Pregnancy care - treatment of pregnancy complications			
Deworming (pregnant women)	72	772	844
Postpartum care - other			
Mastitis	909	4,033	4,941
Breast feeding education and advices	0	30,247	30,247
Treatment of postpartum hemorrhage	555	8,686	9,241
Other sexual and reproductive health			
Treatment of urinary tract infection (UTI)	4,732	39,382	44,114
Identification and management of infertility	0	126,075	126,075
Treatment of syphilis	24,975	36,495	61,471
Treatment of gonorrhea	1,889	14,764	16,653



Intervention (provided at the primary level)	Drug & Supply Costs (BAD, 2019)	Health Providers Costs (BAD, 2019)	Total Costs (Drugs & Supplies and Providers)
Treatment of chlamydia	17,639	31,685	49,324
Treatment of trichomoniasis	3,177	46,283	49,460
Treatment of PID (Pelvic Inflammatory Disease)	50,876	59,720	110,595
GENERAL PRACTICE			
General practice	21,794,213	7,526,567	29,320,780
ORAL CARE AND CANCER			
Dental cleaning and preventive care	0	1,713,954	1,713,954

Annex 3: References and assumptions used to estimate the total number of services delivered

Clinical Services	Reference / Assumption
IMMUNIZATION	
Rotavirus vaccine	MOH Health Statistics 2019
Measles vaccine	
DPT vaccine	
Hib vaccine	
Hep B vaccine	
Polio vaccine	
BCG vaccine	
Pneumococcal vaccine	
Varicella vaccine	Assumption based on current Coverage Rate (CR) (Immunization)
Influenza vaccine	MOH Health Statistics 2019

Clinical Services	Reference / Assumption
NON-COMMUNICABLE DISEASES	
CVD and diabetes	
Screening for risk of CVD/Diabetes	Assumption: 5.0%
Follow-up care for those at low risk of CVD/ Diabetes (Absolute Risk: 10-20%)	Estimation based on MOH Health Statistics 2019 (NCD Clinics)
Treatment for those with very high cholesterol but low absolute risk of CVD/Diabetes (< 20%)	
Treatment for those with high blood pressure but low absolute risk of CVD/Diabetes (< 20%)	
Treatment for those with absolute risk of CVD/ Diabetes 20-30%	
Treatment for those with high absolute risk of CVD/Diabetes (>30%)	
Treatment of new cases of acute myocardial infarction (AMI) with aspirin	
Treatment of cases with established ischaemic heart disease (IHD)	
Treatment for those with established cerebrovascular disease and post stroke	
Treatment of cases with rheumatic heart disease (with benzathine penicillin)	
Standard Glycemic control	Estimation based on MOH Health Statistics 2019 (Diabetes Clinics)
Intensive Glycemic control	
Retinopathy screening	
Neuropathy screening and preventive foot care	
Breast cancer	
Basic breast cancer awareness	Assumption: 5.0%
Screening: Clinical Breast Examination	MOH Health Statistics 2019
Cervical cancer	
Papanicolaou test (Pap smear)	MOH Health Statistics 2019
Colorectal cancer	
Screening: Fecal occult blood testing	Estimation based on CBE and Pap Smear



Clinical Services	Reference / Assumption
RESPIRATORY DISEASE	
Asthma: Inhaled short acting beta agonist for intermittent asthma	Estimation based on UHC Service Coverage Sub-Index on NCDs (WHO)
Asthma: Low dose inhaled beclometasone + SABA	
Asthma: High dose inhaled beclometasone + SABA	
COPD: Smoking cessation	
COPD: Inhaled salbutamol	
COPD: Low-dose oral theophylline	
COPD: Ipratropium inhaler	
COPD: Exacerbation treatment with antibiotics	
COPD: Exacerbation treatment with oral prednisolone	
Emergency care	
Average annual emergency care needs	N/A
CHILD HEALTH	
General health	
Child General Health	Assumption: 25% of total number of GP Visit
General Health	
School Health	MOH Health Statistics 2019
Deworming	
Deworming	Estimation based on UHC Service Coverage Sub-Index on Infectious Disease (WHO)
Diarrhea management	
Pneumonia	Estimation based on UHC Service Coverage Sub-Index on Infectious Disease (WHO)
Pneumonia	
Pneumonia treatment (children)	Estimation based on UHC Service Coverage Sub-Index on Infectious Disease (WHO)

Clinical Services	Reference / Assumption
NUTRITION	
Women of reproductive age and adolescent girls	
Intermittent iron-folic acid supplementation	Assumption: 5.0%
Pregnant and lactating women	
Daily iron and folic acid supplementation (pregnant women)	Estimation based on UHC Service Coverage Sub-Index on RMCH (WHO)
Intermittent iron and folic acid supplementation (non-anemic pregnant women)	
Adults	
Care for adults with low BMI	Assumption based on MOH Health Statistics 2019
Children	
Breastfeeding counselling and support	Estimation based on UHC Service Coverage Sub-Index on RMCH (WHO)
Complementary feeding counselling and support	
Intermittent iron supplementation in children	Estimation based on UHC Service Coverage Index (WHO)
MENTAL HEALTH	
Anxiety disorders	
Basic psychological treatment for anxiety disorders (mild cases).	Assumption based on MOH Health Statistics 2019 (Mental Health Clinics)
Basic psychosocial treatment and anti-depressant medication for anxiety disorders (moderate-severe cases)	
Depression	
Basic psychosocial treatment for mild depression	Assumption based on MOH Health Statistics 2019 (Mental Health Clinics)
Basic psychosocial treatment and anti-depressant medication of first episode moderate-severe cases	
MATERNAL NEONATE AND REPRODUCTIVE HEALTH	
Family planning	
Pill - Progestin only	UN 2019: Contraceptive Use by Method (Regional Data)
Injectable - 3 month (Depo Provera)	
Other contraceptives	

Clinical Services	Reference / Assumption
IUCD follow-up care (checking for misplace, removal, treating related infection)	Estimation based on UHC Service Coverage Index (WHO)
Pregnancy care	
Tetanus toxoid (pregnant women)	Assumption based on MOH Health Statistics 2019 (ANC Visits)
Syphilis detection and treatment (pregnant women)	
Basic ANC	
Breast feeding education and advices	
Pregnancy care - treatment of pregnancy complications	
Deworming (pregnant women)	Assumption: 100%
Postpartum care - other	
Mastitis	Estimation based on UHC Service Coverage Sub-Index on RMCH (WHO)
Breast feeding education and advices	
Treatment of postpartum hemorrhage	Assumption: 100%
Other sexual and reproductive health	
Treatment of urinary tract infection (UTI)	Estimation based on UHC Service Coverage Index (WHO)
Identification and management of infertility	
Treatment of syphilis	
Treatment of gonorrhea	
Treatment of chlamydia	
Treatment of trichomoniasis	
Treatment of PID (Pelvic Inflammatory Disease)	
GENERAL PRACTICE	
General practice	MOH Health Statistics 2019
ORAL CARE AND CANCER	
Dental cleaning and preventive care	MOH Health Statistics 2019

