The cost of health services delivered at primary care facilities in

KUWAIT

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Executive summary

Strong primary healthcare (PHC) is the key to more efficient health systems with lower health spending and better health outcomes.

This report determines the cost of selected clinical services provided at the primary care level in Kuwait to further promote preventative and close-to-client services in the country. The cost of a total of 84 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.

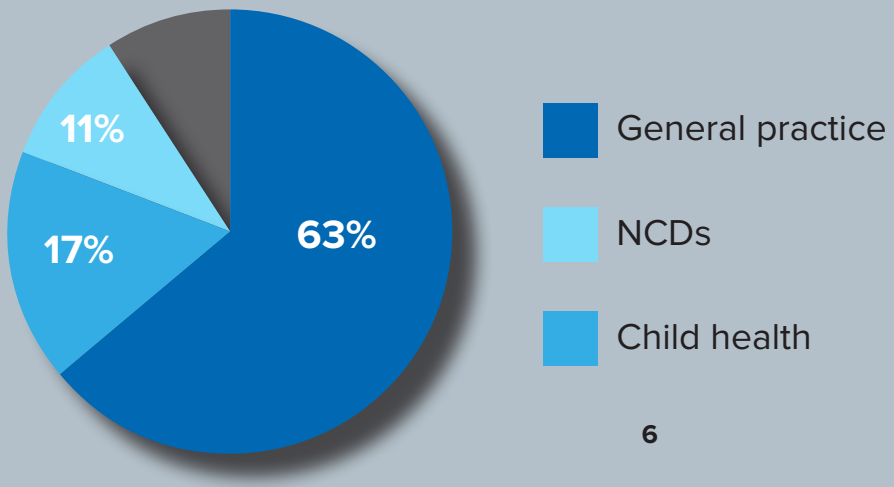
Cost of primary health clinical services

Primary care clinical services cost Kuwait

US$1.2 billion

in 2019. This is equivalent to US$272 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 Kuwait:

- **The total cost for the set of clinical services provided at the primary care level in Kuwait in 2019 was US$1.2 billion.** This is equivalent to US$272 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 63 percent and child health with 17 percent. Non-communicable diseases (NCDs) made up 11 percent of the total costs, and this was mainly driven by diabetes, chronic respiratory disease and cardiovascular disease services.
- **There is room to scale up the coverage of NCD clinical and screening services.** 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 3 million people did not receive NCD screening services and 947,923 people did not receive NCD clinical services they needed at the public primary care level in 2019.
- **Mental health services at PHC level should be strengthened.** The mental health programme makes up less than 1 percent of the total costs, mainly because of low coverage rates. It is estimated that 287,732 people did not receive the mental health services they needed at the primary care level in the public sector in 2019.

Recommendations

1	**Scale-up NCD clinical and screening services delivered at primary care level.**
2	**Shift mental health services from secondary to primary care facilities.**
3	**Strengthen maternal and neonatal care services at the primary care level.**
4	**Scale-up existing and launch new initiatives to strengthen the national healthcare workforce.**
5	**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 tool to achieving universal health coverage and health-related sustainable development goals. PHC is an approach to healthcare based upon three components: multisectoral 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]

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
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. 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.[7,8,9,10,11] Hallmarks of PHC include:

- universal accessibility[7,8,9,10,11]
- person- rather than disease-focussed[7,8,10,11]
- continuous across the life span[7,8,10]
- comprehensive services, including prevention, diagnosis and treatment[7,8,9,10]

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 healthcare[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 Qatar 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 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] An example of this would be one family physician, or team, providing

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

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, K. & Kidd, M. (2019). Family Practice in the Eastern Mediterranean Region: Universal health coverage and quality

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 Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and the UAE, in undertaking a comparative study on the costs of PHC programmes. Understanding the cost of PHC and preparing for 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

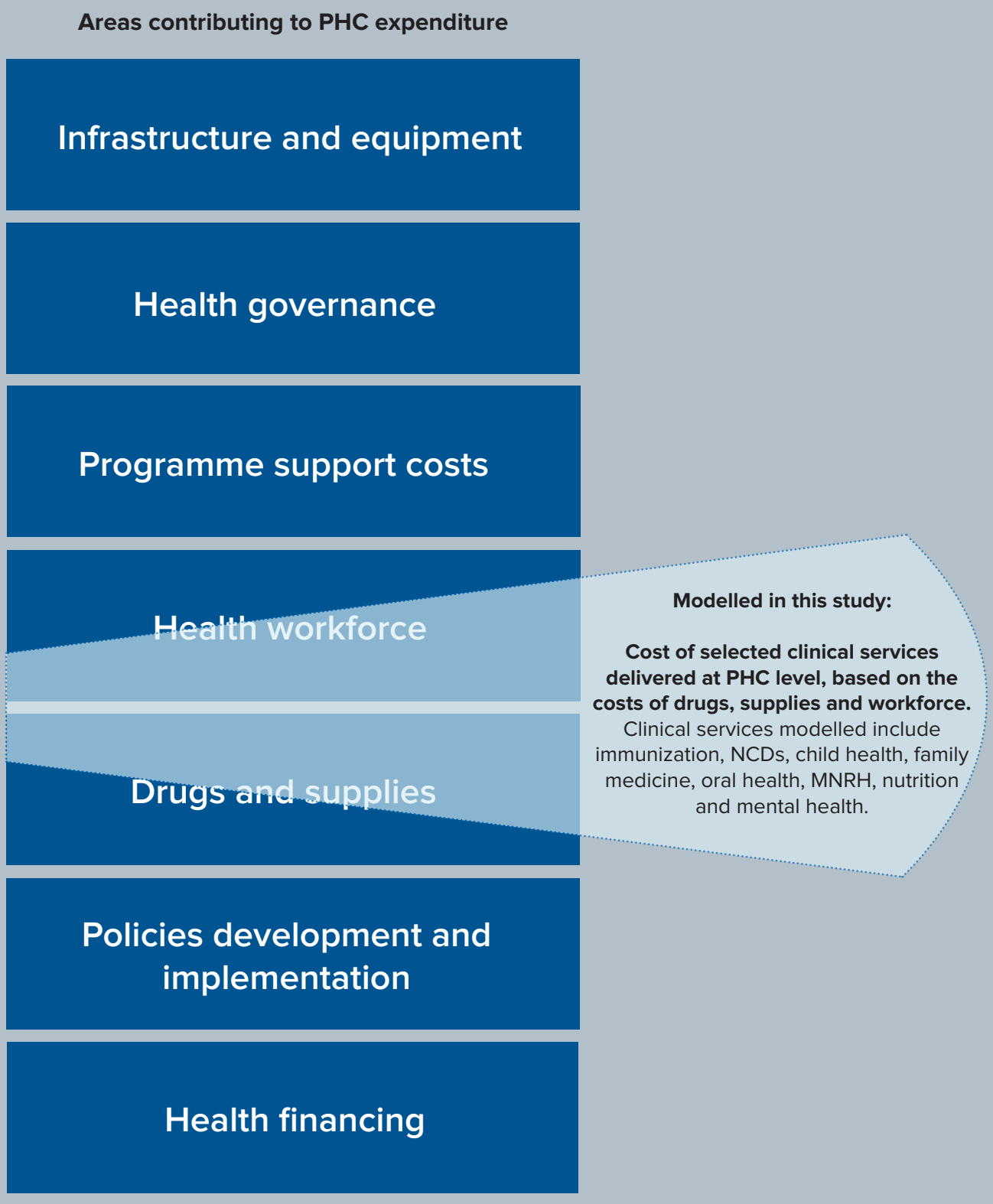
This study summarizes Kuwait's PHC structure and estimates the costs of delivering a set of primary care clinical services spread across seven programmes: (1) immunisation, (2) non-communicable diseases, (3) oral and dental care, (4) child health, (5) nutrition, (6) mental health, reproductive, maternal, 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 important 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 Kuwait's public sector were estimated. The coverage rates might not reflect the number of services delivered in the private sector (**Figure 1**).

primary care. Taylor & Francis Group, Florida, USA.

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:

Intervention cost = Number of services x 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:

Number of services = Target population x Population in need x Coverage rate

To estimate the cost of service the following formula was used:

Cost per service = Drugs and supply costs + 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

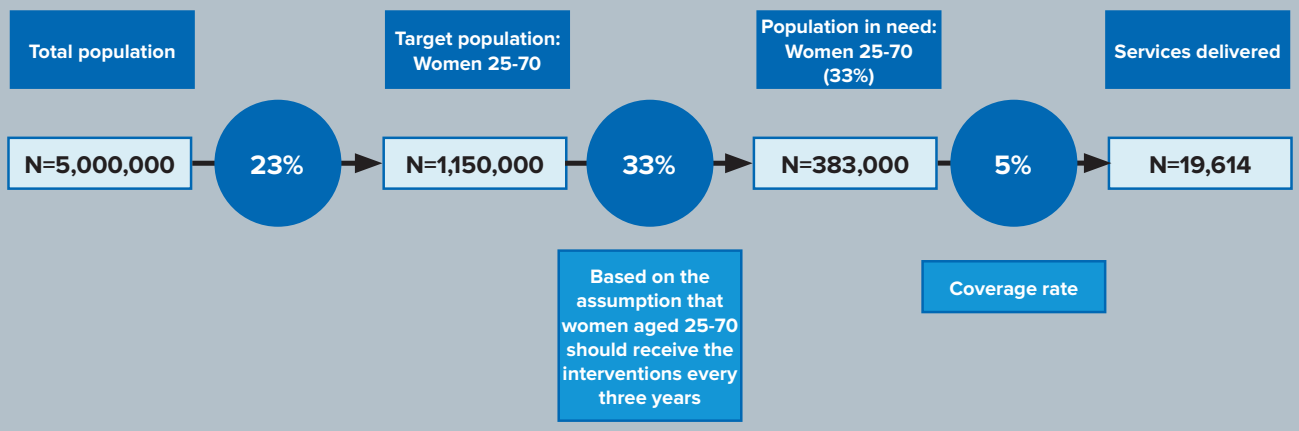
The coverage rate reflects the percentage of the population in need who received a service at the primary healthcare level. The coverage rate was calculated following three steps:

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 formulae was used:

Healthcare provider's cost = salary per minute x 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 (209 days) and working hours per day (7 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.

Photo credit: Matt Tillett via Freepik

Primary healthcare in Kuwait

PRIMARY HEALTHCARE GOVERNANCE

The Ministry of Health manages healthcare policy, financing, resource allocation as well as providing healthcare provision, including the 113 PHC centres.[20, 21] The Ministry of Health is guided by the Supreme Council of Planning who share a five-year national plan with the Ministry of Health, which develops a health plan in response.[22] In 2022, there were six health regions in Kuwait, with each responsible for decentralized administrative functions with a high degree of autonomy in implementation and resource management, including health workforce training and service delivery.[23, 24] One challenge to healthcare delivery in Kuwait is the reliance on an expatriate health work force. The policy of 'Kuwaitization' aims to train a national health workforce across different cadres to reduce the reliance on non-national health professionals.[25]

PRIMARY HEALTHCARE SERVICES

Kuwait's healthcare services delivery system is designed over three levels in accordance with PHC principles: primary, secondary, and tertiary care levels. Tertiary and secondary services are provided by national specialist hospitals and by six general hospitals. Primary services are provided through primary healthcare centres, of which there are 113 spread across the six health regions of Kuwait.[26] Each centre provides services for approximately 40,000 people with a mix of both family and general physicians and general practitioners.

As per a 2018 World Health Organization Review of PHC in the Eastern Mediterranean, 90 percent of PHC centres in Kuwait provided dental and diabetes care, with 38 percent providing gynaecological and obstetric care.[27, 28] PHC centres use an electronic health file which can be accessed across all centres and is planned to be linked to hospitals. A majority (90 percent) of PHC centres are open until midnight, with all centres offering walk-in services.[29]

20 Elmusharaf K., Menescal B., Roberts E., et al. (2021). The Case for Investment in Prevention and Control of Non-communicable Diseases in Kuwait. Geneva: UNDP, WHO, UNIATF, GHC.
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 World Health Organization. (2016). Kuwait Country Cooperation Strategy at a glance. Available at: http://apps.who.int/iris/bitstream/handle/10665/136906/ccsbrief_kwt_en.pdf?sequence=1
23 Elmusharaf K., Menescal B., Roberts E., et al. (2021). The Case for Investment in Prevention and Control of Non-communicable Diseases in Kuwait. Geneva: UNDP, WHO, UNIATF, GHC.
24 World Health Organization. Regional Office for the Eastern Mediterranean. (2015). Kuwait health profile 2015.
25 World Health Organization. (2016). Kuwait Country Cooperation Strategy at a glance. Available at: http://apps.who.int/iris/bitstream/handle/10665/136906/ccsbrief_kwt_en.pdf?sequence=1
26 Salah, K. & Kidd, M. (2019). Family Practice in the Eastern Mediterranean Region: Universal health coverage and quality primary care. Taylor & Francis Group, Florida, USA.
27 World Health Organization. (2019). Report on primary healthcare in the Eastern Mediterranean Region: review of progress over the last decade (2008-2018). AND Kuwait Ministry of Health Stakeholder Interview (2022).
28 Kuwait Ministry of Health. (2022). Interview.
29 Salah, K. & Kidd, M. (2019). Family Practice in the Eastern Mediterranean Region: Universal health coverage and quality primary care. Taylor & Francis Group, Florida, USA.

Challenges for PHC in Kuwait previously included long wait times for patients to attend appointments, which has largely been addressed with wait times now between 18 and 26 minutes. However, the need for a systemic assessment of health service quality including PHC remains a challenge.[30]

PRIMARY HEALTHCARE COVERAGE

The population in Kuwait was 4.2 million in 2020 with expatriates accounting for over 72 percent of the population.[31, 32] PHC coverage is free for citizens, but fees are required to be paid by expatriates to access health services.[33] It is compulsory for expatriates to maintain a health coverage plan through either employment-based health insurance plans or through privately purchased insurance plans.[34] The cost of services to these plans is subsidized by the government, with special financing arrangements to support the low-income expatriate workforce.[35] Recently, insurance packages have been promoted for specific populations within Kuwait, including a package for retired Kuwaiti citizens which is publicly funded but managed by a private company, and employment-based private insurance packages.[36] Therefore, not all of the population accesses services through Ministry of Health primary healthcare centres. In 2019, Kuwait had a universal health coverage effective coverage index of 82 percent, having grown steadily from 65 percent in 1990.[37]

HEALTHCARE WORKFORCE

Since 1983, FP has been the model used by Kuwait to achieve PHC, with the long-term goal of having FP act as the basis for a fully integrated healthcare system.[38, 39] Training of family practitioners has taken place since 1983 with the Kuwait Institute for Medical Specializations establishing the first international fellowship with the Royal College of General Practitioners.[40] Currently there is a five-year residency programme for family medicine which prepares medical school graduates for the delivery of comprehensive healthcare to patients of all

30 World Health Organization. Regional Office for the Eastern Mediterranean. (2015). Kuwait health profile 2015.
31 Elmusharaf K., Menescal B., Roberts E., et al. (2021). The Case for Investment in Prevention and Control of Non-communicable Diseases in Kuwait. Geneva: UNDP, WHO, UNIATF, GHC.
32 World Bank. (2022). Data. Available at: https://data.worldbank.org/indicator/SP.POP.TOTL?locations=KW
33 World Health Organization. (2019). Report on primary healthcare in the Eastern Mediterranean Region: review of progress over the last decade (2008-2018).
34 World Health Organization. (2019). Report on primary healthcare in the Eastern Mediterranean Region: review of progress over the last decade (2008-2018).
35 Elmusharaf K., Menescal B., Roberts E., et al. (2021). The Case for Investment in Prevention and Control of Non-communicable Diseases in Kuwait. Geneva: UNDP, WHO, UNIATF, GHC.
36 World Health Organization 2019 Report on primary healthcare in the Eastern Mediterranean Region: review of progress over the last decade (2008-2018).
37 Institute for Health Metrics and Evaluation. (2022). Kuwait. Available at: https://www.healthdata.org/kuwait
38 Salah, K. & Kidd, M. (2019). Family Practice in the Eastern Mediterranean Region: Universal health coverage and quality primary care. Taylor & Francis Group, Florida, USA.
39 World Health Organization. (2019). Report on primary healthcare in the Eastern Mediterranean Region: review of progress over the last decade (2008-2018).
40 Salah, K. & Kidd, M. (2019). Family Practice in the Eastern Mediterranean Region: Universal health coverage and quality primary care. Taylor & Francis Group, Florida, USA.

ages. Although Kuwait aims to have FP as the cornerstone of PHC, most PHC services are currently delivered by GPs. GPs accounted for 83 percent of physicians working in PHC in 2020, with the remaining 17 percent being qualified FPs.[41] Professional development in FP is also available to GPs, with a national strategy to increase the number of both GPs trained in family practice and qualified FPs. The Kuwait Association for Family Physicians and General Practitioners aims to have one family practitioner for each whole family in the country.[42]

MULTISECTORAL PRIMARY HEALTHCARE COORDINATION

A number of multisectoral initiatives include PHC in Kuwait. These include a committee on NCDs in PHC as one of three thematic committees under the multisectoral high-level committee for NCDs. Another initiative for multisectoral action is the Healthy City Programme. Designated in 2014, the city of Yarmouk is Kuwait's first "Healthy City", following WHO recommendations through a community-lead programme to promote healthy living in the urban setting with health promotion one of six goals of the programme.[43, 44]

HEALTH BUDGETING

In 2019, 87 percent of the total health expenditure in Kuwait was provided by the government, an increase from 73 percent in 2000. Private health expenditure and out-of-pocket health expenditure as proportions of total health expenditure have steadily decreased during this time, to 13 percent and 12 percent respectively in 2019.[45]

Of the six GCC countries, Kuwait had the highest government health expenditure as percentage of gross domestic product in 2019 at 4.8 percent (from a total health expenditure as percentage of gross domestic product of 5.5 percent, second to Saudi Arabia at 5.7 percent).[46] In 2019, Kuwait spent a total of US$1,758.67 per capita on health, with 87 percent (or US$1,539.36) coming from government expenditure as the highest government contribution per capita in the GCC.[47]

41 Kuwait Ministry of Health. (2022). Interview.
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.
43 Elmusharaf K., Menescal B., Roberts E., et al. (2021) The Case for Investment in Prevention and Control of Non-communicable Diseases in Kuwait. Geneva: UNDP, WHO, UNIATF, GHC.
44 Yarmouk Healthy City. (2022). Available at: https://yarmoukhealthycity.org/en/about/
45 World Health Organization Global Health Expenditure Database. (2022). Available at: https://apps.who.int/nha/database/ViewData/Indicators/en
46 World Health Organization Global Health Expenditure Database. (2022). Available at: https://apps.who.int/nha/database/ViewData/Indicators/en
47 World Health Organization Global Health Expenditure Database. (2022). Available at: https://apps.who.int/nha/database/ViewData/Indicators/en

DISEASE BURDEN

The disease burden in Kuwait has shifted over the past 30 years to be predominantly attributable to non-communicable diseases, which amongst others include cardiovascular disease, cancer, chronic respiratory diseases and diabetes. In 2019, 80 percent of the total disease burden (in disability-adjusted life-years) was caused by NCDs (**Figure 3**).[48] The remaining 20 percent of total disease burden is made up of injuries (10.6 percent) and communicable, maternal, neonatal and nutritional disease (9.34 percent). Maternal and neonatal disorders alone account for 4.1 percent of the total disease burden, which is significantly higher than the average for high-income countries of 1.2 percent.[49] However, NCDs are well suited to treatment in PHC which provides consistent access to health services with providers who know their patients' histories to achieve the best outcomes.

Box 3. The burden of NCDs in Kuwait

Detailed economic modelling conducted by the Gulf Health Council, UNDP and WHO revealed that four main NCDs (cardiovascular diseases, cancer, diabetes and chronic respiratory diseases) caused 65 percent of all deaths in Kuwait in 2019, and that nearly one if five adults in Kuwait die from NCDs before the age of 70.[50] Of the main NCDs, cardiovascular disease causes the most deaths in Kuwait every year (43 percent), followed by cancer (14 percent) and diabetes (7 percent).

NCDs cost the Kuwait economy KD 1.6 billion (US$5.2 billion) every year, equivalent to 3.9 percent of its annual GDP. Of these annual costs, 37 percent or 712 million KD (US$2.32 million) were government healthcare expenditures for the four main NCDs.[51, 52]

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.

48 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/.

49 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/.

50 Elmusharaf K., Menescal B., Roberts E., et al. (2021). The Case for Investment in Prevention and Control of Non-communicable Diseases in Kuwait. Geneva: UNDP, WHO, UNIATF, GHC.

51 Elmusharaf K., Menescal B., Roberts E., et al. (2021). The Case for Investment in Prevention and Control of Non-communicable Diseases in Kuwait. Geneva: UNDP, WHO, UNIATF, GHC.

52 Elmusharaf K., Grafton D., Jung JS., et al. The case for investing in the prevention and control of non-communicable diseases in the six countries of the Gulf Cooperation Council: an economic evaluation. BMJ Global Health 2022;7:e008670

Figure 3: NCDs as percentage of total disease burden (in DALYs) 1990-2019

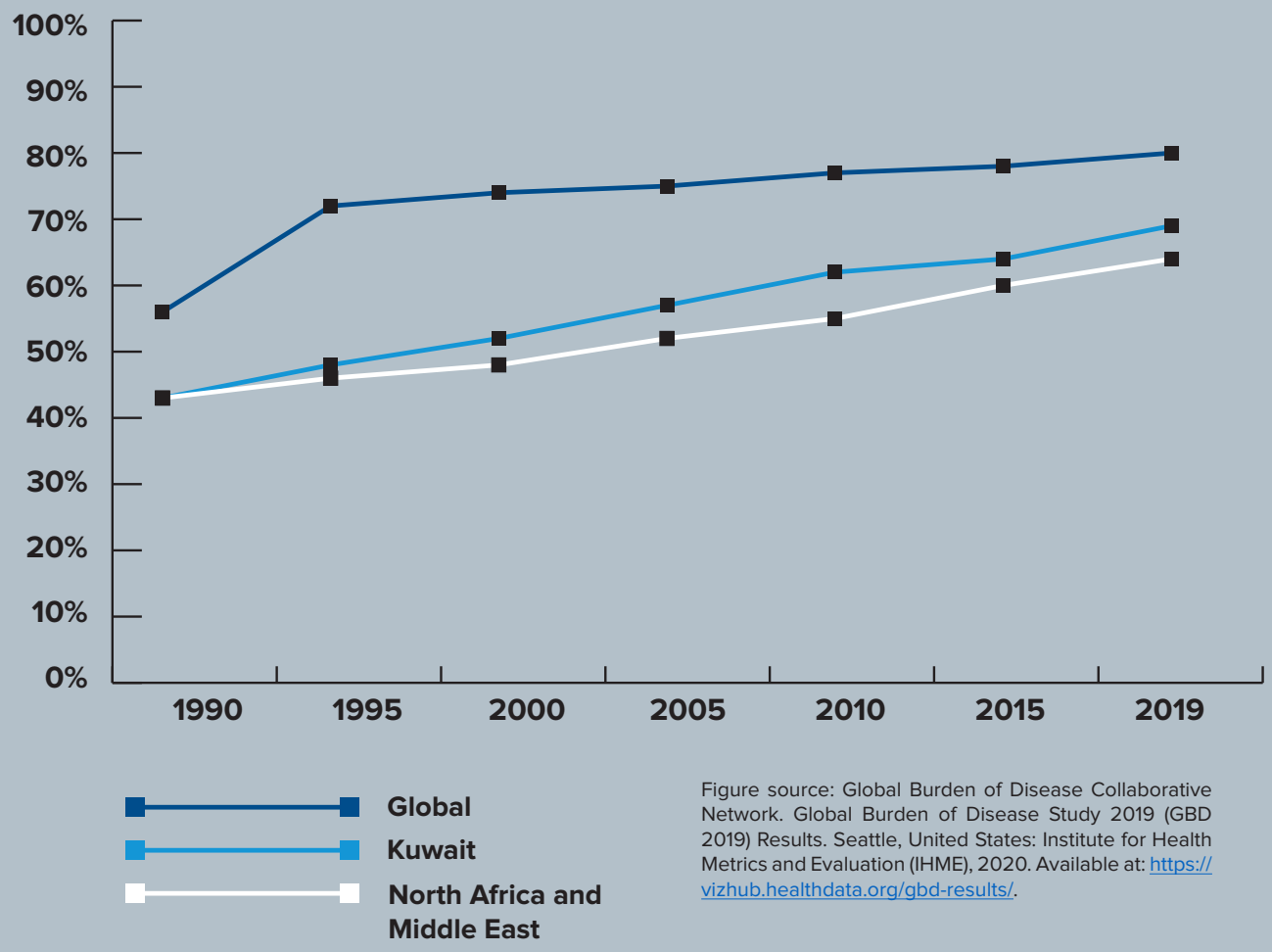


Figure source: Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2019 (GBD 2019) Results. Seattle, United States: Institute for Health Metrics and Evaluation (IHME), 2020. Available at: https://vizhub.healthdata.org/gbd-results/.

Results

LIST OF CLINICAL SERVICES

We included 94 clinical services in the modelling. Of these, 18 clinical services relate to the immunization programme, 29 to the NCD programme, four to the child health programme, seven to the nutrition programme, four to the mental health programme, 30 to the reproductive, maternal and child health programme, one to the oral and dental care programme, and one to the general practice programme.[53] The total number of PHC visits in 2019 was 20,908,981. This is equivalent to 4.7 visits per capita.

CLINICAL SERVICES COSTS IN 2019

For 2019, the cost of the selected clinical services delivered at the primary care level in the public sector was estimated at US$962 million (**Table 1**). The overhead costs were estimated at US$241 million. The total costs were estimated at US$1.2 billion. These total costs account for 16 percent of the total health expenditure (THE) and 19 percent of the government health expenditure (GHE). They represent a per capita cost of US$272.

Table 1: Costs of the clinical service delivered at primary care in Kuwait (2019)

Programme	Cost (US$)
Immunization	10,850,941
Non-Communicable Diseases	109,289,672
Child Health	161,977,975
Nutrition	16,006,514
Mental Health	813,972
Reproductive, Maternal and Child Health	11,769,787
Oral and Dental Care	41,297,382
General Practice	610,364,621

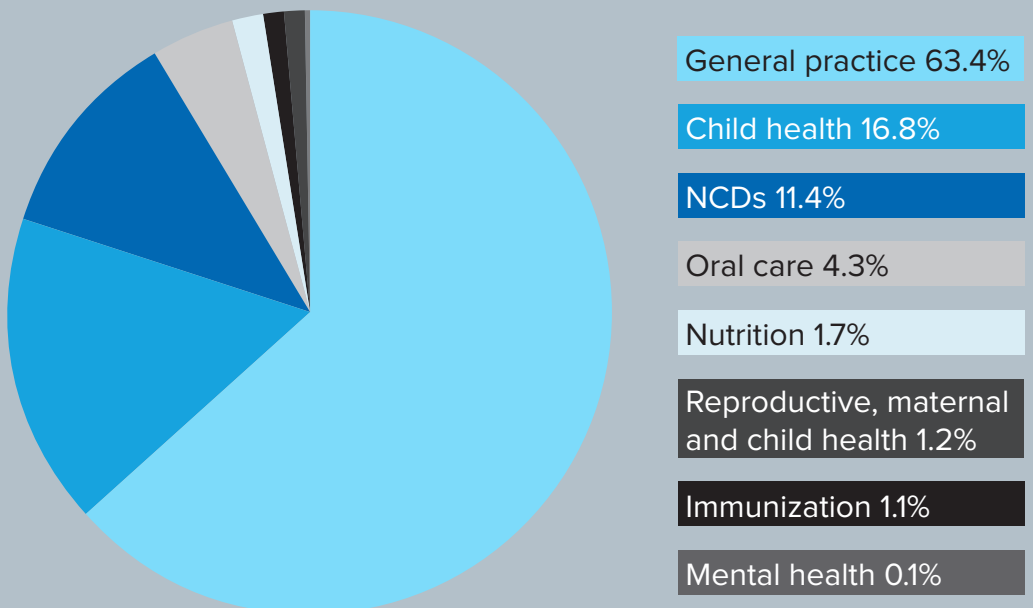
53 General Practice refers to general medicine consultations conducted by a General Practitioner (GP). This includes a wide range of preventive and curative medical services. Common cases seen in general medicine consultations may include acute pain management, infectious diseases treatment, health promotion 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.

Cost of Clinical Services	**962,370,865**
Programme Overhead Costs (+20%)	240,592,716
TOTAL COSTS	**1,202,963,582**
Total Costs (% of THE)	16.3%
Total Costs (% of GHE)	18.6%
Total Costs per capita	US$272.16

COSTS BY PROGRAMME

General practice accounted for 63 percent of the clinical services costs, with costs estimated at US$610 million in 2019 (**Figure 4**). Child health and NCDs were the second and third most expensive programmes, accounting for 17 percent and 11 percent of the clinical services costs, respectively. With an estimated cost of US$813,912, the mental health programme made up less than 1 percent of the total costs, mainly because of a low coverage rate and the fact that most of the clinical services related to mental health are currently conducted at secondary and tertiary levels in Kuwait. Indeed, an estimated 300,000 individuals did not receive mental health services they needed at the public primary care level in Kuwait in 2019.

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



MAIN COST-DRIVING DISEASES

The analysis of the costs per clinical service showed that the prevention, treatment or control of diabetes, chronic respiratory diseases and cardiovascular diseases are important sources of expenditure. By itself, treatment of diabetic patients generates a cost of nearly US$58 million every year. In total, these three disease areas account for 11 percent of the total estimated cost. Based on current coverage rates, it is estimated that 947,923 people did not receive the clinical services they needed to treat or control one of these diseases at the public primary care level (**Table 2**). 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 2: Main cost-driving disease areas

Disease	Cost (US$)	% of the Total Costs	Coverage rate	Patients who did not receive services needed
Cardiovascular Diseases	22,619,447	2.4%	50.9%	601,730
Diabetes	57,504,961	6.0%	50.0%	237,713
Chronic Respiratory Diseases	22,623,303	2.4%	74.3%	108,480
Total	**102,747,710**	**10.7%**	**55.4%**	**947,923**

SCREENING

Taken together, services related to screening for risk of cardiovascular diseases (CVD) and diabetes, cancers and diabetes complications were estimated at US$1 million. It is estimated that over 3.1 million additional individuals should be screened every year to reach a coverage rate of 100 percent (**Table 3**).

Table 3: Costs of top three screening services

Screening	Cost (US$)	% of the Total costs	Coverage rate	Patients who did not receive services needed
Screening for risk of CVD and diabetes	157,212	0.02%	5.0%	1,763,539
Screening for cancer (breast, cervix and colorectal)	362,301	0.04%	13.3%	517,516
Screening for diabetes complications	601,346	0.06%	5.0%	903,309
Total	**1,120,859**	**0.12%**	**6.5%**	**3,184,364**

Recommendations

Kuwait 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 good progress in strengthening PHC by establishing and expanding local training of PHC practitioners, catering for the changing disease burden of the population, and guaranteeing UHC for nationals.

In this study, we estimated the costs of a selection of clinical services delivered at public primary care level in the Kuwait. 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 Kuwait could be further strengthened. The following actions would assist Kuwait to reap significant health and economic benefits across the population:

1 **Increase coverage rates for NCD clinical and screening services delivered at primary care level.**

NCDs account for the majority of morbidity and mortality in Kuwait (80 percent and 65 percent respectively). The costing exercise in this study revealed that NCD services are only the third largest cost driver of public primary care services. Coverage rates need to be considered alongside the percentage spent on services to indicate if population health needs are being met. Coverage rates for the NCD services included in the costing estimate and delivered at the primary care level in the public sector only range from 3.6 to 70 percent of the population in need of that service. Scaling up NCD services at a primary care level where family physicians have a detailed overview of their patients' clinical history can improve health outcomes as well as health system efficiencies.

Beyond patient-centered care, another strength of PHC is the ability to assess patients prior to developing symptoms by providing routine screening services. Less than 1 percent of the PHC costs modelled in this study (or around US$1 million) is dedicated to screening services in Kuwait in 2019. By expanding the breadth and coverage of screening services at the PHC level, Kuwait could reduce the disease burden through early intervention as well as reduce long-term associated health costs while increasing population wellbeing. Indeed, modelling in this study suggests that nearly three million people in Kuwait did not receive NCD screening

services they needed through public primary care in 2019. Notably, the low numbers in the screening services modeled do not represent the total number of patients in the country receiving screening as many may access screening services through secondary or tertiary settings, or in the private sector. However, increasing the number of patients screened at the PHC level by shifting screening services from secondary and tertiary levels would provide the opportunity for more coordinated and cost-effective screening programmes in the country.

2 Shift mental health services from secondary to primary care facilities.

The costing exercise highlighted that mental health services accounted for only 1 percent of the costs for all primary care clinical services modelled in the public sector in Kuwait. This is not due to a low population in need as estimates indicate that around 300,000 individuals did not receive required mental health services at public primary care level in the country in 2019. Of note, these individuals may have sought out and received mental health services in the private sector or in secondary or tertiary care.

Demand for mental health services will likely have increased in the past years as it is well established that the COVID-19 pandemic has had a negative impact on many people's mental health and wellbeing. While Kuwait has taken important steps particularly during the COVID-19 pandemic to ensure access to mental health services and reduce stigma surrounding mental illness, public perception and accessibility of care remain key challenges for mental health services in the country. Indeed, the majority of mental health services are currently mainly delivered at secondary or tertiary level. 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.[54] Moreover, prominent mental health services in primary care can help provide visibility to mental health disorders and provide a platform for education and awareness campaigns to reduce societal stigma surrounding this disease area. 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.

54 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/

3 Strengthen maternal and neonatal care services at the primary care level.

Kuwait has a comparatively high level of maternal and neonatal disorders when compared to OECD or other GCC countries, yet this health area received just 1 percent of primary care costs modelled in this study. Several maternal and neonatal disorders can be better controlled, if not avoided, through antenatal care. However, basic antenatal care has a coverage rate of 71 percent as per the costing estimate, leaving room to increase coverage. Moreover, several maternal and neonatal services are provided under secondary or tertiary care in Kuwait. Shifting these services to primary care would be a cost-effective way to increase delivery of care. However, this must be implemented with considerations to overcoming current challenges of patient wait times and in measuring quality of services.

4 Scale-up existing and launch new initiatives to strengthen the national healthcare workforce.

Like other countries in the region, Kuwait currently relies on expatriate healthcare professionals, including doctors and nurses. Moreover, the number of doctors and nurses per 1,000 population in Kuwait lies below the OECD average, highlighting a clear opportunity to further build up the national healthcare workforce. Kuwait has already put a strategy in place to increase the number of family practitioners and GPs trained in family medicine in the country. Kuwait can further build on this strategy to attract and train more primary care professionals, including for example through offering scholarships provided to nationals wanting to become nurses or family practitioners.

5 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 Kuwait. 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. Kuwait 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.

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 ling of costs associated with services included in this package.

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	US$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+	US$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 (folic acid fortification), 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

Meningococcal vaccine	PIN was not estimated since the number of visits was directly provided by MOH	US$10.6 (WHO Review of vaccine price data)	Nurse (4 min) and GP (4 min) for one dose
Diphtheria (DT) adult vaccine	PIN was not estimated since the number of visits was directly provided by MOH	US$1.8 (WHO Review of vaccine price data)	Nurse (4 min) and GP (4 min) for one dose
DT pediatrics vaccine	PIN was not estimated since the number of visits was directly provided by MOH	US$1.8 (WHO Review of vaccine price data)	Nurse (4 min) and GP (4 min) for one dose
Anti-rabies vaccine	PIN was not estimated since the number of visits was directly provided by MOH	US$48.6 (WHO Review of vaccine price data)	Nurse (4 min) and GP (4 min) for one dose
Hepatitis B (Hep B) vaccine (pediatrics)	PIN was not estimated since the number of visits was directly provided by MOH	US$3.24 (WHO Review of vaccine price data)	Nurse (4 min) and GP (4 min) for one dose
Tetanus (TT) vaccine	PIN was not estimated since the number of visits was directly provided by MOH	US$0.58 (WHO Review of vaccine price data)	Nurse (4 min) and GP (4 min) for one dose
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

Clinical services provided at PHC Level	Drug & Supplies Costs (KD, 2019)	Health Providers Costs (KD, 2019)	Total Costs (Drugs & Supplies and Providers)
IMMUNIZATION			
Rotavirus vaccine	97,066	260,781	**357,847**
Measles vaccine	10,073	173,854	**183,927**
Pentavalent vaccine	37,145	309,991	**347,136**
Diphtheria, Tetanus and Pertussis (DPT) vaccine	25,640	86,927	**112,567**
Polio vaccine	8,822	418,732	**427,554**
BCG vaccine	9,008	100,607	**109,615**
Pneumococcal vaccine	201,043	404,979	**606,022**
Varicella vaccine	639,088	229,801	**868,889**
Influenza vaccine	9,846	22,523	**32,369**
Meningococcal vaccine	130,741	75,908	**206,650**
DT Adult	1,951	6,736	**8,688**
DT Pediatrics	331	1,143	**1,474**
Anti-Rabies	24,390	3,087	**27,477**
Heb B vaccine (Pediatrics)	2,611	4,957	**7,568**
TT	**33**	**344**	**376**
NON-COMMUNICABLE DISEASES			
CVD and diabetes		-	-
Screening for risk of CVD/diabetes	67,757	89,455	**157,212**
Follow-up care for those at low risk of CVD/ Diabetes (Absolute Risk: 10-20%)	52,570	69,404	**121,974**
Treatment for those with very high cholesterol but low absolute risk of CVD/Diabetes (< 20%)	25,208	36,959	**62,167**

Clinical services provided at PHC Level	Drug & Supplies Costs (KD, 2019)	Health Providers Costs (KD, 2019)	Total Costs (Drugs & Supplies and Providers)
Treatment for those with high blood pressure but low absolute risk of CVD/Diabetes (< 20%)	1,437,540	3,452,504	**4,890,044**
Treatment for those with absolute risk of CVD/ Diabetes 20-30%	298,156	343,800	**641,956**
Treatment for those with high absolute risk of CVD/ Diabetes (>30%)	443,041	657,109	**1,100,150**
Treatment of new cases of acute myocardial infarction (AMI) with aspirin	9,391	9,584	**18,975**
Treatment of cases with established ischaemic heart disease (IHD)	16,116	12,553	**28,669**
Treatment for those with established cerebrovascular disease and post stroke	5,614	5,662	**11,276**
Standard Glycemic control	11,677,218	2,205,721	**13,882,939**
Intensive Glycemic control	2,891,349	704,423	**3,595,773**
Retinopathy screening	7,369	147,561	**154,930**
Neuropathy screening and preventive foot care	126,701	319,715	**446,416**
Breast cancer		-	-
Basic breast cancer awareness	0	49,575	**49,575**
Screening: Clinical Breast Examination	0	220,706	**220,706**
Diagnosis after Screened with Clinical Breast Exam	133,570	383,845	**517,415**
Cervical cancer		-	-
Papanicolaou test (Pap smear)	1,581	35,105	**36,685**
Colorectal cancer		-	-
Screening: Fecal occult blood testing	5,460	49,875	**55,335**
ORAL CARE AND CANCER		-	-
Dental cleaning and preventive care	-	10,983,346	**10,983,346**
RESPIRATORY DISEASE		-	-
Asthma: Inhaled short acting beta agonist for intermittent asthma	257,323	445,690	**703,013**
Asthma: Low dose inhaled beclometasone + short-acting beta-agonists (SABA)	1,394,224	891,379	**2,285,604**
Asthma: High dose inhaled beclometasone + SABA	1,705,352	668,534	**2,373,886**
Chronic obstructive pulmonary disease (COPD): Smoking cessation	0	37,723	**37,723**

Clinical services provided at PHC Level	Drug & Supplies Costs (KD, 2019)	Health Providers Costs (KD, 2019)	Total Costs (Drugs & Supplies and Providers)
COPD: Inhaled salbutamol	274,706	475,796	**750,502**
COPD: Low-dose oral theophylline	141,626	209,350	**350,976**
COPD: Ipratropium inhaler	38,624	37,630	**76,253**
COPD: Excacerbation treatment with antibiotics	853	145,207	**146,060**
COPD: Excacerbation treatment with oral prednisolone	7,160	145,207	**152,367**
EMERGENCY CARE		-	-
Average annual emergency care needs	350,164	NR	**350,164**
CHILD HEALTH			
General health			
Child general health	35,651,289	13,493,403	**49,144,692**
Deworming			
Deworming	90	0	**90**
Diarrhoea management			
ORS	2,938	77,796	**80,734**
Pneumonia			
Pneumonia tretament (children)	41	7,870	**7,911**
NUTRITION			
Women of reproductive age and adolescent girls			
Intermittent iron-folic acid supplementation	498	96,009	**96,507**
Pregnant and lactating women			
Daily iron and folic acid supplementation (pregnant women)	3,974	35,322	**39,297**
Intermittent iron and folic acid supplementation (non-anaemic pregnant women)	1,667	113,866	**115,532**
Adults			
Care for adults with low body mass index	20,351	36,657	**57,008**
Children			
Breastfeeding counselling and support	0	585,422	**585,422**
Complementary feeding counselling and support	0	2,474,243	**2,474,243**
Intermittent iron supplementation in children	3,065	1,494,129	**1,497,193**

Clinical services provided at PHC Level	Drug & Supplies Costs (KD, 2019)	Health Providers Costs (KD, 2019)	Total Costs (Drugs & Supplies and Providers)
MENTAL HEALTH			
Anxiety disorders			
Basic psychological treatment for anxiety disorders (mild cases).	0	96,562	**96,562**
Basic psychosocial treatment and anti-depressant medication for anxiety disorders (moderate-severe cases)	7,934	92,173	**100,107**
Depression			
Basic psychosocial treatment for mild depression	0	32,311	**32,311**
Basic psychosocial treatment and anti-depressant medication of first episode moderate-severe cases	1,464	16,963	**18,427**
MATERNAL NEWBORN AND REPRODUCTIVE HEALTH			
Family planning			
Pill - Progestin only	87,908	362,453	**450,361**
Injectable - 3 month (Depo Provera)	889	7,782	**8,671**
Other contraceptives	0	60,526	**60,526**
IUCD follow-up care (checking for misplace, removal, treating related infection)	0	31,305	**31,305**
Management of abortion complications			
Post-abortion case management	4,324	24,970	**29,294**
Pregnancy care			
Tetanus toxoid (pregnant women)	5,654	695,353	**701,007**
Syphilis detection and treatment (pregnant women)	12,382	729,634	**742,016**
Basic ANC	0	767,860	**767,860**
Breast feeding education and advices	0	126,383	**126,383**
Pregnancy care - Treatment of pregnancy complications			
Deworming (pregnant women)	136	2,897	**3,033**
Postpartum care - other			
Mastitis	2,106	17,557	**19,663**
Breast feeding education and advices	0	131,675	**131,675**
Treatment of postpartum hemorrhage	39	1,014	**1,053**
Other sexual and reproductive health			
Treatment of urinary tract infection (UTI)	16,700	253,623	**270,323**

Clinical services provided at PHC Level	Drug & Supplies Costs (KD, 2019)	Health Providers Costs (KD, 2019)	Total Costs (Drugs & Supplies and Providers)
Cervical cancer screening	2	28	**30**
Identification and management of infertility	0	12,934	**12,934**
Treatment of syphilis	7	18	**25**
Treatment of gonorrhea	707	9,487	**10,194**
Treatment of chlamydia	1	2	**2**
Treatment of trichomoniasis	1	32	**33**
Treatment of PID (Pelvic Inflammatory Disease)	497	1,001	**1,498**
Other			
Management of pre pubertal problems (delayed menarche, infection)	0	706	**706**
Management of PCO	0	10,072	**10,072**
Management of hirsutism	0	54	**54**
Management of irregular cycles	0	65,606	**65,606**
Management of amenorrhea	0	1,156	**1,156**
Management of abnormal uterine bleeding	0	119,122	**119,122**
Management of mild endometriosis	0	1,063	**1,063**
Postmenopausal care	0	11,779	**11,779**
General Practice			
General Practice	134,583,580	50,937,582	**185,521,161**
Oral care and cancer			
Dental cleaning and preventive care	0	12,552,396	12,552,396

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

Clinical services provided at PHC Level	
IMMUNIZATION	
Rotavirus vaccine	Ministry of Health Statistics 2019
Measles vaccine	
Pentavalent vaccine	
DPT vaccine	
Polio vaccine	
BCG vaccine	
Pneumococcal vaccine	
Varicella vaccine	
DT adult	
Measles vaccine	Provided by MOH
Varicella vaccine	
Influenza vaccine	
Meningococcal vaccine	
DT pediatrics	
Anti-rabies	
Heb B vaccine (pediatrics)	
TT	
NON-COMMUNICABLE DISEASES	
CVD and diabetes	
Screening for risk of CVD/diabetes	Assumption: Coverage Rate (CR) = 5.0%
Follow-up care for those at low risk of CVD/diabetes (Absolute risk: 10-20%)	Estimation based on UHC Service Coverage Sub-Index on NCDs (WHO)
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%)	

Clinical services provided at PHC Level	
Treatment of new cases of acute myocardial infarction (AMI) with aspirin	Provided by MOH
Treatment of cases with established ischaemic heart disease (IHD)	
Treatment for those with established cerebrovascular disease and post stroke	
Standard Glycemic control	Assumption based on total number of visits to Diabetes Clinics (Ministry of Health Statistics 2019)
Intensive Glycemic control	
Retinopathy screening	
Neuropathy screening and preventive foot care	
Breast cancer	
Basic breast cancer awareness	Assumption: CR = 5.0%
Screening: Clinical Breast Examination	Assumption: based on CR in Oman (8.8%)
Diagnosis after Screened with Clinical Breast Exam	Estimation based on incidence of breast cancer (WHO-IARC 2020)
Cervical cancer	
Papanicolaou test (Pap smear)	Provided by MOH
Colorectal cancer	
Screening: Fecal occult blood testing	Provided by MOH
RESPIRATORY DISEASE	
Asthma: Inhaled short acting beta agonist for intermittent asthma	Estimation based on data provided by MOH
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: Excacerbation treatment with antibiotics	
COPD: Excacerbation treatment with oral prednisolone	
EMERGENCY CARE	
Average annual emergency care needs	N/A
CHILD HEALTH	
General health (children)	
General health (children)	Ministry of Health Statistics 2019

Clinical services provided at PHC Level	
Deworming	
Deworming	Provided by MOH
Diarrhea management	
Oral rehydrating salts	Estimation based on data provided by MOH
Pneumonia	
Pneumonia treatment (children)	Provided by MOH
NUTRITION	
Women of reproductive age and adolescent girls	
Intermittent iron-folic acid supplementation	Estimation based on data provided by MOH
Pregnant and lactating women	
Daily iron and folic acid supplementation (pregnant women)	Estimation based on UHC Service Coverage Sub-Index on MRCH (WHO)
Intermittent iron and folic acid supplementation (non-anemic pregnant women)	
Adults	
Care for adults with low BMI	Assumption based on CR in Bahrain
Children	
Breastfeeding counselling and support	Estimation based on UHC Service Coverage Sub-Index on MRCH (WHO)
Complementary feeding counselling and support	
Intermittent iron supplementation in children	Estimates based on UHC Service Coverage Index (WHO)
MENTAL HEALTH	
Anxiety disorders	
Basic psychological treatment for anxiety disorders (mild cases)	OneHealth Tool
Basic psychosocial treatment and anti-depressant medication for anxiety disorders (moderate-severe cases)	
Depression	
Basic psychosocial treatment for mild depression	OneHealth Tool
Basic psychosocial treatment and anti-depressant medication of first episode moderate-severe cases	

Clinical services provided at PHC Level	
MATERNAL NEWBORN AND REPRODUCTIVE HEALTH	
Family planning	
Pill - Progestin only	UN 2019 Contraceptive Use by Method (Regional Data)
Injectable - 3 month (Depo Provera)	
Other contraceptives	
IUCD follow-up care (checking for misplace, removal, treating related infection)	Estimates based on UHC Service Coverage Index (WHO)
Management of abortion complications	
Post-abortion case management	Assumption (70.0%)
Pregnancy care	
Tetanus toxoid (pregnant women)	Estimation based on data provided by MOH
Syphilis detection and treatment (pregnant women)	
Basic ANC	
Breast feeding education and advices	
Pregnancy care - treatment of pregnancy complications	
Deworming (pregnant women)	Assumption (100.0%)
Postpartum care - other	
Mastitis	Estimates based on UHC Service Coverage Index (WHO)
Breast feeding education and advices	
Treatment of postpartum hemorrhage	Estimation based on data provided by MOH
Other sexual and reproductive health	
Treatment of urinary tract infection (UTI)	Provided by MOH
Cervical cancer screening	
Identification and management of infertility	
Treatment of syphilis	Estimation based on data provided by MOH
Treatment of gonorrhea	Provided by MOH
Treatment of chlamydia	Estimation based on data provided by MOH
Treatment of trichomoniasis	
Treatment of PID (Pelvic Inflammatory Disease)	Provided by MOH
Other	
Management of pre pubertal problems (delayed menarche, infection)	Provided by MOH
Management of PCO	

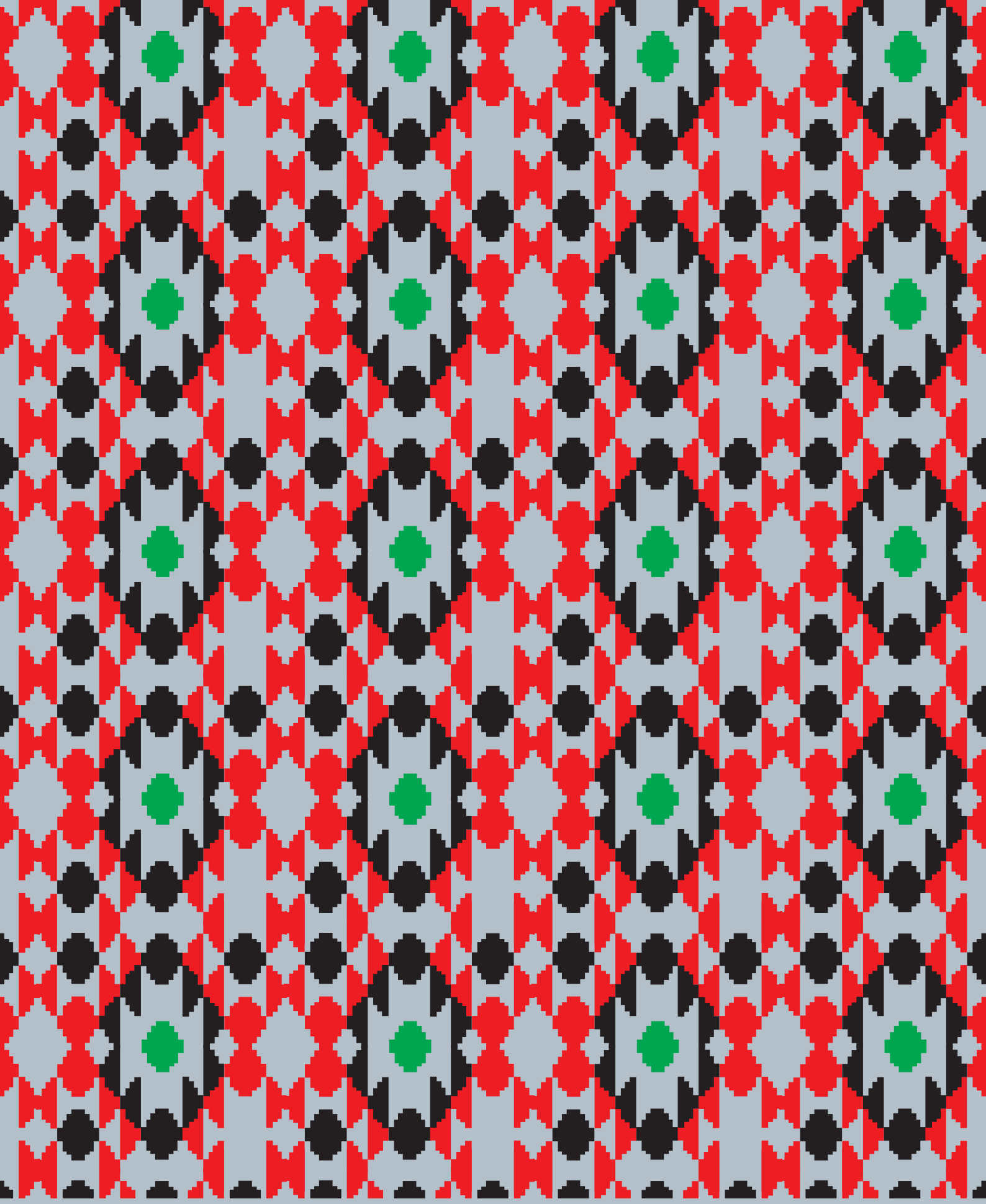
Clinical services provided at PHC Level	
Management of hirsutism	Estimation based on data provided by MOH
Management of irregular cycles	Provided by MOH
Management of amenorrhea	
Management of abnormal uterine bleeding	
Management of mild endometriosis	
Postmenopausal care	
GENERAL PRACTICE	
General Practice	Ministry of Health Statistics 2019
ORAL CARE AND CANCER	
Dental cleaning and preventive care	Ministry of Health Statistics 2019

Annex 4: Breakdown of coverage rates for NCD services provided at PHC level

Coverage Rates of NCD Services Delivered at the PHC Level in Kuwait

Service	Percentage of the total costs	Coverage rate
Diabetes care services	**6.9%**	**10.0-70.0%**
Standard glycaemic control	10.0%	
Intensive glycaemic control	40.0%	
Cardiovascular disease services	**4.2%**	**0.0-70.0%**
Treatment for new cases of acute myocardial infarction with aspirin	18.6%	
Treatment of cases with established ischaemic heart disease	8.6%	
Treatment for those with established cerebrovascular disease and post stroke	3.6%	
Treatment of cases with rheumatic heart disease	0.0%	
Cardiovascular disease / diabetes services		
Follow-up care for those at low risk of CVD/diabetes	70.0%	
Treatment for those with very high cholesterol but low absolute risk of CVD/diabetes	70.0%	

Service	Percentage of the total costs	Coverage rate
Treatment for those with high blood pressure but low absolute risk of CVD/diabetes	70.0%	
Treatment for those with absolute risk of CVD/diabetes	70.0%	
Treatment for those with high absolute risk of CVD/diabetes	70.0%	
Chronic respiratory diseases services	**3.5%**	**5.9-29.2%**
Asthma: inhaled short acting beta agonist for intermittent asthma	17.1%	
Asthma: low dose inhaled beclometasone +SABA	24.9%	
Asthma: high dose inhaled beclomethasone +SABA	29.2%	
COPD: smoking cessation	8.0%	
COPD: inhaled salbutamol	22.0%	
COPD: low-dose oral theophylline	9.7%	
COPD: ipratropium inhaler	5.9%	
COPD: exacerbation treatment with antibiotics	10.0%	
COPD: exacerbation treatment with oral prednisolone	10.0%	
Diabetes complication screening services	**0.07%**	**30.0%**
Retinopathy screening	30.0%	
Neuropathy screening and preventative foot care	30.0%	
Cardiovascular disease and diabetes screening services	**0.02%**	**5.0%**
Cancer screening services (breast, cervix and colorectal)	**0.05%**	**0.4-8.8%**
Clinical breast examination	8.8%	
Papanicolaou test (pap smear)	0.8%	
Faecal occult blood testing	0.4%	



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