

Better noncommunicable disease outcomes: challenges and opportunities for health systems



TURKMENISTAN

Country assessment



Jill Farrington
Anastasia Koulyu
Anne Staehr Johansen
Marilys Corbex
Ivo Rakovac
Isabel Yordi Aguirre

Francesca Romana Pezzella
Alexei Yakovlev
Maribel Almonte
Vitaly Smelov
Guljemal Ovezmyradova
Laura Vremis



**World Health
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Abstract

Premature mortality due to noncommunicable diseases (NCDs) is high in Turkmenistan. The probability of dying prematurely (between the ages of 30 and 70 years) from one of the major NCDs is 26.9%. This has significant socioeconomic consequences for the development of the country and calls for immediate strengthening of the health system to respond to the growing burden of NCDs. Despite political commitment and significant progress, for example in reducing the prevalence of behavioural risk factors and in upgrading the health facility infrastructure, the outcomes of NCDs could still be improved. This report reviews the challenges and opportunities of the health system in Turkmenistan for scaling up core services for the prevention, early diagnosis and management of NCDs. The report also provides examples of good practice in tobacco control. Policy recommendations are made for further action, based on the assessment.

Keywords

CHRONIC DISEASE – prevention and control
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Acronyms and abbreviations

ACE	angiotensin-converting enzyme
ACS	acute coronary syndrome
AMI	acute myocardial infarction
CDC	consultative and diagnostic care
CEDAW	Convention on the Elimination of All Forms of Discrimination against Women
CI	confidence interval
CIS	Commonwealth of Independent States
COSI	WHO European Childhood Obesity Surveillance Initiative
CPGs	clinical practice guidelines
CT	computerized tomography
CVD	cardiovascular disease
ECG	electrocardiogram
EMR	electronic medical record
GDP	gross domestic product
GP	general practitioner
HbA1C	glycated haemoglobin
HBSC	Health Behaviour in School-aged children
HPV	human papilloma virus
ICD-10	International Classification of Diseases, 10th revision
NCDs	noncommunicable diseases
NGO	nongovernmental organization
PCI	percutaneous coronary intervention
PEN	Package of Essential Noncommunicable Disease interventions
PHC	primary health care
SDG	Sustainable Development Goal
STEPS	WHO STEPwise approach to surveillance
24/7	24 hours a day, seven days a week
WHO FCTC	WHO Framework Convention on Tobacco Control



1. Introduction and rationale

Noncommunicable diseases (NCDs) are the leading cause of death, disease and disability in the WHO European Region. The four major NCDs (cardiovascular disease (CVD), cancer, chronic obstructive pulmonary diseases and diabetes) account for the vast majority of the disease burden and of premature mortality in the Region. In Europe, NCDs (more broadly defined) accounted for nearly 89% of deaths and 85% of the disease burden in 2016, increasing the strain on health systems, economic development and the well-being of large parts of the population (1).

NCDs also have a significant macroeconomic impact and exacerbate poverty (2). Most NCDs are chronic and patients have repeated interactions with the health system and recurring and continuous medical expenses, often leading to catastrophic, impoverishing expenditure. It has been estimated that the loss of productivity due to NCDs is significant: for every 10% increase in mortality from NCDs, economic growth is reduced by 0.5%. Recent analysis by WHO suggests that every US\$ 1 invested in implementing a package of 16 'best buys' (the most cost-effective NCD interventions identified by WHO) in low- and middle-income countries will yield a return of at least US\$ 7 by 2030 (3).

This country assessment is part of a six-year programme of the WHO Regional Office for Europe on strengthening the health system response to NCDs. This multidisciplinary and interdivisional work was motivated by increasing calls by Member States for a comprehensive health system response to NCDs, at a time when pragmatic and actionable guidance on what constitutes this response was not available.

Twelve assessments have been conducted to date in Armenia, Belarus, Croatia, Estonia, Hungary, Kazakhstan, Kyrgyzstan, North Macedonia (formerly known as the former Yugoslav Republic of Macedonia), the Republic of Moldova, Serbia, Tajikistan and Turkey. The same approach and multidisciplinary assessment teams were used for all the country assessments, which are based on a structured guide outlined in a background paper on the role of health systems in reducing NCDs (4). While the same guide was used for all the country assessments, the recommendations are tailored to the context of each country. Analysis of the findings resulted in a regional synthesis report (5) and a WHO high-level technical conference in Sitges, Spain, in April 2018.

A multidisciplinary WHO expert team visited Turkmenistan on 19–22 November 2018 and met a wide range of stakeholders and experts involved in the prevention and control of NCDs. The methodology for this assessment is based on the original assessment guide, and the approach taken also draws on learning of what constitutes a comprehensive and aligned approach to achieving better NCD outcomes.



2. NCD outcomes

2.1 Mortality

Life expectancy at birth in Turkmenistan has been increasing steadily for the last two decades and now exceeds 70 years (6). Similar to other countries in the WHO European Region, the vast majority of deaths in the country are caused by NCDs. According to official country statistics submitted to WHO, only 6% of approximately 32 000 deaths that occurred in 2015 were attributed to infectious and parasitic diseases and external causes of injury.

One of the targets of the Sustainable Development Goals (SDGs) is to reduce by one third premature mortality from NCDs by 2030. The probability of premature death (from 30 to under 70 years) from four major NCDs – CVD, cancer, chronic obstructive pulmonary diseases and diabetes – has decreased steadily in Turkmenistan, the Commonwealth of Independent States (CIS) and the WHO European Region over the last decades (Fig. 1). In 2015, this figure for Turkmenistan was 26.9% for both sexes, which was higher than the CIS average (25.4%) and the average for the WHO European Region (16.5%). Since 2005, the probability of dying from NCDs in CIS countries has started to decline faster than in Turkmenistan. In Europe, males were at a higher risk of premature death from NCDs than females. However, the difference between female and male mortality rates has narrowed more in Turkmenistan compared with the CIS average, indicating less inequality in premature death rates from NCDs (6).

Fig. 1. Unconditional probability of dying between 30 and 70 years of age from four major NCDs in Turkmenistan, CIS countries and the WHO European Region, 2000–2015

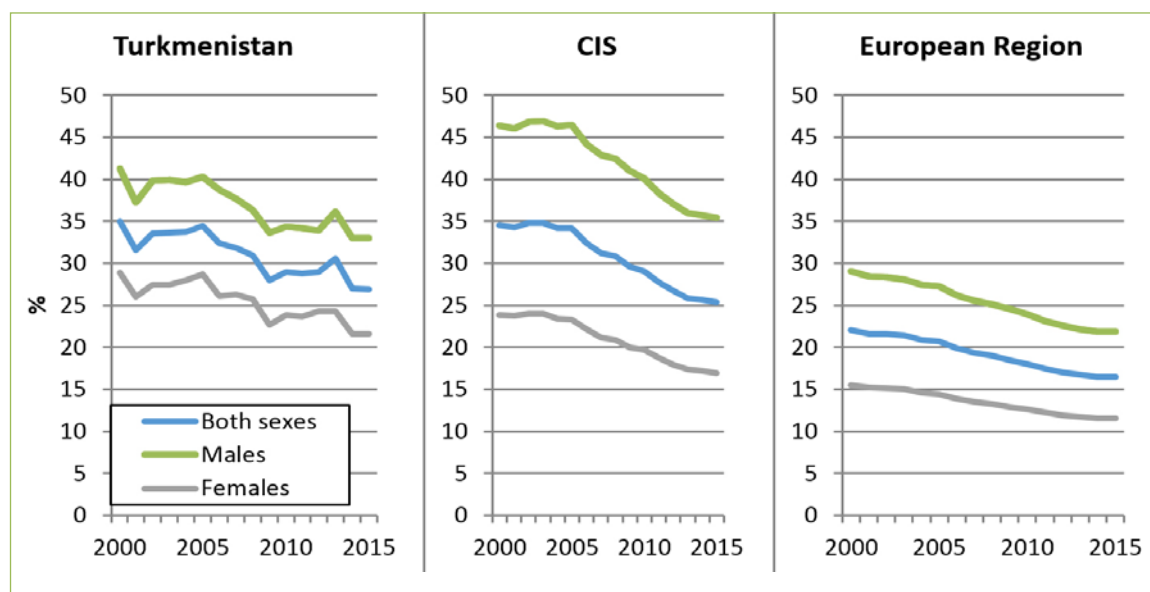
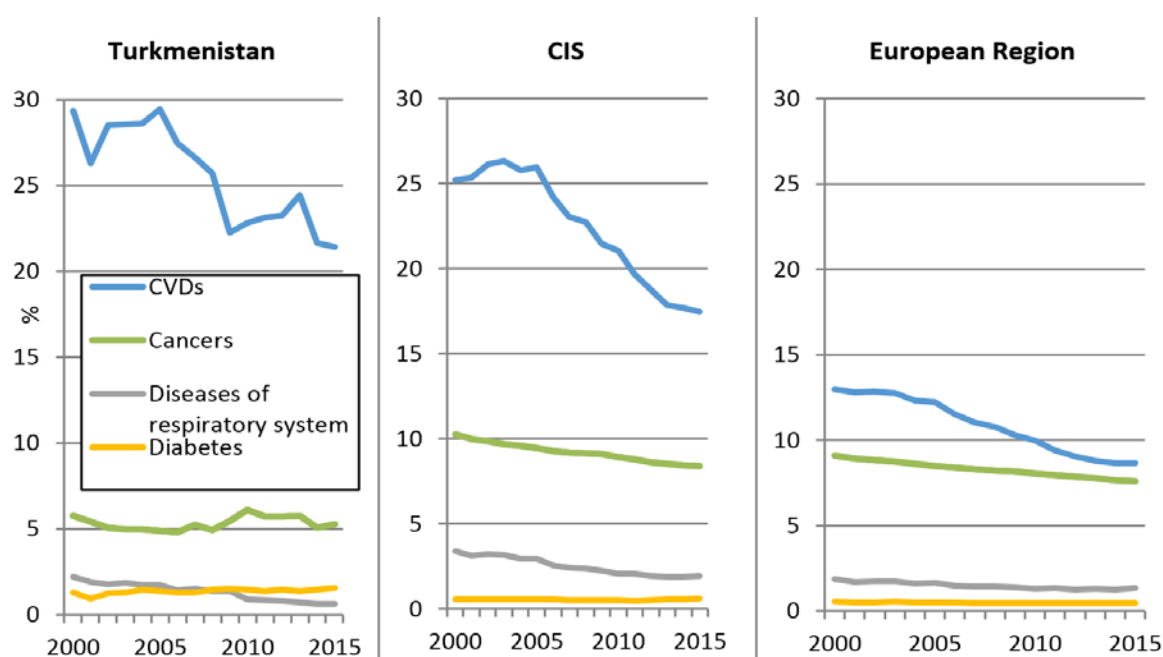


Fig. 2 shows the probability of premature death by disease category. CVD is the leading cause of death in Turkmenistan, CIS countries and the WHO European Region. The probability of premature death from CVD in Turkmenistan was 21.4% in 2015, which is higher than the averages of the CIS countries and the WHO European Region. In Turkmenistan, CVD caused 80% of premature deaths from four major NCDs, followed by cancer. In Turkmenistan, the burden of premature death from cancer is lower than in the CIS countries and the WHO European Region. While the premature mortality rate due to cancer is somewhat stable in Turkmenistan, it is declining in CIS countries and the WHO European Region, although the rate of decline is much slower than for CVD. The proportion of premature deaths caused by diseases of the respiratory system and diabetes

is small compared to deaths caused by CVD and cancer. Deaths from respiratory diseases are decreasing. In Turkmenistan, premature deaths from diabetes are increasing, although the rate remains very low compared with CVD and cancer.

Fig. 2. Unconditional probability of dying between 30 and 70 years of age from four major NCDs in Turkmenistan, CIS countries and the WHO European Region, 2000–2015, by disease



2.2 Gender and NCDs

Differences in health outcomes between women and men and between socioeconomic groups within countries exist in all parts of the WHO European Region, including those countries in which overall levels of health are relatively high. Evidence gathered by WHO shows that gender norms and roles, education, income and other social determinants influence a person's exposure to NCD risk factors, experiences with the health system, health outcomes and their impact. The evidence showing the impact of gender and other socioeconomic determinants is consistent for risk factors such as alcohol, tobacco and unhealthy diets but also for injuries (for example, work-related and road traffic injuries) and mental health. Traditional norms of masculinities increase men's exposure to risk factors and act as a barrier to their access to health services. Moreover, gender-based inequality may limit the access of women to economic resources and services that require fees, and their participation in leadership roles in the health sector (7, 8).

WHO reports on women's (7) and men's health (8) in the WHO European Region have documented the impact of gender norms and roles on NCD outcomes. All countries in the WHO European Region, including Turkmenistan, endorsed evidence-informed regional strategies on women's and men's health. The recommendations call for challenging gender norms and roles and gender inequalities that may act as barriers to NCD prevention and treatment. This section focuses on identifying these barriers.

2.2.1 Building on political commitment

The Government of Turkmenistan shows strong political commitment to achieve gender equality. The country ratified the Convention on the Elimination of All Forms of Discrimination against Women (CEDAW) in 1997 and the Optional Protocol to CEDAW in 2009. In 2015, the first National

Action Plan on Gender Equality was adopted and included activities to promote the collection and use of sex-disaggregated data, to increase the participation of women in social, political and professional settings and to change and eradicate gender stereotypes. In 2015, the Law on State Guarantees of Ensuring Equal Rights and Opportunities for Men and Women was adopted. The country's 2016 Constitution guarantees equality of women and men before the law.

According to the WHO European regional strategies for women's and men's health, it would be important that this political commitment to gender mainstreaming and gender equality is also reflected in NCD policy. The outcome statement of the high-level regional meeting "Health Systems Respond to NCDs: experiences in the European Region" in Sitges in 2018, specifically highlighted this.

At present, references to gender in national strategies on NCDs include improving reproductive health and the health of pregnant women (such as preventing anaemia and promoting breastfeeding) and improving breast and cervical cancer screening. In addition, the national action plan on physical activity refers to the need to increase physical activity among women as a transformative action.

However, gender norms and roles can be better addressed as a social determinant of health, for both women and men in Turkmenistan health policies. At present, gender is mostly identified with reproductive health, as reflected by new legislation on the reproductive health of men. It would be beneficial if priorities for men's health also address the impact of gender norms and roles on their access to health services and their exposure to risk factors.

The National Action Plan on Gender Equality could be a strong tool to address the links between gender and other determinants of health such as employment, participation in public life, social protection policies, links between violence and health, challenging gender stereotypes, etc.

The commitments made in the outcome statement of the high-level meeting Health Systems Respond to NCDs (9) are as relevant in Turkmenistan as in any other country in the Region. The commitments include developing gender-responsive approaches in population and individual services, and addressing the impact of gender norms and roles on the differential exposure to risk factors between men and women, on their health-seeking behaviours and on the responses from health care providers.

2.2.2 Disaggregation, collection, analysis and use of data

Challenges in the collection and use of data are described in detail throughout the rest of this publication. Strengthened systematic collection and use of data on morbidity and risk factors, and the use of facility data disaggregated by sex and/or socioeconomic background would be needed to identify and address gender barriers and health inequities in the health systems response to NCDs.

Current efforts to improve the health information system and the collection of data present a good opportunity to disaggregate key data and to understand the impact of gender and other social determinants of health on CVD and other NCD outcomes.

Throughout health facilities visited, sex-disaggregated data on NCDs (except for oncology data) were not systematically collected. Collecting and analysing the data from facilities that register the sex of patients would be useful. While there are main gender-based differences in premature mortality due to CVD, health care providers do not seem to observe a difference between men and women in access to and use of health care services. Data such as hypertension-related morbidity, incidence of hypertension, number of check-ups and participation in health schools¹ are not disaggregated by sex or by any socioeconomic variable.

¹ Health schools are classes run by primary health care facilities (houses of health) for patient education on health promotion, disease prevention and management of chronic diseases.

A main source of information on the impact of gender on risk factors is survey data. The 2018 WHO STEPwise approach to surveillance (STEPS) survey (10) collects sex-disaggregated data on risk factors showing wide differences between men and women on smoking (6.6% men; 0.2% women) and alcohol consumption (8.1% men; 1.4% women). Women tend to be more obese than men and engage less in recommended levels of physical activity. Other indicators such as consumption of fruit and vegetables show no significant differences between sexes.

The Health Behaviour of School-aged Children (HBSC) survey in Turkmenistan (11) shows differences between children based on age, sex, socioeconomic variables, dwelling (urban/rural) and family structure. About one third of all youth report regular health complaints, in particular headaches, and this is consistently higher among girls across all age groups and among urban youth. Frequent trauma/injury occurs mostly among 13-year-old boys. Girls report more chronic disease and depression (twice that of boys). About a quarter of respondents report that with varying frequency they have experienced feelings of loneliness, which increased with age and are more pronounced among girls (36%) than boys (20%). At younger ages, girls consume more fruits than boys, but there is little difference in fruit consumption between girls and boys aged 17 years. According to the HBSC survey, about one quarter of children consume soft drinks every day or more often, with no real difference between girls and boys. Nearly two thirds of adolescents consider their weight as satisfactory, boys more often than girls. More girls (13% at 13 years; 10% at 17 years) are overweight than boys (11.5% at 13 years; 6% at 17 years), also at younger ages. In all age groups, boys are more physically active than girls but physical activity decreases with age. According to the HBSC survey, there were more boys than girls (6.9% and 1.2% respectively) who have ever used cigarettes, tobacco, pipes or hookah in older adolescence (17 years old), and urban youth smoke four times more than rural.

Linking the analysis of survey data (STEPS, HBSC and forthcoming Multiple Indicator Cluster Surveys) presents an opportunity to redefine the health system response taking gender into account and the collection of disaggregated data in the use of health care services.

2.2.3 Design and access to services

It is clear that in primary health care (PHC) “women in reproductive age are a priority”, as expressed by one of the providers interviewed as part of the assessment. PHC facilities are more focused on mothers and children with few male patients and few male health care providers. According to the 2018 STEPS survey (10), despite similar levels of raised blood pressure among women and men, more women (42.2%) received treatment than men (29.7%); this indicated a lower use of health services by men.

There was little information about the use of health care services by men and women and it would therefore be important to build further awareness of the relevance of collecting these data. Men seem to use PHC less; however, they are more likely to attend health schools despite these being open during normal working times. This is based on providers’ perceptions since sex-disaggregated data are not available.

Traditional norms and expectations of masculinities are strongly embedded in Turkmenistan. The health sector may perpetuate this by accepting that men do not often use health services and by reinforcing the role of women as unpaid carers. Future plans for home care need to ensure that gender stereotypes are not reinforced.

Out-of-pocket payments may prevent those with fewer economic resources, which are generally women, particularly in rural areas, from seeking health care. The CEDAW report (12) calls attention to the impact that fees for services have on women accessing reproductive health services in Turkmenistan since women have a lower participation rate in the labour market, particularly

rural women. Fee-based services can also be a barrier to NCD prevention and treatment for unemployed men. One of the main evidence gaps is the lack of knowledge about those who do not receive health care services. All health facilities visited and health care providers interviewed made clear their commitment to leave no one behind.

2.2.4 Gaps in competences and gender bias in the health workforce

Gender-related gaps in competences are observed. The knowledge, skills and capacity of health providers on gender-based differences in the manifestation of diseases, in access to services and in the responses to prevention, management and control of diseases, can be strengthened. Protocols and guidelines for CVD and stroke prevention and control could better reflect known differences between women and men in symptoms, responses to treatment and the perception of risk determined by biological differences and bias in research, and therefore help fill the gaps in competence.

There are also gender issues in relation to the composition of the health workforce. Although the workforce in the health sector is primarily composed of women, the internal distribution presents horizontal and vertical gender-based segregation. This is illustrated by the situation in houses of health in different areas and velayats² (administrative regions) in Turkmenistan (Table 1). Houses of health are the first point of contact of the health care system and address the overlapping health needs of women, men and adolescents. In Turkmenistan, women hold 57% of head managerial positions in houses of health, 13% of head positions in hospitals and 28% of deputy head positions.

Table 1. Managerial positions in houses of health and hospitals in Turkmenistan by gender, January 2018

Area	Institution	Head					Deputy head				
		Male		Female		Total	Male		Female		Total
		N	%	N	%	N	N	%	N	%	N
Ashgabat	Houses of health	5	29	12	71	17	8	50	8	50	16
	Hospital	8	62	5	38	13	23	68	11	32	34
Ahal velayat	Houses of health	-	-	-	-	-	-	-	-	-	-
	Hospital	13	87	2	13	15	11	69	5	31	16
Balkan velayat	Houses of health	6	100	0	0	6	0	0	3	100	3
	Hospital	19	86	3	14	22	9	100	0	0	9
Dashoguz velayat	Houses of health	1	33	2	67	3	0	0	3	100	3
	Hospital	17	89	2	11	19	16	64	9	36	25
Lebap velayat	Houses of health	0	0	5	100	5	1	20	4	80	5
	Hospital	28	93	2	7	30	22	63	13	37	35
Mary velayat	Houses of health	3	75	1	25	4	4	100	0	0	4
	Hospital	21	91	2	9	23	21	91	2	9	23
Turkmenistan	Houses of health	15	43	20	57	35	13	42	18	58	31
	Hospital	106	87	16	13	122	102	72	40	28	142

² The local government system comprises three levels: velayat (regional), etrap (district) and city/village.

2.2.5 Health promotion: from traditional to gender transformative

Traditional health promotion campaigns target women with health care messages directed at family and maternal health. Women are the main carers in the family and perform the majority of unpaid care, and men are the main breadwinner in the family. There are specific initiatives to encourage men to use health services. However, messages available in health facilities perpetuate a traditional division of labour. The WHO European regional strategies for women's and men's health encourage health promotion that builds on assets and positive images, and challenges gender stereotypes harmful to health.

Traditional norms and stereotypes compete with attempts to move towards gender transformative messages in areas such as physical activity, encouraging young women to exercise more and facilitating exercise in workplaces.

The use of fatherhood as an opportunity for health promotion for both men and women could be better included in current NCD activities. Engaging men in healthy fatherhood presents opportunities for building healthy relationships, changing the imbalance of unpaid care and for improving men's health through decreasing their exposure to risky behaviours and by improving their knowledge and familiarity with PHC facilities. So far fatherhood programmes focus on child health outcomes.

Further analysis of gender differences in risks for NCDs, access and use of services and health outcomes appears throughout this report.



3. Coverage of core NCD interventions and services

According to WHO, up to 80% of heart disease, stroke, and type 2 diabetes and over a third of cancers could be prevented by eliminating shared risk factors, mainly tobacco use, unhealthy diet, physical inactivity and the harmful use of alcohol (1).

This section explores coverage of core population interventions (tobacco, alcohol and nutrition) and individual services (CVD, diabetes and cancer) that are closely linked with improving NCD outcomes. Core services are evidence-based, high impact, cost-effective, affordable and feasible to implement in a variety of health systems. The core services reviewed in the country assessments are closely linked to the Global action plan for the prevention and control of NCDs 2013–2020 (1) and the Action Plan for the Prevention and Control of NCDs in the WHO European Region 2016–2025 (13). A standard set of core interventions and services are used for all country assessments and are summarized in Table 2. The assessment teams evaluated each service on a three-point scale (limited, moderate and extensive). The criteria for scoring were developed by WHO and can be found in the assessment guide (4) and in Annexes 1–3 of this report.

Table 2. Core population and individual services for NCDs

Population interventions	Individual services
<p>Wide range of anti-smoking interventions</p> <ul style="list-style-type: none"> • Raise tobacco taxes to reduce affordability • Smoke-free environments • Warnings of dangers of tobacco and smoke • Bans on advertising, promotion and sponsorship • Quit lines and nicotine replacement therapy 	<p>CVD and diabetes – first line</p> <ul style="list-style-type: none"> • Risk stratification in PHC, including hypertension, cholesterol, diabetes and other CVD risk factors • Effective detection and management of hypertension, cholesterol, and diabetes through multidrug therapy based on risk stratification • Effective primary prevention in high-risk groups and secondary prevention after acute myocardial infarction (AMI) and stroke including acetylsalicylic acid <p>CVD and diabetes – second line</p> <ul style="list-style-type: none"> • Range of rapid response and secondary care interventions after AMI and stroke*
<p>Interventions to prevent harmful alcohol use</p> <ul style="list-style-type: none"> • Pricing policies on alcohol including taxes • Restrictions or bans on advertising and promotion • Restrictions on the availability of alcohol in the retail sector • Minimum purchase age regulation and enforcement • Allowed blood alcohol level for driving* 	<p>Diabetes</p> <ul style="list-style-type: none"> – Effective detection and general follow-up – Patient education and intensive glucose management – Hypertension management among diabetes patients – Prevention of complications (for example, eye and foot examinations)

Table 2. (contd)

Population interventions	Individual services
<p>Interventions to improve diet and physical activity</p> <ul style="list-style-type: none"> • Reduce salt intake and salt content in foods • Replace <i>trans</i>-fats with unsaturated fat • Implement public awareness programmes on diet and physical activity • Reduce free sugar intake* • Increase intake of fruit and vegetables • Reduce marketing pressure of food and non-alcoholic beverages to children* • Promote awareness about diet and physical activity 	<ul style="list-style-type: none"> • Cancer – first line <ul style="list-style-type: none"> – Prevention of liver cancer by vaccination against hepatitis B – Vaccination against human papilloma virus (HPV) as appropriate if cost-effective according to national policies – Screening for cervical cancer and treatment of precancerous lesions • Cancer – second line <ul style="list-style-type: none"> – Early case-finding for breast cancer and timely treatment of all stages – Population-based colorectal cancer screening at age > 50 linked with timely treatment

* Indicates interventions are services added to the list of the Global action plan for the prevention and control of NCDs 2013–2020 to allow a more comprehensive assessment (1).

3.1 Population interventions

This section assesses the coverage of core population interventions and services for improving NCD outcomes.

3.1.1 Tobacco

Table 3 shows the assessment of implementation of population-based interventions for tobacco control.

Table 3. Score card for core population-based interventions for tobacco control

Intervention	Rating	Criterion for rating
Raise tobacco taxes	Extensive*	A rating of extensive normally indicates that tax is > 75% of retail price. *In Turkmenistan, tax is approximately 32% of retail price; however, another state regulation substantially increases the price.
Smoke-free environments	Moderate	100% smoke-free environment in public places including hospitals, workplaces, schools and public transport. Limited enforcement in the hospitality sector.
Warnings of dangers of tobacco and smoke	Extensive	Warning labels on all products cover at least 65% of the package front and back and include pictures
Bans on advertising, promotion and sponsorship	Extensive	Ban on all forms of advertising and promotion, including at points of sale. Ban on tobacco products display at point of sale. No requirement to present prescribed anti-tobacco advertisements before, during or after the broadcasting or showing of any visual entertainment. Compliance seems to be high.
Quit lines and nicotine replacement therapy	Moderate	Smoking cessation services are available. Nicotine replacement therapy is available for full pay.

According to the STEPS survey in 2018 (10), the smoking prevalence among adults in Turkmenistan is very low at 3.4%, with higher rates for men (6.6%) than women (0.2%). The adult smoking rate has decreased by more than half since 2013 when the estimated prevalence was 8.3% and is by far the lowest value among all countries in the WHO European Region who have recently conducted STEPS surveys. The smoking prevalence among youth was 0.3% in 2015 (14); a new global youth tobacco survey was underway in 2018.

In 2011, Turkmenistan ratified the WHO Framework Convention on Tobacco Control (WHO FCTC) and the Protocol to Eliminate Illicit Trade in Tobacco Products in 2015. In December 2013, the country adopted the “Law on the protection of the health of citizens from the effects of tobacco smoke and the consequences of tobacco consumption” (15). A national programme and action plan on the implementation of the WHO FCTC for the period of 2017–2021, which follow the previous action plan on tobacco control in Turkmenistan for 2012–2016, are being implemented. Turkmenistan aims to become the first tobacco-free country in the European Region with the smoking rate at 5% or less by 2025. A set of measures is planned to be introduced to strengthen current legislation.

There is no tobacco industry in the country. Tobacco is imported, in a process led by the Ministry of Trade and Foreign Economic Affairs, and the industry involved is in full compliance with national requirements, as declared by the country.

The Law also regulates the use of smokeless tobacco products; nasvay (a type of smokeless tobacco for oral use) and e-cigarettes are illegal (15).

Taxation

The State regulates prices for tobacco products by establishing minimum retail prices. The price of one pack of cigarettes (the same price for all brands of cigarettes) is 25 manats (around US\$ 7.15) of which 8.08 manats or 32.32% is tax (Ministry of Trade and Foreign Economic Affairs of Turkmenistan, 18 October 2018, unpublished data), which is far lower than the 75% tax recommended by WHO. With cigarettes sold through state-run points of sale, however, it is not the level of the tax that is important, but rather the price charged to consumers, which the State regulates directly. Consequently, cigarettes became less affordable between 2008 and 2016 as prices rose (14), compensating for the relatively low level of taxation and succeeding in achieving a very high price level in comparison to other CIS countries. The sale of tobacco products by and to minors is prohibited.

Smoke-free environments

All enclosed public places, including public transport, and some outdoor areas are completely smoke-free in Turkmenistan, but enforcement is limited in the hospitality sector. While smoking is prohibited inside hotels, designated smoking areas are planned on hotel grounds. Smoking violations incur fines for the patron and the establishment. No funds are dedicated to enforcement, and no system is in place for citizen complaints and further investigations (16). In private transport, smoking is prohibited only for drivers. The issue is under the Ministry of Internal Affairs. There are fines for violation and compliance is good, according to the country.

Warnings

Health warnings are legally mandated to cover 65% of the front and back of the principal display area for tobacco products, with 12 warnings approved by law. They appear on each package and any outside packaging and labelling used in retail sale and describe the harmful effects of tobacco use. The Law also mandates font size/style and colour for package warnings that must include photographs or graphic elements. The position of health warnings on packages rotates, and the messages are written in the principal language(s) of the country. Each unit of consumer packaging of smokeless tobacco products should also have a warning label (15). According to the national programme on the implementation of the WHO FCTC for 2017–2021, 70% of a package will be covered with health warnings starting in 2020. Plain packaging is planned to be introduced further. A quit line number will also be displayed on the package.

Bans

Through a law adopted in 2013 as well as the law on advertising (2016) (17), Turkmenistan has bans in place on most forms of direct (national/international television and radio, local/international magazines and newspapers, billboards and outdoor advertising, advertising on the Internet) and indirect (free distribution in mail or through other means, promotional discounts, non-tobacco products identified with tobacco brand names, sponsored events) advertising. Advertising at the point of sale is banned. There is no open display at the point of sale. Warnings, as well as notices about the prohibition of selling tobacco products to minors, should be displayed.

Showing tobacco products and their consumption in recently produced television and/or films is not permitted, except if this action is considered an integral part of the artistic design. However, there is no requirement to present anti-tobacco advertisements before, during or after the broadcasting or showing of any visual entertainment.

Turkmenistan also has bans on tobacco companies/industry publicizing their activities, and bans on entities other than tobacco companies/industry publicizing activities of tobacco companies. A law requires fines for violations of these bans, and compliance seems to be high (14).

Smoking cessation services

Smoking cessation services are available through help centres (trust centres): nine centres in the country (four in Ashgabat and five in regional central cities). Consultations are free of charge. A clinical protocol to treat tobacco dependence that includes pharmacotherapy is available. A quit line (#118) is being implemented.

Nicotine replacement therapy can be purchased in pharmacies without prescription, but the cost is not covered by the Government. Nicotine replacement therapy will also be available in the future at points of sale of tobacco products. According to the national programme on the implementation of the WHO FCTC for 2017–2021, a text messaging service will be introduced for basic tobacco-related medical consultations.

3.1.2 Alcohol

Table 4 shows the assessment of implementation of population-based interventions for alcohol control.

Table 4. Score card for core population-based interventions for alcohol control

Intervention	Rating	Criterion for rating
Raise taxes on alcohol	Extensive	Taxes on alcoholic beverages were introduced in 2018. Alcohol taxes follow the price index and are related to alcohol content. Legislation includes taxes on products that are particularly attractive to young consumers (beer).
Restrictions, bans on advertising and promotion	Extensive	Full ban on alcohol marketing of any kind
Restrictions on availability of alcohol in retail sector	Extensive	All governmental and educational institutions free of alcohol
Minimum purchase age regulation and enforcement	Moderate–Extensive	Minimum age of 18 years for all alcohol products and effective enforcement; this changed to 21 years in December 2018. Violations incur fines for retailers; if the violation is repeated, an administrative penalty is applied (15 days detention).
Allowed blood alcohol level for driving	Extensive	Maximum blood alcohol concentration when driving is 0.03%.

In 2016, the average total consumption per person in Turkmenistan was 5.4 litres of pure alcohol, which is lower than the European Region average of 9.8 litres (18). However, there is a big difference between sexes: men consume 9.5 litres and women 1.5 litres. The proportion of lifetime abstainers was 41.6%, and the share of the population who abstained from alcohol in the last year was 28.0% (18). The share of the population who said that they had consumed alcohol in the last 30 days also decreased significantly from 8.6% in 2013 to 4.8% in 2018 (10). A large difference was observed between sexes, with 8.1% of males and 1.4% of females drinking alcohol in the last 30 days. Those rates are among the lowest among countries in the WHO European Region who have recently conducted STEPS surveys (10). The recorded alcohol consumption by people aged 15 years and older is spirits (38%) followed by wine (35%) and beer (27%) (18).

The national programme and its action plan to reduce the harmful use of alcohol in Turkmenistan 2018–2024 are being implemented. They include a set of measures on pricing and taxation, some unrelated to price incentives, to control the production, importation, trade and consumption of alcohol, to prevent diseases and accidents, to provide medical and social rehabilitation, and to raise awareness. A law on prevention of the harmful use of alcohol was adopted in December 2018.

Taxation

The price for 0.5 litres of 40-proof alcohol is 12 manats (around US\$ 3.4). According to a new law on amendments and additions to the law on taxes,³ taxes follow the price index and are related to alcohol content (from 25% to 50% of the price for alcohol products that are 20-proof or more). Tax for beer is 20%. Taxes are higher for imported alcohol products (from 60% to 110% of the price, following the alcohol content). Under the guidance of the Ministry of Finance and Economy and the Ministry of Trade and Foreign Economic Affairs, the country is planning to increase the price of alcohol.

Warnings

The law on prevention of the harmful use of alcohol introduced requirements for packaging and labelling, and health warnings should be placed on consumer packaging.

Bans

The law on advertising (2016) bans direct and indirect advertising of alcohol products, including sponsorship.

Availability

All governmental and educational institutions are free of alcohol. According to the law on prevention of the harmful use of alcohol, introduced retail trade of alcoholic beverages is carried out only on working days from 10.00 to 20.00. Additional measures include reducing to 32% (alcohol by volume) all produced alcoholic products and prohibiting the import of products with alcohol contents above 32%.

Purchase age

The sale of alcohol to minors (under the age of 18) is prohibited under the law on trade (2002). Retailers incur fines for violations; if the violation is repeated, an administrative penalty is applied (15 days administrative detention), according to country information. Meanwhile, a new law on prevention of the harmful use of alcohol has increased the minimum purchase age for alcohol to 21 years. Appropriate warnings should be displayed at the point of sale.

Blood alcohol level for driving

The maximum legal blood alcohol concentration when driving a vehicle is 0.03% (18).

³ Law on amendments and additions to the law on taxes. Ashgabat: President of Turkmenistan; 2018.

3.1.3 Nutrition and physical activity

Table 5 shows the assessment of implementation of population-based interventions for nutrition and physical activity.

Table 5. Score card for core population-based interventions for nutrition and physical activity

Intervention	Rating	Criterion for rating
Reduce salt intake and salt content in foods	Moderate	Criteria are based on salt intake reduction in the last 10 years. No data are available on trends in salt consumption (only STEPS in 2018). The results from the FEEDCities study indicate that many foods sampled have high salt values, in some cases very high. New national policy under development contains provisions to reduce salt consumption and WHO expert recommendations have been acknowledged. Current regulation was amended in 2017–2018 to reduce the salt content in bread/bakery products. Some dietary restrictions for school meals are in place.
Virtually eliminate <i>trans</i> -fatty acids from the diet	Limited–Moderate	New national policy under development contains provisions to reduce the consumption of <i>trans</i> -fatty acids and WHO expert recommendations have been acknowledged, but no evidence is available on implementation. A survey of food products confirmed that some products contain artificial <i>trans</i> -fats and with very high values.
Reduce free sugar intake	Moderate	Consumption of sugary soft drinks and sweets among children is high. New national policy under development contains provisions to reduce sugar consumption and WHO expert recommendations have been acknowledged. Steps have been taken in 2017–2018 to monitor the sugar content in non-alcoholic beverages. Some dietary restrictions for school meals are in place.
Increase intake of fruit and vegetables	Extensive	Consumption of fruits and vegetables has increased since 2013. Government-supported initiatives to increase their availability and accessibility are in place. There is no evidence on incentives to increase affordability.
Reduce marketing pressure of food and non-alcoholic beverages to children	Limited–Moderate	New national policy under development contains a provision on the practical implementation of the WHO set of recommendations on marketing and monitoring of products with a high content of calories, saturated fats, <i>trans</i> -fats, sugar and salt, and marketing of soft drinks to children by adopting a law and regulatory documents and using taxation on soft drinks. No evidence is available on implementation so far.
Promote awareness about diet and activity	Extensive	Awareness-raising activities are in place, such as a medical television programme “Health of the Nation – Wealth of the Country”. PHC is involved through family doctors and health schools. It is considered a priority issue to be addressed at a high political level.

There is a lack of routinely collected data on nutrition and physical activity in adults and in youth in Turkmenistan. The main sources of information are two rounds of STEPS surveys led by WHO (2013 (19), 2018 (10)), the WHO European Childhood Obesity Surveillance Initiative (COSI) (2015–2017) (20,21) and the FEEDCities project (2016) (22).

WHO recommends that individuals consume a minimum of 400 g of **fruit and vegetables** per day. Consumption of fruits and vegetables in Turkmenistan has increased since 2013. According to the WHO STEPS survey, the share of the population who meet WHO’s recommendation for daily consumption of at least five servings of fruit and vegetables increased significantly from 57.1% to 72.3% in 2018. The gender gap in insufficient fruit and vegetable consumption was reduced, and in 2018 in Turkmenistan a similar proportion of men and women ate at least five servings daily (10). Over two thirds of children eat vegetables (68.1%) and fresh fruit (70.1%) daily (21). According to the Food and Agriculture Organization of the United Nations data, the availability of fruit and vegetables in Turkmenistan was estimated at 153.7 g and 410.25 g per capita per day, respectively in 2013. Generally, rural populations (about 80%) grow their own fruits and vegetables. Some measures to increase the accessibility of city populations have been taken with the Government building storage hangars in Ashgabat and each velayat

for fruits and vegetables. A greenhouse farm was constructed in Ashgabat. The President of Turkmenistan has a programme on import substitution, and farmers can receive subsidies and credits for producing fruits and vegetables.

In 2018 in Turkmenistan, the average concentration of **salt** in the urine of participants in the STEPS survey was 9.5 g/day, which is higher than the WHO recommendation of less than 5 g/day. These values were 2.8 g/day higher in males than in females (10). Current estimated values are likely to be underestimated when compared with other countries that used 24-hour urinary sodium excretion and obtained values of 15–19 g/day (23). The results from the FEEDCities study indicate that many foods sampled have high salt values, in some cases very high: savoury snacks, especially salty sticks and crackers, in particular contained worryingly high concentrations of salt, at 6.6 g/100 g and 5.1 g/100 g respectively. Other high-salt foods included savoury pastries, prepared salads, doner kebabs and hamburgers (22). From a public health perspective – and in the context of high-salt intake – this calls for comprehensive salt reduction strategies to gradually reduce the salt content of widely consumed foods.

In Turkmenistan in 2016, the **fat composition** of many food products revealed high levels of trans-fats and saturated fats, especially in sweet pastries and snacks. Cookies and waffles had the highest amount of *trans*-fats with many samples containing more than 2 g of *trans*-fats per 100 g total fat. Values of *trans*-fats per 100 g of total fat in cookies were eight times the recommended limit (16 g *trans*-fat per 100 g of total fat) (22). Such high levels of salt and *trans*-fats in food pose a risk for the population if consumed regularly.

There is no information available on trends in **sugar** consumption in the population. Consumption of sugary soft drinks among children is very high: 42.5% of children drink soft drinks containing sugar more than three days per week (21). Approximately 43.9% of children eat sweet treats like candy or chocolate more than three days per week, and 48.3% of children eat foods like biscuits, cake, doughnuts or pies more than three days per week (20). The national study (2017–2018) of the chemical composition of soft drinks showed that the content of added sugar is 8.7–11.2 g/100 g of product and Fanta still has 12 g/100 ml, for example.

Approximately 7% of the population of Turkmenistan does not meet the WHO recommendation of at least 150 minutes of moderate-intensity **physical activity** per week combined with muscle-strengthening exercises; women are more likely to have insufficient levels of physical activity (10). Approximately 35% of teenagers (13–17 years old) practice daily physical activity (11). Time spent by children on sports and physical activity is low:

- 73.5% of children are not a member of a sports club or take dancing courses (20)
- 19.0% of children spend less than one hour per day playing outside on weekdays
- 7.8% of children spend less than one hour per day playing outside on weekends (21).

The prevalence of **overweight and obesity**, defined as a body mass index greater or equal to 25 or 30 kg/m² respectively, has remained unchanged in Turkmenistan over the last five years. Approximately half of the population is overweight, and one in seven is obese. Figures for overweight are similar to other central Asian countries, but the prevalence of obesity is among the lowest in the WHO European Region. In Turkmenistan, more men than women are overweight, but more women are obese (10). In addition, around 11% of boys and girls in primary schools are overweight (21).

The **national strategy** and its action plan on healthy nutrition, which follow the previous ones for 2013–2017, has been developed. WHO's expert recommendations were taken into consideration, and a set of measures – such as marketing regulations, including at schools, labelling requirements, reformulation of product ingredients, motivation mechanisms for food companies to offer healthier products and monitoring systems – are planned to be implemented. They contain provisions to reduce the consumption of foods high in salt, fats and sugar. For example, Turkmenistan is planning to introduce measures to prohibit the sale of sweetened beverages near schools and to develop a list of products banned for sale in official institutions. In 2017–2018, the current regulation was amended to reduce the salt content in bakery products; additional measures are planned for other types of food products. A tax for sweetened beverages is also under consideration. Additionally dietary restrictions

on school meals prohibit cream confectionery (cakes and pies); fried potatoes; energy drinks and alcohol; chips; caramel; carbonated beverages; ice cream; and drinks containing synthetic colours, flavours, sweeteners, preservatives, amino acids and caffeine, but margarine and hydrogenated fats can be used in the production of bakery and pastry (Order No. 477 on sanitary and epidemiological rules for general educational institutions in Turkmenistan). Furthermore, according to the country, iodized salt and wheat flour fortified with iron and folic acid are available and promoted.

Additionally, an amendment to a law on ensuring the safety and quality of food products is being prepared to prohibit the import of products containing more than 2 g of salt per 100 g of product, non-alcoholic beverages containing more than 18% of added sugar to 100 g of product, and foods containing trans isomers of fatty acids in an amount greater than 2% of the available total fat.

There is no ban on **advertising or marketing** of unhealthy food products in the country, but Turkmenistan is planning to introduce some specific measures. The law on advertising (17) prohibits the advertising of energy drinks and dietary supplements. No Internet-based marketing of unhealthy food has been detected, according to the country.

The national strategy and action plan for increasing physical activity for 2018–2025 were adopted in 2018. A set of measures including the development of infrastructures (for example, sports fields, bicycle paths and parks) are being implemented.

Both strategies include provisions on **awareness-raising activities**. Furthermore, family doctors provide counselling on nutrition and physical activity. Several guidelines for health professionals on physical activity (concerning pregnant women, children, healthy ageing) are being developed. Medical facilities provide exercise therapy, and health schools in PHC facilities organize trainings for patients that include information on diet and physical activity. In addition, a television show “Health” promotes healthy lifestyles including healthy eating habits and daily physical activity. The medical television programme of the Health Information Centre of the Ministry of Health and Medical Industry “Health of the Nation – Wealth of the Country” (one hour twice a week) promotes a healthy lifestyle, including healthy eating habits and daily physical activity; doctors provide advice. Two radio channels broadcast medical radio programmes (twice a week); newspapers and magazines publish health advice.

Physical activity recently became a matter of importance, with the President of Turkmenistan setting an example of being physically active. The President personally promotes the use of cycling among civil servants and the general population, and World Bicycle Day (3 June 2018) was celebrated by a bicycle ride throughout the country. Different sport events such as bicycle races, football matches, healthy festivals and other outdoor activities are organized to help celebrate national and international holidays.

3.2 Individual services

This section assesses individual services for delivering core NCD interventions and for achieving the relevant NCD global targets, in particular that at least 50% of eligible people receive drug therapy and counselling (including glycaemic control) to prevent heart attacks and strokes, and that a 25% relative reduction in the prevalence of raised blood pressure is achieved or the prevalence of raised blood pressure is contained. These aims would be supported by action to achieve an additional global target, such as 80% availability of the affordable basic technologies and essential medicines, including generics, required to treat major NCDs in both public and private facilities. The core interventions are selected from the list of very or moderately cost-effective interventions identified by WHO in the Global action plan for the prevention and control of NCDs (1) and updated at the Seventieth World Health Assembly in May 2017 (24).

These services include early detection, proactive disease management and secondary prevention for CVD and diabetes and selected interventions for cancer. Effective delivery of most of these services requires people-centred PHC with well-organized links to population outreach activities in acute and chronic care settings. Clinical guidelines for CVD, cancer, chronic respiratory diseases and diabetes were reported as utilized in at least 50% of health facilities in 2017 (25), and an estimated 25–50% of PHC centres reported offering CVD risk stratification in 2017 (26).

The prevalence of behavioural risk factors for NCD is reported in section 3.1. The prevalence of other risk factors is reported below.

3.2.1 CVD

Table 6 shows the assessment of implementation of individual services for CVD.

Table 6. Score card for individual services for CVD prevention and management

Intervention	Rating	Criterion for rating
Risk stratification in primary care	Moderate	Clinical guidelines (including the WHO package of essential NCD interventions (PEN)), risk prediction charts and training support measurement of 10-year CVD risk but are used more by specialists than family doctors or nurses. Cardiologists in polyclinics calculate CVD risk scores and direct the management of CVD risk factors.
Effective detection and management of hypertension	Moderate	Around 93% of adults report that they have had their blood pressure measured. Cases of raised blood pressure are underdetected in PHC. Evidence-based hypertensive drugs are prescribed, but efforts to increase patient adherence are not systematic.
Effective primary prevention in high-risk groups	Moderate	A national clinical guideline recommends routine prescription of multidrug regimens, including statins, for very high-risk patients. Acetyl salicylic acid is not prescribed to hypertensive patients with low or medium CVD risk. Coverage of high-risk patients with drugs and counselling is moderate. The effectiveness of management of high-risk patients (and outcomes) is not monitored.
Effective secondary prevention after acute myocardial infarction (AMI)	Moderate	The proportion of patients with known coronary heart disease receiving secondary prevention (acetylsalicylic acid, beta blockers and statins) is not monitored through the acute coronary syndrome (ACS) register. PHC facilities have dispensary cards and journals, but recordkeeping does not support an overview.
Rapid response and secondary care after AMI and stroke	Moderate	National guidelines promote timeliness of care, and some support processes are in place. Clinicians are aware of standards, but the timeliness of care for acute AMI or stroke is not routinely monitored. The functionality of ACS and stroke registers is not clear.

Risk stratification in primary care

Adults aged 18 years and over employed within ministries and other public institutions as well as students are subject to an annual preventive medical examination that includes laboratory tests as well as other investigations as appropriate according to Order No. 177 (27). Family doctors also invite (by call or visit) citizens once in three years to a preventive medical examination (28). The first stage of medical examination includes laboratory tests and other investigations. Depending on findings, a second stage of examination by specialist may occur with further investigations. After that according to the results, patients are categorized into different groups for follow-up. Those at high risk and with detected chronic diseases are subject to dispensary observation by family doctors and specialists.

The use of the protocols for diagnosis and treatment of arterial hypertension and ischaemic heart disease (29) that include CVD risk stratification algorithms and the European Society of Cardiology Systematic Coronary Risk Evaluation prediction charts is promoted. WHO PEN protocols have been introduced at PHC level since 2017; these refer to WHO/International Society of Hypertension risk prediction charts. National clinical practice guidelines for lipid metabolism disorders have been in place since 2017.

Prescriptions are written by family doctors in consultation with other specialists (medicines and healthy lifestyles counselling). Medicines included in clinical guidelines are on the National Essential Medicines List and are reimbursed at 50% for those patients who are insured. Some categories of patients are eligible for drugs free of charge (see Challenge 11).

According to the 2018 WHO STEPS survey (10), 8.4% of the population aged 18–69 years has three or more risk factors,⁴ with similar rates for men and women; this figure increases to 14.6% in the population aged 45–60 years. The survey also found that the proportion of adults aged 40–69 years with a 10-year CVD risk \geq 30%, or with existing CVD, is 13.1%, without a significant difference between men (10.6% [95% CI 8.0–13.2]) and women (15.7% [95% CI 12.4–19.0]).

Effective detection and management of hypertension

According to a concept strategy on the prevention of CVD for 2017–2020, systematic work is being done in order to improve the quality of health care for CVD patients. The protocols for diagnosis and treatment of arterial hypertension and ischaemic heart disease were introduced in 2017. They were developed in accordance with the European Society of Cardiology and the European Society of Hypertension pocket guidelines and contain indications for prescribing drugs (such as acetylsalicylic acid, beta blockers and statins), including multidrug regimens.

Blood pressure is measured during a patient's first visit to a polyclinic in the current year, regardless of the purpose of the visit or specialization of the health care provider. According to Order No. 449 on measures for improvement of organization of health care for patients with CVD in Turkmenistan (30), blood pressure is measured by a family doctor during the consultation or by a nurse in the health school. According to a regulation on the organization and function of health schools for patients with hypertension, in Appendix 5 of Order No. 449, a key objective of health schools is to identify patients with high blood pressure among new outpatients coming to a clinic for an appointment with a specialist during the current year. The total number of patients who visited health schools in PHC in 2017 was 43 662, of which 11 421 (26.2%) had hypertension (data provided by the Hospital with Scientific-Clinical Centre of Cardiology). According to the 2018 STEPS survey, 93% of adults report that they have had their blood pressure measured (males 91.5% [95% CI 89.5–93.3]); females 94.7% [95% CI 93.2–96.1]) (10).

Family doctors refer patients with raised blood pressure (high-risk patients) to a cardiologist for consultation. Outpatient journals (paper-based records) include the results of medical examinations and treatment. Patients get their prescription medicines monthly, which is preceded by a consultation with a physician and examinations as appropriate. More information is available in Challenges 5, 9 and 11.

Monitoring of diagnosis and treatment of hypertension is routinely done at national level, and statistics are available. The incidence (number of new registrations) of hypertension in 2017 was 232.8 per 100 000 population (data provided by the Ministry of Health and Medical Industry of Turkmenistan, 2017). The total number of registrations in 2017 was 1128.8 per 100 000 population (data provided by the Ministry of Health and Medical Industry of Turkmenistan, 2017), corresponding to 1.1% of the population diagnosed with hypertension.

⁴ The combined risk factors combine five risk factors of which four do not show statistically significant differences between men and women based on overlapping 95% confidence intervals (CIs) (less than five servings of fruit and vegetables per day, prevalence of overweight, raised blood pressure, insufficient physical activity) and a fifth (current daily smoking) which does.

According to the 2018 WHO STEPS survey in Turkmenistan (10), raised blood pressure⁵ was found in 25.9% of the population, and the rates were comparable in men (26.3% [95% CI 23.4–29.2]) and women (25.5% [95% CI 23.2–27.9]). All these values appear to have increased significantly since 2013, when raised blood pressure was measured in 19.1% of adults (17.6% of men and 20.6% of women). Nevertheless, the prevalence of hypertension for 2013 and 2018 are substantially higher than that registered in 2017 suggesting a significant underdetection rate.

Underdetection is also indicated by the STEPS survey (10), which found that only 37.8% of adults with raised blood pressure² in the general population were diagnosed with hypertension;⁶ this detection rate seems to be *significantly lower for males than females* (males 32.0% [95% CI 27.5–36.7]; females 43.7% [95% CI 38.8–48.5]). The assessment team visited a family doctor at a house of health with a catchment population of 725 adults (aged 18 years and over). Using STEPS prevalence data, 102 women and 85 men would be expected to be diagnosed with raised blood pressure. Yet medical journals registered only 14 women and five men with a diagnosis of hypertension.

The 2018 WHO STEPS survey also found that only half (54.3%) of people diagnosed with hypertension³ receive treatment,⁷ which seems to be *significantly lower for males than females* (males 42.3% [95% CI 33.6–51.0]; females 63.0% [95% CI 56.7–69.3]). Only one in eight (12.4% of) adults diagnosed with hypertension³ has their blood pressure controlled⁸ (males 8.3% [95% CI 3.2–13.3]; females 15.5% [95% CI 10.7–20.2]).

Other core activities of health schools that are offered to patients with hypertension include: education on hypertension according to standard programmes, monitoring the knowledge and skills acquired by patients enrolled in the schools' programmes, and assessment of the effectiveness of patient education.

Effective primary prevention in high-risk groups

The protocols for diagnosis and treatment of arterial hypertension and ischaemic heart disease (29) provides prescription drug information (including acetylsalicylic acid, beta blockers and statins), including multidrug regimens. According to the WHO STEPS survey in 2018 (10), 79% of adults aged 40–69 years at high CVD risk (10-year CVD risk \geq 30%, or with existing CVD) received drug therapy and counselling.

Patients with chronic diseases are put under “dispensary observation” and should have consultations with a family doctor four times a year, and full examination twice a year. Three quarters (78%) of patients with hypertension in Turkmenistan are registered for regular monitoring.

Examination of patients with CVD includes: daily blood pressure measurement; a physical examination, electrocardiogram (ECG) and echocardiography; examination of blood glucose levels; coagulation of the blood; chest radiography; Doppler ultrasound of blood vessels; and an ultrasound examination of the thyroid gland and kidneys. Patients who do not improve during ambulatory care are hospitalized. According to national data, 25% of hospitalized patients in 2017 had CVD, of which 13% had hypertension.

For patients with multiple risk factors, medicines are prescribed: statins for high cholesterol, and acetylsalicylic acid for patients with myocardial infarction; for hypertensive patients with low and medium stages of CVD, acetylsalicylic acid is not prescribed.

⁵ Raised blood pressure is defined as a systolic blood pressure equal to or greater than 140 mmHg, or a diastolic blood pressure equal to or greater than 90 mmHg or people on current medication for high blood pressure.

⁶ Patients diagnosed with hypertension means they were told by a doctor or other health worker that they have raised blood pressure or hypertension.

⁷ Treatment for raised blood pressure is defined as a patient who was prescribed drugs (medication) by a doctor or other health worker in the last two weeks.

⁸ Controlled blood pressure is defined as $<$ 140/90 mmHg.

Effective secondary prevention after AMI or stroke

Guidelines on secondary prevention of ACS and stroke are available, which can be in the form of “handbooks” of clinical guidance developed by the leading clinical institutions and approved by the Ministry of Health and Medical Industry for the use of clinicians, but they are not closely aligned with international guidelines. Moreover, tools for the implementation of orders and protocols are limited, and dissemination could be improved.

According to the protocols for diagnosis and treatment of arterial hypertension and ischaemic heart disease, acetylsalicylic acid, beta blockers and statins are recommended for secondary prevention after AMI. Hospitals provide patients with a written discharge summary (excerpt from the inpatient or outpatient medical record). Once discharged, patients should go to PHC facilities for follow-up. Patients receive fee-free medication in hospitals for acute phases of care, which reverts to a 50% discount for medicines upon discharge for those patients with medical insurance and full price for patients without it.

Rehabilitation services are provided in hospitals during late stages of stay (early rehabilitation). Patients receive a discharge summary with recommendations for follow-up care by primary care professionals; sanatorium/health resort treatment services are also provided. National-level hospitals have well-equipped rehabilitation departments and experienced personnel (who are also trained by the Senior Expert Service).

Clinical pathways for stroke patients were approved in 2017 by Order No. 326 (“On the provision of care to patients with acute disorders of cerebral circulation”) of the Ministry of Health and Medical Industry, and aim to provide patients with access to services at four levels: etrap hospitals; inter-etrap stroke centres in etrap hospitals; regional/velayat multidisciplinary hospitals and the Treatment Consulting Centre named after S. A. Niyazov; and the International Neurology Centre of the General Directorate of Medical Centres. Clinical pathways for CVD patients were approved by Order No. 29 (“On the provision of care to patients with cardiovascular pathology”) in 2019 and similarly describe services at four levels: etrap hospitals; inter-etrap hospitals; Ashgabat city hospital, the Hospital with Scientific-Clinical Centre of Physiology and velayat multidisciplinary hospitals; and the Hospital with Scientific-Clinical Centre of Cardiology.

Rapid response and secondary care after AMI and stroke

In the pre-hospital phase of stroke care delivery, a person with suspected stroke should seek emergency medical care and be admitted to specialized hospitals to have better outcomes. Easy-to-understand information about the symptoms of myocardial infarction and stroke and the recommended emergency actions to take are fee-free and widely available in periodical magazines and in posters in medical institutions. The population is informed through the media about **early recognition of the signs and symptoms of stroke and the importance of timeliness of care**. A video on the FAST (Face, Arms, Speech, Time) test has been produced.

Order No. 449 on measures for improvement of organization of health care for patients with CVD in Turkmenistan (30) describes the actions to be taken in the acute phase of stroke care. Patients with ACS (myocardial infarction, unstable angina) and other life-threatening conditions are transported as soon as possible to the nearest medical institution, which has departments of radiology and surgical methods of diagnosis and treatment, and anaesthesiology and intensive care.

The main policy document for ACS acute care is the protocols for diagnostic and treatment of patients with arterial hypertension and ischaemic heart disease (2017) (29). This document contains classifications, descriptions of basic diagnostic and treatment approaches for ACS and basic identification of the main stages of acute care. It contains the basic principles of choosing a treatment strategy and coordination of care. Coronary angioplasty followed by coronary

artery stenting is available only in specialized departments in hospitals with a clinical research centre; the time frame for scheduling this procedure is up to 24 hours for AMI with ST-segment elevation, and up to 72 hours for non-ST segment elevation AMI.

For suspected stroke patients, computerized tomography (CT) scans are generally available 24/7, but delays can occur transporting a patient, once stabilized, to one centre for a CT scan and then to another for treatment.

Clinical scales such as the National Institutes of Health Stroke Scale (NIHSS) and the Barthel Index, are starting to be used in many neurological and resuscitation departments to assess neurological deficits and predict outcomes but are not routine. Endovascular thrombolytic therapy for stroke is not yet routinely used across the country. In 2018, 58 patients with stroke underwent endovascular thrombolytic therapy, 48 within the International Neurology Centre and the rest in the Treatment Consulting Centre named after S.A. Niyazov. Of those treated at the International Neurology Centre, streptokinase was used in more than half of the patients, although it is not indicated in acute ischaemic stroke according to international guidelines, and treatment time in many cases was higher than the target therapeutic window, even 20 hours after the stroke. Alteplase is the only lytic agent currently approved by international guidelines and standards for the treatment of acute ischemic stroke, and its use is limited by a therapeutic window of 4.5 hours. Only three of the patients received alteplase within the therapeutic window and another seven possibly so (treated at 3–6 hours). A **streamlined pathway to optimize timeliness of interventions and resource organization is lacking**.

Secondary care after AMI and stroke is covered in the previous section on “Effective secondary prevention after AMI or stroke”.

3.2.2 Diabetes

Table 7 shows the assessment of implementation of individual services for diabetes prevention and management.

Table 7. Score card for individual services for diabetes prevention and management

Intervention	Rating	Criterion for rating
Effective detection and general follow-up	Limited–Moderate	There is a national diabetes register, and PHC practices keep lists of patients with chronic diseases. The general population is screened (rather than high-risk groups) using blood sugar as part of periodic preventive medical examinations. There appears to be significant underdetection compared to estimated population prevalence.
Patient education on nutrition, physical activity and glucose management	Moderate	Patients need to attend at least 10 sessions of health schools, which are largely run by endocrinologists in PHC using a standard curriculum and mixed methods. Uptake and follow-up is systematically monitored. General counselling on nutrition/physical activity is available. The numbers of glycated haemoglobin (HbA1C) tests is recorded.
Hypertension management among diabetic patients	Limited–Moderate	The numbers of people with diabetes and hypertension is recorded but quality of control is not clear. The numbers of people receiving medication for high cholesterol is recorded.
Preventing complications	Moderate	People registered with diabetes are offered a foot examination, eye examination (fundoscopy) and urine/protein analysis on an annual basis, and the number of examinations is recorded.

Effective detection and general follow-up

Turkmenistan has a national diabetes register. In 2017, the total number of patients registered with diabetes mellitus in Turkmenistan was 455.2 per 100 000 population (Ministry of Health and Medical Industry, 2017), which equates to 0.46% of the population; the type, age and gender ratio were not provided. For comparison, the WHO age-standardized estimate (31) for

the prevalence of diabetes mellitus in Turkmenistan in 2014 was 12.2% (males 12.4%; females 12.0%). According to the WHO STEPS survey in 2018 (10), the prevalence of raised blood sugar (fasting blood glucose ≥ 7 mmol/L or on medication) is 5.8% of adults aged 18–69 years with no apparent difference between males (6.0% [95% CI: 4.6–7.4]) and females (5.6% [95% CI: 4.4–6.8]). Whichever population-level prevalence estimate is used, there appears to be a significant underdetection rate. The number of cases detected through screening as part of preventive medical examinations is much lower than what would be expected based on the prevalence levels for the general population.

PHC offers diagnostic procedures – examination by a PHC specialist and laboratory tests – and treatment procedures: urgent and emergency care delivery; provision of free medicines and health products to patients with diseases of the endocrine system; preventive check-ups; and screenings of target populations with subsequent follow-up.

Both the three-yearly preventive medical examination for all citizens and the annual preventive medical examination for employed adults (27) include blood sugar testing. Asymptomatic individuals are invited for screening; there is no separate system for identifying those at high risk of diabetes. Following detection of raised blood sugar, a person is hospitalized to confirm diagnosis. The clinical diagnosis should be determined no later than three calendar days from the date of the patient's admission to hospital. In 2017, a total of 55 new cases per 100 000 population were registered (Ministry of Health and Medical Industry). Registered cases are taken under dispensary observation and undergo regular follow-up.

Order No. 73 of the Minister of Health and Medical Industry of Turkmenistan (32) approved guidelines for endocrine care and service provision in Turkmenistan. Diabetes is mainly managed in PHC by specialists (endocrinologists) within houses of health, rather than by family doctors. The PHC physician carries out the follow-up care of the patient, in accordance with the endocrinologist's recommendations.

Patient education on nutrition, physical activity and glucose management

All patients registered with diabetes are required to have full examinations annually. Insulin-dependent diabetic patients need to be under the care of endocrinologists to receive prescriptions for insulin, and they need to see a family doctor or endocrinologist at least once a month to get fee-free prescriptions.

Patients with diabetes are offered at least weekly measurements of glucose in the blood and, if indicated, a fasting blood sugar test several times a week in the morning and 1.5–2 hours after eating. Every three months, an HbA1c test is offered (for a fee). The HbA1C test is administered in diagnostic centres in all velayats, as well as in all clinics at the national level. The number of HbA1C tests is recorded.

According to Order No. 408 (33), PHC facilities (houses of health) are staffed with specialists (pulmonologist, cardiologist and endocrinologist) who run health schools for various chronic diseases. If a PHC facility does not have a given specialist, then a family doctor provides the service. Health schools have a standard curriculum, and classes are offered three days a week. For diabetes, the approach includes lectures and practical skills delivered face-to-face to a group of patients. Teaching is supplemented with video clips and handouts of educational materials. Attendance is recorded in a register. A patient with diabetes should attend a minimum of 10 sessions. According to a diabetes registry report, 100% of patients with diabetes mellitus attend NCD prevention classes.

Schools support children with diabetes mellitus. All children are trained to provide first aid and to manage their symptoms themselves. Schools have medical units with nurses, doctors and dentists. A child can keep insulin within the medical unit. About 260 children under the age of 15 years have diabetes, and all are under dispensary observation; they and their parents are supported through health schools. There are summer camps and health resorts available for children with chronic diseases.

The State provides universal services for diabetes treatment listed in a state guaranteed health benefits package and partially covers other elements of diabetes care. The costs for insulin and oral hypoglycaemic agents are fully covered from the state budget.

Hypertension management among diabetes patients

The number of patients with diabetes and hypertension is recorded but it is not clear if more than 75% of registered diabetics with hypertension have achieved a blood pressure < 140/90 mmHg. Antihypertensives and statins are not fully reimbursed, even for people with diabetes. According to a diabetes registry report, 100% of people registered with diabetes mellitus receive medication for diabetes.

According to Order No. 449 on measures for improvement of organization of health care for patients with CVD in Turkmenistan (30), a blood pressure target for diabetics with hypertension is 130/85 mmHg. According to the protocols for diagnosis and treatment of patients with arterial hypertension and ischaemic heart disease (29), as well as Order No. 449, angiotensin-converting enzyme (ACE) inhibitors are recommended as a first-line antihypertensive.

Prevention of complications

Consultations with ophthalmologists, nephrologists, cardiologists, neurologists and vascular surgeons are routinely offered as part of an annual examination for people with diabetes. Tests that are offered annually include Dopplerography of leg vessels, examination of urine for microalbuminuria for diabetes patients on medications, as well as a lung X-ray, ECG and ultrasound examination of internal organs, and biochemical blood tests (triglycerides, bilirubin, alpha-amylase, urea and creatinine). Examination by specialists usually requires co-payment but with some population groups receiving fee-free services and others getting discounts, and the recommended/prescribed procedures are similar.

The number of examinations and complications are recorded on the diabetes register. In addition to routine examination data, the diabetes register also includes data from specialist examinations (such as ophthalmologist, angiosurgeon) and surgical treatments of the main disease, complications and their severity. According to the Ministry of Health and Medical Industry data, in 2018, 221 amputations were performed due to diabetes mellitus complications (289 amputations in 2017). The same source indicates that 1771 patients had diabetic retinopathy in Turkmenistan in 2018, of whom 875 were new cases (in 2017, 1922 and 852 patients, respectively).

3.2.3 Cancer prevention and screening

There is a strategy for cancer prevention, early detection and treatment for 2014–2020, which follows the previous strategy for 2011–2013. Various cancer screening practices take place although they fall below international standards for organized, population-based, quality-assured screening programmes. Target age groups and frequency of screening for cervical and breast cancer varies according to health care professionals interviewed showing a lack of common understanding and suboptimal dissemination of national guidelines. Cancer treatment is free and is provided at five oncology centres: one in each of the four velayats and one in the capital city. Chemotherapy is only available in these specialized hospitals. There is a national cancer register that is paper based except for breast cancer, which uses an electronic system and is maintained centrally. Cancer registration is passive; cancer cases are registered through a paper-based data system in each polyclinic/velayat and then aggregated by velayat. Nongovernmental organizations (NGOs) (Women's Union, Youth Union) take part in NCD prevention activities, for example, by organizing monthly thematic events on cervical cancer (in February), prostate cancer (in June) and breast cancer (in October).

Table 8 shows the assessment of implementation of individual services for cancer prevention and management.

Table 8. Score card for individual services for cancer prevention and management

Intervention	Rating	Criterion for rating
Prevention of liver cancer through vaccination against hepatitis B	Extensive	All newborns (> 98% coverage) and some adult groups (medical staff and medical/nurse students) are immunized.
Vaccination against HPV	Extensive	An immunization programme for boys and girls aged 9 years using 2 doses of a quadrivalent vaccine has been in place since 2016. The approach is successful, resulting in high coverage (> 95%).
Screening of cervical cancer and treatment of precancerous lesions	Limited–Moderate	PAP tests have been introduced. A screening algorithm involves too many steps with unnecessary visits to different health professionals and repetitive tests/colposcopies. Statistics on the rates of detected and treated precancerous lesions are missing. Women are referred to secondary or tertiary level for treatment of precancerous lesions.
Early case-finding for breast cancer and timely treatment of all stages	Limited	Various screening algorithms are in use using clinical breast examination, mammography and ultrasound. Age groups and screening intervals are not evidence based or consistent throughout facilities.
Population-based colorectal screening at age > 50 years linked with timely treatment	Limited	A digital rectal examination is conducted but there is no evidence-based test for screening. Late diagnosis is observed (75% of cases diagnosed at a late stage compared to 25% for breast cancer). An early diagnosis programme is needed.

Prevention of liver cancer through vaccination against hepatitis B

Vaccination against hepatitis B vaccine has been included in the national immunization programme for newborns since 2002. There is good coverage according to WHO data, and coverage reaches 98% of newborns according to the Ministry of Health and Medical Industry. However, the timeliness of doses, specifically the birth dose, which should be given within 24 hours after birth to minimize mother-to-child transmission, is unclear.

Some adult groups, namely medical staff and medical/nurse students, receive fee-free vaccinations against hepatitis B. Coverage is reported at 98%. Other adults (nonmedical staff and students) may pay full price and be vaccinated against hepatitis B.

There is a possibility to conduct a serosurvey to understand the impact of the vaccine (and validate the achievement of the WHO European regional targets), and all survey tools are available in Russian.

Vaccination against HPV

The HPV vaccine was introduced in 2016, supported by strong political will and an immunization team at the Ministry of Health and Medical Industry. The implementation was apparently smooth, and it is reported that there was no opposition to the vaccination campaign and no anti-vaccination movement. The vaccination campaign targets all girls and boys aged 9 years old with two doses of the quadrivalent Gardasil vaccine given at a six-month interval. No catch up of an older cohort is planned. Vaccination is fee-free and organized through schools or in some cases at polyclinics. Family doctors and immunization specialists at polyclinics track who is/is not vaccinated. The vaccine is available to women and girls on a voluntary basis free of charge. According to the country, coverage is high (95%). In 2017, according to national data shared with the United Nations Children's Fund, two doses of HPV vaccine were administered to girls aged 9 years: the first dose was administered to 98 476 girls and the second dose to 98 193 girls. For the period 2016–2018, 10 vaccinations were carried out for girls over 15 years.

Screening of cervical cancer and treatment of precancerous lesions

The national screening programme for cervical cancer targets women aged 30–69 years. Women in this age group receive a mandatory Pap smear every three years (every two years, according to some professionals and can also be conducted with a Romanovsky-Gimsa stain). Pap smears are collected at PHC by gynaecologists, and test results are generally read at primary level (81 laboratories throughout the country); additional tests are sometimes performed (liquid-based Pap smear and HPV test), with results read at tertiary level. Women are invited for screening by family doctors; those with positive test results are sent to secondary level for colposcopy, and for abnormal results or positive biopsy, referred to a regional cancer centre. According to the documents provided (Chapter V of the National Strategy for the Implementation in 2014–2020 of Tasks Defined in the Ashgabat Declaration on Prevention and Control of NCDs in Turkmenistan and Order No. 144), no treatment for pre-cancerous lesions is done at primary level as women should be referred from etrap hospitals or houses of health (primary care facilities) to velayat hospitals (secondary level) or to the Scientific-Clinical Centre of Oncology (tertiary level, in Ashgabat). There are variations in screening pathways throughout the country, but in general they are not clearly written, and involve too many steps with unnecessary visits to different health professionals, repetitive and unnecessary tests and repetitive colposcopies. Moreover, the screening test and the follow-up are not fee-free (eligible for 50% reimbursement by health insurance). Some data on screening coverage and follow-up of positive women are collected but not used for quality control or process improvement. Data on the rate of detected and treated precancerous lesions are not collected or analysed.

According to the WHO STEPS surveys, in 2013, 62.2% of women aged 30–49 years have had at least one Pap smear; this figure increased to 70.1% (95% CI: 65.9–74.4) in 2018. This coverage is relatively high, but in the absence of population-based data on incidence it is unclear if screening is successful at preventing the disease. The International Agency for Research on Cancer estimates indicate a relatively high age-standardized incidence at 13.6 per 100 000 population suggesting that screening is achieving limited impact. The complex pathway for women with a positive screening can be expected to result in a high rate of loss to follow-up treatment, which could explain the high incidence despite high screening coverage in Turkmenistan.

The country benefits from a well-equipped health care infrastructure for cervical cancer screening including a state-of-the-art laboratory with HPV test capacities and motivated medical and laboratory staff. It gives a unique opportunity to implement HPV-based screening and to simplify the screening algorithm (following WHO recommendations).

Early case-finding for breast cancer and timely treatment of all stages

Adult preventive health examinations include a clinical breast examination, a test that has been shown to improve stage at diagnosis. This practice may explain at least partly the relatively low proportion of breast cancers diagnosed at a late stage (25%). The periodic preventive medical examinations carried out according to Order No. 177 (employed persons) and Order No. 203 (all citizens) both include mammography. Mammography is offered at all levels of care, sometimes with discounted fee, but age groups and screening intervals are not consistent throughout facilities. One order recommends annual mammography screening for women aged 35–49 years; however, the national cancer centre disseminates slightly different (and more reasonable) recommendations, i.e. mammography every two years for women aged 40–49. Mammography is performed at various levels of care, including PHC; quality assurance is suboptimal in most facilities (no double reading of mammograms, poor knowledge of the Breast Imaging Reporting and Data System classification, no requirement on the minimal

number of images to be read each year by radiologists, no external audit, etc.). There is an electronic registry for breast cancer located at the national cancer centre, but it does not register mammography screening uptake; therefore, coverage figures could not be provided. This cancer registry remains paper based for all the other cancers.

In case of positive mammography at primary or secondary level, the patient is referred to a cancer centre; there is therefore a high risk of overloading tertiary facilities with benign cases. At the Scientific-Clinical Centre of Maternal and Child Healthcare, all admitted women aged over 35 years receive a mammography. In case of positive findings, they are referred for tomography/magnetic resonance imaging.

There is an urgent need to homogenize and rationalize mammography screening practices, following international recommendations, i.e. screening every two or three years for women aged 50–70 (and not younger than 45 years in any case as harms outweigh benefits in women under 45), with efficient, timely and fee-free follow-up of positive cases (34,35).

Population-based colorectal screening at age > 50 years linked with timely treatment

There is no organized population-based screening programme for colorectal cancer although a pilot project was mentioned. The periodic preventive medical examinations for adults include rectal examination; however, there is no evidence that palpation of the rectum decreases late stage diagnosis. According to Order No. 203 (June 2018), citizens aged 48–75 years are entitled to a faecal occult blood test every three years. However, in practice healthy individuals are not tested, and mainly patients with complaints or signs of colorectal cancer are offered the faecal occult blood test. Colorectal cancer is diagnosed at late stages: 75% of cases are diagnosed at stage III or IV compared to just 25% for breast cancer. Introducing a population-based screening programme for colorectal cancer would not be cost effective in Turkmenistan given the low incidence of the disease in the country (6.1 per 100 000 population compared to 29 per 100 000 population in western Europe (36)) and the current life expectancy (colorectal cancers happen late in life). However, introducing an early diagnosis programme would be highly beneficial (37).

Screening for other cancers

The periodic preventive medical examinations for adults include mouth, pharynx, thyroid, skin, breast and rectum examinations. However, these check-ups have not proven their value in improving cancer outcomes with the exception of skin and breast cancers. Thyroid screening may even be harmful because of the high risk of overdiagnosis and overtreatment of tumours that do not put the patient at risk (i.e. cancer that does not evolve and does not need treatment (38)). The understanding of cancer screening among professionals is suboptimal and could be improved, for example through participation in relevant international events.



4. Health system challenges and opportunities to scale up core NCD interventions and services

This section reviews the health system features that influence the control of NCDs. Fig. 3 summarizes the common features.

Fig. 3. Common health system features for NCD control

Political commitment to NCDs	Explicit priority-setting approaches	Interagency cooperation	Population empowerment
Effective model of service delivery	Coordination across providers	Regionalization	Incentive systems
Integration of evidence into practice	Distribution and mix of human resources	Access to quality medicines	Effective management
Adequate information solutions	Managing change	Ensuring access and financial protection	

Source: WHO Regional Office for Europe (4)

Challenge 1. Political commitment to NCDs

Political commitment at the highest level is necessary if a country is to effectively reduce its premature mortality and morbidity due to NCDs and reduce the resulting economic losses to society.

For the past decade, Turkmenistan has enjoyed exceptionally strong commitment at the highest level of government for the protection of health and promotion of well-being. Major investments have been made to improve the infrastructure of health facilities, diagnostic equipment and the treatment modalities available in the country. The State Health Programme “Saglyk” (2015–2025) includes among its priorities the development of PHC and family medicine, training and retraining of medical staff, and promotion of preventive medicine (39). The national programme for the transformation of social and living conditions of the population of villages, towns, etrap (district) cities and etrap centres for the period up to 2020 is being implemented, which also funded the construction of numerous hospitals, rural health centres and polyclinics as well as 114 sports schools and 73 sports facilities. Furthermore, Order No. 333 (2017) (40) on improving the health care services provided to the population included a revision in the state guaranteed health benefits package that expanded the provision of fee-free medical services for certain diseases (for example, diabetes and cancer) and certain population groups.

The Government of Turkmenistan is particularly committed to tackling NCDs and the economic burden they impose on the economy, as reflected in the National Programme of the President of Turkmenistan on Socioeconomic Development for 2019–2025, adopted in February 2019 (41). The economic impact of NCD-related death is taken in consideration in development-related issues, making clear the links with productivity and workforce. This commitment is further evidenced by the National Strategy for the Implementation in 2014–2020 of Tasks Defined in the Ashgabat Declaration on Prevention and Control of NCDs in Turkmenistan (42) and the numerous policies and programmes subsequently adopted specifically to reduce the prevalence of behavioural risk factors. These include but are not limited to the national action plan to reduce the harmful use of alcohol in Turkmenistan (2018–2024), the national strategy for increasing physical activity 2018–2025 and the National Programme on Mental Health 2018–2022. Furthermore, the development of PHC and the establishment of family medicine have been done with the express aim to increase early detection of patients with metabolic risk factors and NCDs.

The Government's commitment to tackling NCDs is part of its broader commitment to implement the 2030 Agenda for Sustainable Development in general and SDG 3 in particular. As a result, health promotion and the provision of healthy lifestyles, which is critical for reducing the NCD burden, is a priority not only for the health sector, but for all (relevant) government sectors. The 2018–2024 socioeconomic development programme therefore includes a variety of initiatives aimed at improving the social and living conditions of the population, the development of physical education and sports, as well as the above-mentioned rural development programme. An interagency coordination committee supports the implementation of each programme. Nevertheless, the Human Development Index shows that, **despite the spectacular increase in income per capita in recent years, health and education lag most comparison countries.** The World Bank has commented that while Turkmenistan has extraordinary resource abundance and massive investment in physical infrastructure, investments in so-called softer assets – human capital and institutional upgrading – remain relatively low priorities (43).

The adoption in 2013 of the Ashgabat Declaration on the Prevention and Control of Noncommunicable Diseases in the Context of Health 2020 reflects the Government's commitment to tackling the NCD burden not only at home, but regionally and globally as well. The Declaration called for countries to accelerate actions to reduce tobacco consumption, strengthen whole-of-government initiatives and increase national activities, much as the Government of Turkmenistan has sought to do. Continuing the regional and global leadership to reduce the NCD burden, the Government is planning a five-year follow-up conference to take place in April 2019.

Challenge 2. Creating explicit processes for setting priorities and limits

Funding for health care is fragmented across the different levels of government. At national level, the Ministry of Health and Medical Industry receives funding from the Ministry of Finance and Economy for the institutions under its jurisdiction (for example, national hospitals and universities, research-clinical and training centres). Funding from regional (velayat) medical facilities derives from the regional multisector budget, and allocation across facilities is made by the Velayat Health Department and the city of Ashgabat. PHC facilities are funded out of local (etrap) multisector budgets allocated by central etrap hospitals. In addition, premiums from the voluntary medical insurance and (50% of after-tax) user fees from health care facilities go to a special account of the Ministry of Health and Medical Industry. The special account of the Ministry of Health and Medical Industry reimburses medical institutions for 50% of medicines and medical services provided to insured citizens.

This fragmentation of funding across different levels of government and the special account of the Ministry of Health and Medical Industry undermines the Government's ability to establish explicit processes for setting priorities. Every year in June, health facilities are requested to submit to their relevant level of government their budget request for the following year. At the central level, the Ministry of Health and Medical Industry consolidates the budget requests from the institutions under its jurisdiction and submits it to the Ministry of Finance and Economy. Similarly, the regional (velayat) and local (etrap) facilities submit their budget requests to their respective ministries, which consolidate budgets from all the institutions under their jurisdiction and submit them to the Ministry of Finance and Economy. The Ministry of Finance and Economy prepares a multisectoral national budget to the Cabinet of Ministers who decides on the final allocation of resources (total budgets) across the sectors at national level as well as within regional and local governmental budgets. The Cabinet of Ministers also approves the detailed line-item budgets for each sector. While the Cabinet of Ministers typically only approves about 90% of the total budget requested, there was no report of resource constraints presenting a significant challenge. The budget is prepared and approved in accordance with the Budget Code of Turkmenistan.

The budget allocation process, which relies on a standardized budget matrix with 25–27 budget line items (salaries, equipment, medicines, pension contributions, hospital food, etc.), makes it impossible to explicitly link the allocation of funds to health priorities. Earlier efforts to develop programme-based budgets have not been successful, so it is only through the Government's economic and social development plans and the State health programmes that priorities may be established, but there is currently no regular mechanism to ensure a specific level of funding for the prevention and control of NCDs in general, although certain NCDs (for example, cancer and diabetes) are covered free of charge (see Challenge 15 for additional information). The introduction of programme budgeting is planned for 2021.

Because of the high priority health care enjoys in Turkmenistan, additional budgets are frequently allocated, for example, for construction of new or renovation of existing facilities, to cover medicines for disadvantaged populations or to provide additional funds for specific priorities. Other programmes (for example, the national programme for the transformation of social and living conditions of the population of villages, towns, etrap (district) cities and etrap centres for the period up to 2020) or regional and local governments also provide funding for construction of facilities.

At the hospital level, efforts are made to treat patients who cannot pay for their services. This happens by the patient applying to the management for hospitalization in a so-called budget bed. The hospital manager may decide to use income from user fees to cover such a patient. Furthermore, at the beginning of each week, each department considers patients on a case-by-case basis to determine whether there is a need to apply to the board to admit the patient free of charge. If patients are unemployed, a certificate from their housing authority is obtained to verify their status. Patients entitled to be hospitalized in the budget beds are the preferential categories identified in accordance with Order No. 333.

Challenge 3. Strengthening interagency cooperation

The Government has taken steps to mobilize multisectoral or whole-of-government action on health. The State Health Programme "Saglyk" (2015–2025) implies the principle of interagency work in the health sector. Health is an aspect of the work of ministries and relevant agencies of education, labour and social welfare, finance and economy, trade, justice, agriculture and environmental protection, culture, sport, communications and others (44). For NCDs, the principle of interagency work was established by the Ashgabat Declaration programme on NCD prevention and control 2014–2020. There is an interagency committee on NCDs chaired by the Vice-Prime Minister responsible for health. Interagency health committees at regional level are

chaired by the Deputy Head/Khyakim of a region/velayat and the Head of Health Administration. Regional committees are represented at national-level committees. Since 2016, there has also been a national interagency SDGs committee chaired by the Ministry of Finance and Economy.

Some joint cross-sectoral processes exist for goal- and target-setting, policy development, implementation, monitoring and reporting related to NCDs. The President of Turkmenistan approves all strategies and then implementation of each national programme is also supported by an interagency coordination committee chaired by the Ministry of Health and Medical Industry (45). Generally, interagency coordination committees are held at the same time as their issues are interrelated. As an example, the Tobacco Control Committee has 40 members drawn from government services, NGOs, ministries, the private sector and so on. It meets four times a year but can also be convened on an ad hoc basis.

All the ministries involved in the implementation process submit reports to the Ministry of Health and Medical Industry, which is responsible for reporting to the Supreme Control Chamber and to the Cabinet of Ministers on a monthly basis, and to the General Prosecutor quarterly; this forms a monitoring mechanism for implementation.

Challenge 4. Population empowerment

The main efforts for empowering patients lie within the health schools for chronic diseases available at PHC facilities, which are described elsewhere in this report. They are intended to support patients in self-management through lectures, handout materials and trainings on healthy lifestyles, for example. In health schools, patients are also trained to measure their blood pressure and to follow up appropriately. Registers of attendance are kept, and health workers in PHC can monitor this when the patient returns for medical examinations and monthly prescriptions. Health school records differentiate between men and women although these data are not fully used further. There are limited programmes to empower patient adherence to secondary prevention or follow up and monitor efficacy of received care.

Limited health promotion campaigns take place. The hour-long popular science programme produced by the Health Information Centre of the Ministry of Health and Medical Industry “Health of the Nation – Wealth of the Country”, which airs on television twice a week, addresses among others the issues of diabetes and promotes healthy lifestyles including healthy eating habits (see section 3.1.3. for additional information). NGOs (Women’s Union, Youth Union) take part in NCD prevention, for example by organizing monthly thematic events on cervical cancer (in February), on prostate cancer (in June), on breast cancer (in October) and on diabetes (in November on diabetes day). The Women’s Union targets rural women from remote areas. They are mostly unemployed, and their health insurance is linked to their husband’s.

Patients’ rights are included in the law on health care and the Ombudsman Office also takes care of patients’ rights. Although **some facilities have mechanisms for patient complaints, these are not broadly used** (see Challenge 12). Patients can submit complaints about health care in a number of ways. The patient can complain to the head of the health facility or to the city health department. A registry of written submissions is kept. Across Ashgabat, for the 16 PHC facilities (houses of health), the city health department receives 20–30 written submissions per year.

Traditional masculinities act as a barrier to participation. Gender-traditional norms and expectations may limit participation of men in health promotion activities and access to services due to social expectations of masculinities.

There are gender stereotypes. The elimination of discriminatory gender stereotypes is one of the priorities of the National Action Plan on Gender Equality. The CEDAW concluding observations on the fifth periodic report of Turkmenistan (2018) (12) is concerned that, despite legal prohibitions, there are reports of discriminatory practices such as child/forced marriage, so-called virginity

tests and travelling restrictions. The Government is however not aware of the existence of these practices and confirms its commitments to observe existing legal prohibitions. Positive steps towards collection of data on violence against women are being taken in Turkmenistan. Currently, preparations are underway for conducting this survey.

Discriminatory practices and gender stereotypes that limit the enjoyment of rights challenge the empowerment of girls and women and their participation in public life. They also limit access to services of women who cannot make decisions about their health and/or afford the required co-payment of services.

Challenge 5. Establishing effective models of service delivery

The public health system focused on NCDs, and its structures have been recently upgraded. NCD prevention is mostly the responsibility of PHC. PHC is mostly provided at district level through PHC facilities that include family doctors, specialists (such as pulmonologists, cardiologists, endocrinologists) and nurses. Turkmenistan has 35 city houses of health as well as 920 rural health centres and 605 rural houses of health that are part of etrap/district hospitals – a total of 1560 PHC facilities. All PHC facilities were renovated and equipped, and new ones built during the last 10 years.

Family doctors receive patients at their facilities for consultations and reach out to them by visiting households and inviting patients for further examinations if needed. Apart from some health education campaigns and health schools for patients with chronic diseases, broader health literacy efforts were not in evidence. For preventive examinations, **outreach** to people is done through employers (for those who work) and by family doctors and nurses in the districts directly (by calls/visits), and multiple investigations are conducted periodically (see section 3.2.1). The proportion of PHC facilities that can offer cardiovascular risk stratification for the management of patients at high risk for heart attack and stroke is 25–50% (25). For example, in 2017, 78% of patients with hypertension in Turkmenistan were registered for dispensary observation (Hospital with Scientific-Clinical Centre of Cardiology, Ministry of Health and Medical Industry of Turkmenistan, 2017, unpublished data).

There is an explicit policy to strengthen PHC, downsize the hospital structure and develop PHC as the centre of care for chronic disease patients. The State Health Programme “Saglyk” (2015–2025) aims to increase the efficiency of public health, and improve family medicine and comprehensive medical care close to people’s residences. Actions were taken aiming to reduce hospitalizations (from 70% of all patient episodes) and increase ambulatory care (from 30% to 70%). In 2017, 25% of patients were hospitalized with CVD in Turkmenistan, of which 13% had hypertension (Hospital with Scientific-Clinical Centre of Cardiology, Ministry of Health and Medical Industry of Turkmenistan, 2017, unpublished data). As part of this, there is an emphasis on promoting healthy lifestyles and disease prevention, as well as modernizing health infrastructure. The development of the PHC system in Ashgabat serves as a model for the rest of the country. Each new housing estate in Ashgabat included the construction of houses of health as an integral requirement. The houses of health are equipped with modern medical equipment and new technologies, and provide comprehensive preventive work and organization of medical care so that patients can get examination and treatment close to home without hospitalization. Medical staff also have various portable diagnostic devices such as a pocket foetal Doppler, compact diagnostic ultrasound machine, electrocardiograph, dermatoscope, dynamometer, otoscope, ophthalmoscope and glucometer so that they can diagnose diseases at home.

PHC is multidisciplinary, but some key disciplines are missing. Within houses of health, family doctors and nurses are co-located with health educators (in health schools) as well as specialists (cardiologists, endocrinologists, physical therapists, etc.). Family medicine is a

separate specialization: following six years of general education, the physician completes one year of internship, and two years of practice under supervision. There is one family doctor per 1000 people. The standard distribution for a specialist, depending on the type of specialist, ranges from 0.1 to 0.5 per 10 000 people, according to the staffing guidelines for city houses of health. Rural areas have specialists despite having smaller populations than urban areas. Other stakeholders are also involved in NCD prevention, such as health schools in PHC, help centres (trust centres) especially involved in tobacco cessation programmes; civil society; NGOs (such as the Women's Union and the Youth Union); and the private sector.

For example, a house of health opened in 2011 in the rural district of Babarap in Ahal velayat and covers 8000 people. It has six family doctors, six specialists (including cardiologists, endocrinologists, oncologists and pulmonologists) and 10 nurses and includes phlebotomy, laboratory, cytology, ultrasound and a health school among its services. Its health school holds sessions during the hours of 09:00–12:00 and 12:00–15:00. Sessions for people with chronic diseases are usually run by the relevant specialist where these exist; in rural settings, where there are fewer specialists, the family doctor may provide the service. A register of attendance is kept and showed that for the last three chronic disease sessions within the health school in general 6–7 patients participated in each session. The sessions are interactive and can take the form of a lecture, video or demonstration with discussion. Health educators have not had special training for the role, for example in motivational interviewing, but rely instead on their existing experience.

As another example, House of Health No. 10 in Ashgabat covers 60 catchment areas, each with 1000 patients. Its staffing includes two endocrinologists, two cardiologists, one oncologist, two neuropathologists, one doctor of physical therapy, one exercise physical therapist, one statistician, six gynaecologists, four dentists as well as a surgeon/endoscopist, immunologist and paediatricians. Apart from consultations, it also has ambulance/emergency services, day care facilities for day surgery and observation of patients, and rehabilitation services (including massage, acupuncture, electrical current treatment, sea water/salt/mud treatment). Prices are affordable, and 90% of patients are covered by medical insurance and can receive a discount.

In Ashgabat, the city health department and houses of health work closely together and compile working plans for the year. Every month, the facility submits reports to the city health department. The statistician checks and analyses them and then suggests areas of focus. Periodically, the city health department may do monitoring visits to the facility; for example, it checks how dispensarization is being implemented, and the chief paediatrician checks the health of children. They may also ask patients about the quality of care received.

Remote rural areas have a shortage of staff, so specialists and/or family doctors may not be available. Mobile health solutions are being developed. The use of telemedicine for consultation between physicians remote from each other is already in operation. Text messages are planned to be sent to some categories of patients as a reminder.

Continuity of care is encouraged. There is an assigned family doctor by subdistrict, and in practice this principle is mostly respected. Patients have a right to choose or change their family doctor, and they can change a house of health if they are in an area with multiple options.

PHC facilities are intended to be open access. The working day of a family doctor takes place during the hours of 08:00–20:00 (three shifts) and includes three hours for home visits and three hours for consultations or related work in a medical facility. A patient can go to the PHC facility any time, but going to the assigned family doctor during the doctor's working schedule is preferable. The functions of family doctors include prevention, diagnosis, treatment, rehabilitation, health education about risk factors and healthy lifestyles (according to the latest national strategies), periodic preventive medical examinations and monitoring. A catchment area is 1000–1500 persons per family doctor. Electronic queueing systems are being established in Ashgabat and the five velayats. Fee-free phone consultations with experienced emergency care physicians are available out of working hours.

Nevertheless, **the co-location of family doctors and specialists in PHC and care pathways can potentially disempower family doctors and undermine their role as coordinator of care** (see Challenge 6). The role of family doctors in PHC can be fairly limited particularly if they are co-located with particular specialists in a house of health. While the family doctor can measure cardiovascular risk factors such as blood pressure, height and weight, the calculation of the cardiovascular risk score is done by the cardiologist; in some health systems, the assessment of risk factors and calculation of risk score is entirely done by family doctors and/or nurses. The relevant specialists make the diagnoses of hypertension and diabetes and direct treatment and prescribing. Family doctors can repeat prescriptions under their direction. The family doctor is responsible for cancer screening (by smear for cervical cancer and by palpation for other cancers such as thyroid, breast or rectal).

Family nurses visit patients under observation, performing prevention activities related to promotion of healthy lifestyles (nutrition, physical activity, tobacco, alcohol). Family nurses do not hold separate clinics or have a separate consultation room of their own for seeing patients. Instead, the nurse sits in the same room as the family doctor for the consultation. They may assist in checking identification data, taking physical measurements (pulse, blood pressure) and note taking. Together they see about 6–9 patients during a four-hour clinic.

Key diagnostic tests for NCDs are available at PHC level (for example, measurement of blood pressure, blood sugar and cholesterol, and ECG) but these incur a fee. Adult immunization against hepatitis B is provided free of charge for medical/nurse students and professionals; adults who would like to be vaccinated can do so at full cost (no reimbursement).

The gatekeeper function of family doctors and/or primary care is not strong. While the primary care system is increasingly being developed as a hub for NCD care as part of the drive to manage patients outside hospital and close to home, some anomalies still exist. The family doctor does not act as gatekeeper; patients can self-refer to specialists (in secondary and tertiary levels) as well as be referred by their family doctors. Patients with chronic diseases can also be admitted periodically to hospital for stabilization for a few weeks, for conditions that could be managed within ambulatory care such as stroke rehabilitation or hypertension.

The example of a patient with diabetes mellitus can be used to illustrate this. Consultative and diagnostic care (CDC) for patients with diseases of the endocrine system is provided by doctors specializing in endocrinology in district, interdistrict and city polyclinics; city and regional consultative and diagnostic centres; and in the Republican Consultative and Diagnostic Centre. To refer a patient to an endocrinologist for CDC, a primary care physician completes a referral form containing the patient's laboratory test results. After CDC has been provided, the endocrinologist provides the PHC physician who referred the patient for consultation with information on the advisory and diagnostic consultation using a form that contains the results of the conducted examination and treatment, as well as recommendations for further treatment of the patient. The endocrinologist providing the CDC ensures the maintenance of the PHC documentation and submission of reports. The PHC physician carries out the follow-up care of the patient, in accordance with the endocrinologist's recommendations.

For cancer patients, referral is relatively well organized from PHC to tertiary level and back to PHC. There are approximately 100 oncology examination rooms at PHC rayon level. PHC oncologists are responsible to identify and refer for diagnosis patients who have symptoms indicative of cancer and to follow up cancer patients (rehabilitation/palliative care) after they have been discharged. Information in the form of cards is filled in for each patient at all levels of care, but this system is paper based.

There is no special palliative care system in the country, but there is awareness about the need to develop it. Five new cancer hospitals are planned (two to be developed in the near future), and these hospitals will have a palliative care department. A hospice is also planned. Palliative care is provided in oncology or non-specialized hospitals. There is no palliative care specialist at tertiary level (there is none in the country); there is no department or unit of palliative care in oncology hospitals and no specific linkage with social services in tertiary hospitals. Palliative

patients are mainly taken care of by PHC oncologists and family doctors; some stay at general hospitals (when hospitalization is needed) but the majority are taken care of at home. Home care relies mainly on patient families and notably women to take care of palliative patients.

Home care is regulated by the Ministry of Health and Medical Industry, with care at home being provided by junior- and medium-level health care professionals (for example visiting nurses). Social work services are also available (under the Ministry of Labour and Social Welfare). A Ministry of Health and Medical Industry order is being developed to establish a new nurse-assistant service for providing health care at home.

Challenge 6. Improving coordination across providers

The role of the family doctor as a coordinator of care is limited. One of the four essential pillars of PHC is to ensure coordination of care across providers (46). In Turkmenistan, coordination of care is challenged in a number of ways. First, while patients typically have a family doctor at the PHC facility in their neighbourhood, they have a legally protected right to seek care from other providers, including specialists. Second, the function of the family doctor is not conceptualized as serving as the coordinator of care. Instead, the role is primarily to prevent NCDs and identify patients with risk factors and/or potential NCDs. The actual diagnosis and treatment are made by a specialist either in the polyclinic or in a hospital. Although the family doctor monitors patients diagnosed with one or more NCDs, they are referred for follow-up to a specialist, frequently in the hospital, if they are not well controlled. Furthermore, once a patient has been hospitalized for an NCD, the patient is often told to return for follow-up at the hospital, sometimes several times per year, which also undermines the ability of the family doctor to ensure continuity of care over time.

The electronic patient record system is not yet developed to enable the family doctor to monitor the care provided by other providers or the patients' outcomes. An e-health system has been under development and roll out since 2010, but a paper-based special card (Form 74) is used to monitor NCD patients in the PHC facility. Registries of different types of NCD patients are also kept in paper form, although some information is available in electronic form. If a patient has been discharged from the hospital, a paper-based discharge summary is prepared that includes information about the diagnosis, treatment and dietary changes prescribed to the patient. The discharge summary is given to the patient who is expected to go to the PHC provider for follow-up. Information from other health care providers is therefore typically not part of the record system used to monitor NCD patients at their PHC facility.

Multidisciplinary care teams with physicians, nurses, health educators, etc. could be strengthened by including allied health professionals like dietitians and case coordinators in PHC facilities. The lack of allied health professionals is in part due to the absence of training programmes for these professions. Furthermore, nurses appear to be underutilized, mostly carrying out administrative tasks, for example, transferring information from paper records to electronic records that could be done by assistants with lower levels of education. In general, there appears to be a culture of doctors carrying out almost all tasks related to patients. This is not efficient, however, and undermines an effective use of scarce resources. It should be noted that a new Ministry of Health and Medical Industry order is being developed to increase the authority/role of nurse assistants working in the patronage/home health care system. The Ministry of Labour and Social Welfare operates a system of social care for patients in their homes. It is unclear the extent to which this system is linked or coordinated with PHC providers.

The rate of loss of follow-up for key NCDs, and the variation by different social and ethnic groups is not known. The high rate of premature mortality suggests that loss of follow-up may be part of the explanation for this. There is a perception by physicians that NCD patients may stop taking their medication after a hospital admission (for financial reasons), which contributes to repeat hospitalizations and poor outcomes. They also report that many patients present late

in their disease, which may be due to delayed diagnosis and/or poor management due to loss of follow-up. The PHC facilities visited during the assessment also reported having difficulties in getting the non-working population to come in for check-ups: the cumulative cost of the multiple tests and specialist consultations involved for these check-ups may cause some barriers. In contrast, the facilities often had contracts with local employers to pay for the check-ups of their workers, alleviating their financial burden.

Regarding **coordination of emergency care in ACS and stroke**, emergency assistance using all modern technologies is available only in the capital in third-level institutions. The current system of assistance is not designed to monitor and minimize time delays in the provision of emergency assistance. Data are not fully collected to monitor the effectiveness and quality of the emergency system.

For cancer, coordination across levels is suboptimal. The tertiary level is dealing with secondary-level tasks: for example, many non-cancerous patients come to the oncology centre for diagnosis, and patients screened positive for cervical cancer (Pap smear) get final diagnosis and treatment of precancerous lesions at tertiary level. Similarly, coordination across the different levels of care is very limited when it comes to palliative care. PHC oncologists and general practitioners (GPs) responsible for palliative care have no specialist services they can refer to for advice.

Challenge 7. Taking advantage of economies of scale and specialization

Successful models of acute care should be multidisciplinary, regionalized and integrated, so the organization of acute care is an important indicator of the potential and performance of a health care system.

For planning purposes, **main mortality data is needed for the analysis of health care performance and perspectives of development of regional networks for acute care.** Age-standardized death rates from coronary heart disease in 2013 was 295.1 (365.7 for men and 240.3 for women per 100 000 population per year) (data from Turkmenistan and the WHO Regional Office for Europe Health for All database). In 2017, mortality rates for AMI were 17.0 (22.9 for men and 11.2 for women) per 100 000 population per year; mortality rates for stroke were 72.0 (80.9 for men and 63.2 for women) per 100 000 population per year. Overall mortality due to stroke has been increasing since 2013 (64.6 per 100 000 population per year) and is higher in men (80.9 per 100 000 population in 2017) than in women (63.2 per 100 000 in 2017). Mortality due to AMI has decreased slightly since 2013 when it was 18.5 per 100 000 population in 2013. As for stroke, mortality rates are higher in men (22.9 per 100 000 population in 2017) than in women (11.2 per 100 000 population in 2017). The hospital discharge rate with coronary heart disease in Turkmenistan increased from 416 to 733 per 100 000 population per year between 2000 and 2013 (47). In 2017, the in-hospital mortality rate was 8.2 per 100 000 population for stroke patients and 6.3 per 100 000 population for patients with AMI.

It seems there are not enough centres for treatment of ACS or stroke, and those that exist are underutilized. European standards recommend the presence of one stroke unit per 250 000 inhabitants, and one comprehensive stroke centre per one million inhabitants.⁹ Therefore, for Turkmenistan, with a population around 5 million (49), one would expect at least 20 stroke units and five comprehensive stroke centres. Instead, there are 17 hospitals in total, with facilities for acute ischaemic stroke patients to undergo systemic thrombolysis, early rehabilitation and other basic components of stroke care. There are plans to soon double the number of these centres with this basic level of stroke care. Only two of the 17 hospitals that could provide endovascular

⁹ According to European Stroke Organization standards, a stroke unit and a stroke centre are the two defined levels of institutional stroke care. The stroke unit provides stroke care at the basic level, including intravenous thrombolytic treatment, neuro-intensive care, diagnostics and other key therapies, such as secondary prevention, early treatment of complications and the start of rehabilitation. The stroke centre is a fully equipped institution providing the same service as a stroke unit, in addition to offering thrombectomy and other neuro-radiological and surgical interventions (48).

thrombolysis have started to use it: the International Neurology Centre of the General Directorate of Medical Centres and the Treatment Consulting Centre named after S. A. Niyazov.

CT scans for diagnosis of stroke are generally available 24/7, but delays can occur transporting a patient to one centre for a CT scan and then to another one for treatment. The International Neurology Centre of the General Directorate of Medical Centres recently started to carry out thrombectomy for acute stroke. Special rehabilitation programmes are needed in hospitals with high-volume stroke admissions. Clinical scales are not widely used yet, and care does not appear to be customized according to a patient's cerebrovascular profile and clinical picture as measured by scales such as the Modified Rankin Scale, the National Institutes of Health Stroke Scale and the Barthel Index.

Based on the available data, a preliminary estimate of the annual number of patients with ACS (about 15 000 cases) for a population around 5 million, about 5000 percutaneous coronary interventions (PCI) annually would be needed. That would require at least five PCI centres working 24/7 for the whole country depending on the transport accessibility of regions. Only three hospitals in the country are able to do PCI for ACS, one in Ashgabat (Hospital with Scientific-Clinical Centre of Cardiology (50)) and two outside the capital. In-hospital thrombolysis is available (streptokinase and actilyse, free of charge).

There is an explicit written plan that outlines the respective roles of successive levels of care, but it is still possible for a patient to self-refer directly to a tertiary-level centre. The recently enacted Order No 29 of the Minister of Health and Medical Industry of Turkmenistan on 2 February 2019 on "the procedure for providing medical care to patients with cardiovascular pathology" regulates access of patients with acute and chronic cardiovascular conditions to the different settings and levels of care. It describes organizational and clinical requirements/standards, appropriateness criteria and patient workflow among clinical pathways. Since it has been just very recently released, its implementation in practice is not completed yet.

The tertiary-level centres are of international standard and self-financed (under the jurisdiction of the Ministry of Health and Medical Industry and offer high-technology services for higher fees). There are minimum requirements for hospitals to become PCI and stroke centres, and a tendering process takes place. National centres monitor the performance of hospitals.

There are limited monitoring activities to follow up on stroke patients who received thrombolysis; door-to-needle time is not monitored, but clinical outcome is assessed in a descriptive manner. Data collected about admitted patients are not used to provide feedback to clinicians, and the opportunities for independent quality control are limited.

Although physical infrastructure is of a high standard, and the main diagnostic and treatment options are available, these are not fully used to achieve the best outcomes. The Treatment Consulting Centre named after S. A. Niyazov had admitted 3159 patients with acute stroke in the first 11 months of 2018 but, despite high volumes of stroke admissions and advanced equipment, it had only carried out 48 systemic thrombolyses for stroke; as previously described the lytic agents used in these procedures were alteplase and streptokinase, and international guidelines do not recommend streptokinase for stroke patients.

The Hospital with Scientific-Clinical Centre of Cardiology in Ashgabat hospitalizes about 100–200 patients with ACS annually and performs over 100 stents per month. Early reperfusion and primary PCI in ST-elevation myocardial infarction is not promoted.

The Treatment Consulting Centre named after S. A. Niyazov is the leading national medical institution in Ashgabat providing emergency care to patients with CVD in Ashgabat. It is a large multidisciplinary hospital with an intensive care unit, 24/7 CT scan service, departments of cardiology and neurology, and a rehabilitation department. For treatment of patients with ST-elevation myocardial infarction, there is an option of in-hospital thrombolysis (streptokinase only); for the high-volume admission of stroke patients, there is not yet thrombolytic treatment. ACS and stroke patients can be transferred to national centres of cardiology and neurology for PCI, coronary artery bypass grafting or neurosurgery.

The current models of acute care for ACS and stroke in Turkmenistan are not integrated, are insufficiently coordinated and lack monitoring for effectiveness and appropriateness. Current clinical practice in acute stroke care in some respects differs with what is expected and recommended by international standards and guidelines (timeliness, lytic agents and organizational model of care at regional level).

Availability of some basic diagnostic and treatment interventions at different levels of care is essential for building an effective model of acute care. Besides the ECG, which is widely available in Turkmenistan, quantitative assessment of troponin level is very important for accurate diagnostic of myocardial infarction and correct risk stratification in ACS patients (51). PCI is a most effective treatment for high- and intermediate-risk ACS patients (52,53). Availability of 24/7 CT scans and thrombolytic therapies are essential for effective care for stroke patients. Availability of key diagnostic and treatment capabilities at different levels of care is illustrated in Table 9.

Table 9. Diagnostic and treatment capabilities for ACS and stroke at different levels of care

Diagnostic/Treatment capability	Level of care available	Level of care needed
Troponin	National	Regional
Angiography laboratory/catheterization available for emergency procedure	National	City/Regional
CT scan available 24/7	Regional	Regional
Thrombolysis for stroke	National	Regional

Emergency care and the care for socially important diseases and certain population groups are fee-free. Treatment is free of charge for all cancer patients, for example. Disabled, poor and other special groups also receive other care free of charge. According to the information provided by the Scientific-Clinical Centre of Oncology, all patients are treated the same regardless of social level and connection. Fees for inpatient stays for other diseases are higher at the International Neurology Centre or tertiary centres in Ashgabat than in a multiprofile hospital outside the capital. The assessment team was given the example of a patient with acute stroke who had been taken by ambulance to the International Neurology Centre for a CT scan and then chose to return to the local hospital outside the capital for treatment. A patient with ACS is in hospital about 7–10 days on average. The average length of stay for a patient with acute stroke is 7–10 days and then 1–3 weeks in a rehabilitation unit.

Seven days' treatment in the Hospital with Scientific-Clinical Centre of Cardiology in Ashgabat might cost 1400 manats (a hospital nurse might earn around 1100 manats per month) although a 50% discount is available for those with insurance. An admission for stroke at the International Neurology Centre of the General Directorate of Medical Centres might require three weeks in hospital and cost 3000–4000 manats before applying the 50% discount.

There are no real guidelines about when to stop treatment; for cancer patients, this is decided by a council of doctors. There is no special palliative care system. Palliative care is provided in oncology or non-specialized hospitals. Home care is provided under the Ministry of Health and Medical Industry. Information on palliative care is described further in Challenge 5.

The emergency care service is available 24/7 in Turkmenistan and seems to be well organized. Ashgabat has one emergency care centre, and there is one emergency care centre per region (velayat) outside the capital. The emergency care centre keeps the bed occupancy rate around 70% so that it is able to respond if there is a major emergency. There is no specialist qualification for emergency medicine, but postgraduate courses are available for medical and nursing personnel working in emergency environments.

Each velayat has a network of primary care and ambulance services. The Ministry of Health and Medical Industry runs the ambulance services at the level of district (etrap) hospitals. The Emergency Centre in Ashgabat is a centralized dispatcher service, which coordinates acute care with multiple substations and performs initial triage. It uses a global positioning system to

track ambulances, which automatically calculates ambulance time of arrival to the emergency department and supports decision-making by ambulance service staff. Dispatchers have a nursing background and take a special course. Dispatchers at the centre visited by the assessment team work 12-hour shifts. Patients may access emergency services by ambulance or come directly to a hospital emergency department. There is one telephone number (03) for the public to call for an ambulance/emergency support. Other numbers are available for remote consultations, of which about 30 000 per year occur in Ashgabat. Free-of-charge phone consultations with experienced emergency care physicians are available out of working hours. No family doctors are available at night, so people needing medical advice call these numbers out-of-hours.

Ambulance teams (“Tiz Kömek” service) are well equipped with defibrillators, ECG machines without remote transmission, third-generation thrombolytics (alteplase, but not tenecteplase) and medications for early ACS treatment. In addition, three specialist cars work in four shifts. These are special teams that can do ECGs in people’s homes, as well as specialized cardiology/intensive care ambulance teams that are available and can be directed by dispatcher or by request of an ordinary ambulance team. The standard for ambulance response time within Ashgabat is up to 20 minutes, but it is often longer in rural areas; the overall performance against standard was not specified during the assessment mission but it was declared to be 15–20 minutes on average in the capital. The Ministry of Health and Medical Industry makes control calls from time to time to check the speed of dispatch; in 2017, seven control calls averaged 11 minutes. If ambulances take longer than 20 minutes, the delay has to be investigated. Quality control is done by experienced expert doctors who check the documentation filled in by ambulance teams and medical histories of patients received by hospitals.

Challenge 8. Creating the right incentive systems

Revenues for health care are derived from a combination of general taxes, payroll taxes and user fees. The central budget finances national-level health facilities, public health programmes and other programmes for diseases such as cancer. Velayat (regional) governments finance regional health facilities, while etrap (district) governments finance district hospitals and PHC. Health insurance contributions (3% of salary or pension income) are held in a special account and mostly used for central procurement of medicines and to cover the 50% price “discount” for services/medicines provided to people covered by the medical insurance scheme. Fifty percent of user fees collected at facility level are transferred to the off-budget account. Excise taxes on alcohol and tobacco are retained in the treasury.

The allocation of public resources for health facilities is norms based (for example, number of beds/population, staff/bed) as was the tradition in the former Soviet Union. Facilities receive budgets with approximately 25 line items and staff is paid base salaries, with possible supplements for hazardous conditions, scientific degrees (for example, PhD), special government awards and on-call duties. Surgeons and family doctors are paid 15% more than other physicians. Public funds cover the cost of so-called budget beds, which account for approximately 30% of total costs. The remaining 70% of costs are paid for by user fees according to a government price list. The 50% of user fees (less taxes) that are retained at facility level are used to finance private beds, but may also at the discretion of the hospital director be used to cover uninsured indigent patients.

There are no provider payment mechanisms to encourage comprehensive PHC or incentives to deliver core NCD services. Furthermore, the system remains heavily hospital-centric. While the total number of hospital beds has declined significantly over the past 20 years, approximately 70% of encounters with the health system are inpatient, which helps to explain the low number of ambulatory visits per capita (see Challenge 15). However, the Government announced that in the future outpatient visits must increase to 70% of all encounters. The expectation is that houses

of health will increase day treatment to compensate for the required reduction in inpatient admissions. It is unclear how this goal will be achieved without a reform of provider payment mechanisms, or what consequences there will be, if any, for the provision of core PHC services.

High out-of-pocket user fees for PHC services and medicines reduce the utilization of core PHC services and the consumption of medicines by patients with NCDs, and undermine the achievement of universal health care. Inadequate utilization of core PHC services is not only the result of the current resource allocation methods but also a lack of appropriate incentives. The 50% or 100% co-payment rates¹⁰ required for services and medicines for patients not belonging to certain vulnerable groups or not having socially significant diseases significantly undermine patients' ability to pay for such services. In the case of preventive medical examinations, many PHC facilities contract with local employers to cover the cost of these visits, but the non-working population without any coverage reportedly presents a continuing challenge.

There are no demand-side incentives for patients to adhere to a prescribed treatment. Hospital staff report that many NCD patients present late in their disease process and stop taking their medications after they have been discharged. The high costs of medicines and a lack of financial incentive for patients to take their medicines contribute to high rates of complications and premature mortality.

Patient education and counselling about NCD risk factors is a high priority in PHC, but there are no financial mechanisms to support or develop peer-to-peer education or support groups for patients with key conditions. Every NCD patient is referred for patient education and counselling according to the diagnosed disease, and well-equipped training rooms are available in all PHC facilities. However, the training is provided by doctors and/or nurses. Peer-to-peer (patient-to-patient) education or support groups do not exist, nor are there any dietitians to educate patients on how to change their diet and what to cook. It is unclear whether this is because there are no financial mechanisms to support such activities or because of a lack of knowledge of the evidence that has documented the effectiveness of patient-to-patient support groups in improving outcomes.

Challenge 9. Integrating evidence into practice

There is a structured process in the country to develop clinical practice guidelines (CPGs) although evidence may not be explicit. CPGs are generally developed by a working group (that includes hospital practitioners, academia representatives) under the guidance of the Division of Treatment and Prevention of the Ministry of Health and Medical Industry. Patient associations or their representatives do not participate in the guideline development process. There is a special agreement between the Ministry of Health and Medical Industry and experts in Germany so that technical expertise is received in preparation of CPGs. A draft CPG is then examined by the Scientific Council of the Scientific Clinical Centres (by specialization) and then by the Scientific Council of the Ministry of Health and Medical Industry, before being signed and becoming a Ministry order. Guidelines are planned to be updated every five years. The development of CPGs also takes into account international experience: for example, the national hypertension guidelines considered the guidelines of the European Society of Cardiology and the International Society of Hypertension. While CPGs often refer to international guidelines, they may not be to the most recent version that existed at the time of their development. Turkmenistan's guidelines on ischaemic heart disease (issued in 2017) do not present a classification of the level of evidence, the classes of recommendation or a reference list.

¹⁰ Patients who are covered by the medical insurance scheme pay a 50% co-pay, while those who are not covered pay 100%.

CPGs exist for many of the core services reviewed as part of this assessment report. There are CPGs (protocols) for hypertension (2017), ischaemic heart disease (2017), stroke (2015) and diabetes (2017). National guidelines for diagnosis and treatment exist for all cancers. Oncological guidelines also include the list of tests (mainly palpations and cervical smear) that should be done at PHC to screen for cancer. WHO PEN protocols for the prevention of heart attacks, strokes and kidney diseases, for health promotion and for lung diseases were recently adapted and approved for use. The algorithms for cancer screening are described in section 3.2. Clinicians are aware of international guidelines; for example, medical personnel at the International Neurology Centre of the General Directorate of Medical Centres quoted European Neurological Association and American Heart Association CPGs during the assessment visit, as useful reference for clinical practice.

The relationship between CPGs and prescribing of priority NCD medicines could be further strengthened. For example, in Turkmenistan's guideline on ischaemic heart disease (2017), authors use the commercial name of drugs and not the name of the active pharmaceutical ingredient. The recommendations do not completely match the European Society of Cardiology standards: for example, there is no information that patients with ACS need high-intensity statin regimens (80 mg of atorvastatin or 40 mg of rosuvastatin). For other issues, the information provided is limited. For example, the section on myocardial infarction recommends the use of prognostic scales such as GRACE, TIMI and CRUSADE,¹¹ but it does not inform on how to use prognostic scores to manage patients. For cancer guidelines, all the drugs mentioned in protocols must be free of charge.

A limited process exists for disseminating new guidelines and training providers. Once approved, printed and electronic versions of CPGs are sent to all medical facilities for dissemination, although these were generally not visible, neither patient nor professional versions, during the assessment visit to facilities. Special capacity-building trainings are organized in Ashgabat for medical practitioners from all over the country when new CPGs are developed. For the WHO PEN protocols, training materials have been developed based on Finland's experience. In 2018, face-to-face one-week trainings for physicians in velayats were organized. Some of these trained specialists will become trainers for physicians (both family doctors and specialists) in etraps. At the PHC level, the family doctor had a black-and-white photocopy of the PEN protocols in a drawer.

Monitoring of adherence to guidelines takes place through an external monitoring process, rather than through internal quality assurance processes. To control compliance with clinical guidelines, special expert groups from scientific-clinical centres (in cardiology, neurology, oncology and endocrinology) are formed and sent to velayat hospitals twice a year. Experts use checklists to measure quality (compliance) and prepare reports for the Ministry of Health and Medical Industry.

There are some efforts to overcome barriers to accessing the international evidence base. The longstanding collaboration between Germany and Turkmenistan has meant that German clinicians have spent time in Turkmenistan training national clinicians, and Turkmen clinicians have visited Germany for training. Medical personnel receive postgraduate training in Germany or on-site by German consultants (54). Since 2011, the exchange programme has sent multiple doctors from the International Neurology Centre of the General Directorate of Medical Centres to Germany. The assessment team was told that staff was encouraged to learn German and/or English in order to benefit from such training opportunities. Apart from these activities, stroke physicians are aware of ongoing initiatives in other countries but do not seem to be involved in any international projects, such as international registries, conferences and training. Insufficient Internet speed may limit networking opportunities.

¹¹ The prognostic scales include the global registry of acute coronary events (GRACE), the thrombolysis in myocardial infarction (TIMI) risk score and the CRUSADE (Can Rapid risk stratification of Unstable angina patients Suppress ADverse outcomes with Early implementation of the American College of Cardiology/American Heart Association guidelines) bleeding risk score.

Challenge 10. Addressing human resource challenges

Turkmenistan is seeking to strengthen human resources for health. Educating and improving the quality of health professionals is one of the objectives of the State Health Programme “Saglyk” (2015–2025). Activities such as strengthening the system of continuous education, introducing new specializations and utilizing new methods for education are planned according to the Programme. In addition, in order to ensure a sustainable health workforce for the future, a strategic programme on human resources for health is in development, including an implementation/action plan to strengthen the health system’s response to NCDs in particular and the wider health system in general.

Education and training pathways for health professionals have been standardized. Education of health professionals is free of charge. Medical education is a shared responsibility between the Ministry of Education, which defines the pedagogy, and the Ministry of Health and Medical Industry, which designs curriculum content. New undergraduate medical specializations were recently introduced (for example, rehabilitative and traditional medicine, military medicine, sports medicine, medico-social affairs).

The medical education and training pathway takes nine years: six years of undergraduate education and three years of postgraduate training and specialization (one year of internship and two years of work by mandatory placement). Students can also choose a two-year residency that replaces the internship and mandatory placement. A salary is paid during the internship and a bursary is paid to residents. Family medicine is considered as a medical specialization (six years of undergraduate medical education, one year of internship and two years of practice under supervision). The education and training pathway for pharmacists and dentists is five years of undergraduate education, one year of internship and two years of work by mandatory placement. For nurses, the basic pathway is two years and six months of training in nursing at secondary medical schools. For midwives, the equivalent pathway is two years and six months. NCD-related topics are included in general curricula for all health professionals.

After six years of undergraduate education, the assignment process of mandatory placement for postgraduate medical specialist training is done by the state allocation committee. The Ministry of Health and Medical Industry collects requests for health personnel from facilities, as well as from other stakeholders (Ministry of Internal Affairs and Ministry of Defense) and provides information to the committee; there does not seem to be further planning to ensure the right mix of specialists. The committee offers vacant posts to graduates for a minimum of a two-year period, first priority being the region of the origin of the graduate. Decisions are made by agreement.

The number of students studying abroad and returning to the country after graduation is increasing. The two options for going abroad are under an intergovernmental agreement or by self-support. Generally, students return to the country of origin for an internship. The Ministry of Education set up and administers the procedure for recognizing foreign medical degrees (applications should be made by interested students).

Continuing professional development is compulsory for doctors and nurses. Every three years, doctors are required to undertake special trainings lasting 2–4 weeks for each specialization, a minimum of 144 hours. The Turkmen State Medical University (in Ashgabat) and specialized clinical centres (also in Ashgabat) provide the training. Continuing professional development is also mandatory for qualified nurses (one month every five years, a minimum of 144 hours). Nurses can receive training in NCDs through continuing professional development at specialized clinical centres. Continuing professional development for family doctors includes subjects related to NCD treatments and promotion of healthy lifestyles (nutrition). In general, the mandatory continuing professional development is provided free of charge but an international education and research centre also offers training for health professionals on a paid basis.

The Ministry of Health and Medical Industry also supports continuing professional development through internships abroad, as well as through short visits of foreign health professionals (primarily from Germany) to Turkmenistan for experience sharing and trainings.

A registry of health professionals is being developed but, currently, there is no system to license health care workers. The Health Information Centre of the Ministry of Health and Medical Industry retains records of health workers through the national reporting form N 17 filled in by health facilities, which includes information by occupation (including detailed information about the medical specialization), health care setting and gender. Based on data gathered, the Ministry of Health and Medical Industry (together with other relevant stakeholders, such as the Ministry of Internal Affairs and the Ministry of Defense) defines the quota for student enrolment at undergraduate level.

The registry for health professionals is integrated at velayat level. There were 36 535 physicians and nurses registered as of November 2018. Despite a general state retirement age (of 57 for women and 63 for men), typically health professionals can continue to work and choose when to retire.

There are shortages of certain cadres of health professionals, especially in remote areas, and measures are being implemented to address this. Since 2008, Turkmenistan has been increasing medical student enrolment in order to graduate more health professionals to work in both PHC and hospitals; in 2018, enrolment nearly doubled from 310 to 573 students at the Turkmen State Medical University (the only one in the country), and 430 students were enrolled in the five medical colleges. The number of student places for the profession of feldsher has also been increased. In order to attract health professionals to become family doctors, especially in remote areas, a 15–30% increase in salaries is being planned, depending on remoteness (15% in city areas, 30% in remote locations), in addition to the 10% increase normally planned each year for all employed Turkmen citizens. A special budget is allocated for this purpose. In remote areas, local authorities provide housing for newly installed family doctors.

The Scientific-Clinical Centre of Oncology has a shortage of medical physicists (with just two in the country), but students specializing in medical biophysics, enrolled in school programmes under the intergovernmental agreement, are soon expected to arrive in the country. Commissioned by the Ministry of Health and Medical Industry, Oguz Han Engineering and Technology University introduced a new specialization – medical equipment engineer. Oncologists mentioned the need for psychologists in cancer care; work is underway to introduce psychologist staff positions at the Scientific-Clinical Centre of Oncology.

Challenge 11. Improving access to quality medicines for NCDs

Priority NCD medicines are available to patients who need them. In general, patients procure their medicines for NCDs through their local pharmacies. Family doctors in consultation with other specialists prescribe medicines, and a community pharmacy dispenses them. There is no electronic prescription system; instead patients hand carry the paper prescription to a pharmacy of their choice. There are 200 state (public sector) pharmacies and 55 private ones. Local pharmaceutical production represents about 40% of the total pharmaceutical sector in terms of volume.

Herbal medicines are promoted, also in combination with drugs, as part of the promotion of healthy lifestyles, prevention of diseases and their complications, treatment and rehabilitation. The President of Turkmenistan has an interest in traditional medicine and has written on the subject (55,56). Phyto bars, which offer medicinal herbal teas, such as those produced by Saglyk Enterprises of the Ministry of Health and Medical Industry, are an integral part of the new houses of health and sanatoriums (57–59).

Turkmenistan has a National Essential Medicines List that the Ministry of Health and Medical Industry defined and amends. The most recent version of the list contains 432 international non-proprietary names (approved by a Ministry of Health and Medical Industry order) of medicines for outpatient and inpatient use. The Ministry of Health and Medical Industry has a special working group on essential medicines. It receives proposals for drugs to include from the treatment institution; for example, a list of oncological drugs is proposed every year. Pharmaceutical companies are not part of this group.

Priority NCD medicines, clinical guidelines, prescribing and dispensing are not aligned. National CPGs exist although not for all conditions (see Challenge 9). For example, Order No. 449 on measures for improvement of organization of health care for patients with CVD in Turkmenistan (30) specifies in detail the list of drugs that must be available in ambulances dedicated to ACS, including analgesic, opioids and thrombolytic drugs.

CPGs indicate drugs by their commercial name and not by the active pharmaceutical ingredient. There is a need to ensure that CPG guidelines do not contain advertisements for branded medicines as was seen, for example, in the “handbook” of clinical guidance “Acute Coronary Syndrome and Chronic Heart Disease” (2017) developed by the Ministry of Health and Medical Industry, International Cardiology Centre of the General Directorate of Medical Centres, and Hospital with Scientific-Clinical Centre of Cardiology. Doctors are not bound to follow the CPGs or constrained in any way in selecting the drugs to prescribe. The Ministry of Health and Medical Industry regulates prescription drugs that receive the 50% discount that are on the National Essential Medicines List. However, the number of drugs that receive the 50% discount is limited. The Ministry of Health and Medical Industry does not have an overview of how many drugs are prescribed that are not on the National Essential Medicines List.

The pharmacy is bound to dispense what the doctor prescribes; however, the pharmacist can offer alternatives with the same active pharmaceutical ingredients (generic substitution). Doctors apparently work in close contact with pharmacies so they know what medicine is stocked/available when they make prescribing decisions.

Affordability of medicines may be a challenge for patients. In general, patients receive a 50% discount on the price of outpatient medicines if they have health insurance. If a doctor has prescribed a medicine that is not on the list of drugs eligible for a discount, or a pharmacist has dispensed a medicine not on that list, the patient is unable to get the discount. Patients admitted to hospital for an emergency, such as a heart attack, receive free treatment for the first seven days of admission. After that, they are charged for the inpatient stay but are eligible to have a 50% discount if they have health insurance. The charge for the patient is based on an itemized bill that includes the costs of medicines and diagnostic procedures.

WHO estimates that out-of-pocket expenditure as a percentage of current health expenditure was 71.1% in 2015 (60). No recent national health accounts or household budget surveys can provide national data on the percentage of the cost of medicines paid out of pocket.

Some priority NCD medicines are included in public sector procurement policies. This list of pharmaceuticals that are available free of charge includes insulin for diabetes patients, bronchodilators for asthma patients, oncological medicines and opioids (61). Pain relief for a terminal patient, whatever the disease, is also fee-free. Any public sector pharmacy can dispense these fee-free medicines except for opioids, which only some public sector pharmacies may dispense. The Government allocated funds to buy drugs for vulnerable populations such as veterans who should receive drugs free of charge. All medicines that are publicly subsidized, i.e. provided free of charge, follow a centralized procurement process. The Ministry of Health and Medical Industry announces a tender based on proposals submitted by facilities. When these contracts are concluded, they go through the State Commodity and Raw Materials Exchange that controls prices. Payment is done from the budget, as well as from other sources such as insurance premiums.

The list of drugs eligible for a discount includes opportunities for more effective use of resources. Some priority CVD medicines are included in the list of medicines dispensed

from pharmacies at a 50% discount for citizens of Turkmenistan who have signed voluntary health insurance contracts and pay the appropriate fees in a timely manner (Order No. 333 (40)). The list does not include oral anticoagulants (old drugs such as warfarin and new oral anticoagulants) to prevent stroke in patients with atrial fibrillation, or clopidogrel for CVD secondary prevention (ACS and stroke). Surprisingly, the list contains neuroprotectors, classified as “medications that normalize blood circulation in the brain” that are reimbursable: cerebrolysin and vinpocetine. Vinpocetine has been banned in Australia, Canada and New Zealand and is not approved by the United States Food and Drug Administration; no beneficial effects in stroke patients to support its clinical use have been observed (62). When updating the list of medicines dispensed at pharmacies with a 50% discount, inclusion of cerebrolysin and vinpocetine will be considered as well as expanding the list of oral anticoagulants for stroke prevention.

Some procedural barriers exist to the equitable access to NCD medications. For example, there are rigid barriers for narcotics, which are mild and strong opioids. Only a limited number of specialists can prescribe narcotics, for a limited duration (10 days) and in a limited amount (10 vials). The empty vials need to be returned to the prescribing specialists in order to get a new prescription. To initiate an opioid prescription to a patient, a commission of three people must be gathered on the request of the patient’s GP. For cancer patients, this commission comprises the oncologist, the deputy director of the polyclinic and the GP. The oncologist prescribes the medicine. Throughout the development of the disease, the GP cannot change the prescription without asking the oncologist. Pain killers available for home care are limited; the main one used is tramadol, a medicine in the second step in WHO’s three-step pain ladder and among the less well tolerated. A GP can prescribe it but only by strictly following the oncologist’s recommendations. Oral morphine is not available yet, only injectable morphine (which is a serious barrier to efficient pain management). On 20 February 2019, oral opioid forms were registered in Turkmenistan and their procurement is planned.

Opioids are feared by health care professionals and families/patients, which is further inhibited by a lack of openness about cancer. Cancer patients are rarely informed about their disease; doctors mentioned a law prohibiting them from informing patients that they have cancer without telling the family first. The general understanding is that patients are better off not knowing that they have cancer. Oncologists tell patients receiving chemotherapy that it is “therapy to prevent cancer”.

Some legislative and regulatory frameworks are in place, but it seems full price regulation in line with WHO guidance¹² is not carried out (meaning at the ex-factory level and at the distribution margins). On 12 January 2016, a law to improve the regulatory framework for access to medicines was enacted. The institutions in charge of medicines regulatory activities (i.e. granting market authorizations, pharmacovigilance activities, etc.) are under the control of the Ministry of Health and Medical Industry. Under the Ministry, there is the Production Association of Medical Equipment (responsible for delivery) in Ashgabat, with four branches in the velayats. There are seven production facilities. The Centre for Registration of Pharmaceuticals performs quality controls, and there is also a Department of Licensing. More than 10 000 medicines are registered in the country, with a valid market authorization.

It seems that price regulation is only carried out at the distribution margins, which cannot be considered as a full price regulation. The Ministry of Finance and Economy and the Ministry of Health and Medical Industry are accountable for pharmaceutical pricing.

- A 25% total mark-up (for the wholesaler and pharmacist) is applied to outpatient pharmaceuticals intended for the general public and business entities.
- A 10% wholesale mark-up is applied to inpatient pharmaceuticals intended for budget entities (hospitals).

All state (public sector) pharmacies have to charge the same prices for the same medicines; only private pharmacies can change prices and stock different brands.

¹² WHO guideline on country pharmaceutical pricing policies. Geneva: World Health Organization; 2015 (https://www.who.int/medicines/publications/pharm_guide_country_price_policy/en/, accessed 13 March 2019).

Challenge 12. Effective management

The appointment process for health care managers differs according to level but managerial training and experience is increasingly a consideration. The President appoints the directors of the nine large international health care centres, the Directorate of Infection Control, and one large multiprofile centre in Ashgabat. The Minister of Health and Medical Industry appoints the directors of other hospitals, as well as the heads and deputy heads of health departments at regional level. These regional heads appoint the heads of houses of health.

The heads of health facilities are doctors and come from the public sector. Appointments have been largely based on previous professional managerial experience and characteristics such as vigour. It is increasingly a formal requirement, however, that managers complete minimum one-month training in health management through a course with a formal curriculum and special certificate.

There is a structured process to develop a cadre or pool of potential health service managers from which to make selections. Following the end of their postgraduate specialist training, with a minimum of five years' work experience, promising young doctors are identified for training for managerial positions. They are sent to a national institution such as the Academy of Public Service or Turkmen State Institute of Economics and Management for training with relevant courses ranging from two months to two years. Short courses for health managers will also be included within the Turkmen State Medical University. A master's degree in public administration is not yet available within the country.

Health service managers have the authority and responsibility to do all things necessary to manage their institution. These are outlined within the duty regulations/special instructions for the appropriate level or the models for city hospital managers. There is also a variety of national programmes, which managers should consider when developing their plan. Based on these, the manager submits the annual workplan to the Ministry of Health and Medical Industry for approval by the Deputy Minister and upon which they then report at the end of the year. This annual workplan is used to develop monthly and weekly workplans.

The performance of facility managers is routinely monitored. Health care facility managers are subject to double monitoring every day. Each morning, they report to the Deputy Minister and to the regional health specialist. If certain issues arise, the chief specialist responsible for the area (such as Chief Cardiologist) monitors the situation and debriefs the Ministry on the case.

Routine data are also used to track performance. Routine data are submitted every day from the health facility to the regional health departments and Ministry of Health and Medical Industry. Two Deputy Ministers have weekly meetings each Saturday at which analysis of the weekly activities is conducted. These data are also available to support the facility manager. The Minister also convenes weekly meetings with the facility managers to review the situation. Monthly board meetings with the directors of medical facilities in Ashgabat, velayats and etraps are organized in the Ministry of Health and Medical Industry, chaired by the Minister or Deputy Minister, to discuss indicators of medical activities.

Performance of managers in their related positions is reviewed every 3 years and appointments can be extended. A special tool for assessing competence has been developed and was adopted in February 2018. This electronic questionnaire comprises 800 questions of institutional performance and includes a special block of questions on clinical outcomes. It will be administered 1–2 times per year. The first assessment will be done at the beginning of 2019. In the future, the results will be linked to funding.

The Ashgabat city health department has competitions for the best clinic and the best doctor. First, the polyclinic chooses its best doctor then a jury chooses the best doctor in the city. Patient complaints are taken into consideration when making the choice.

Challenge 13. Creating adequate information solutions

Death certification is universal but a considerable proportion is ill-defined. Physicians perform certification of death. A physician specializing in medical statistics selects the underlying cause of death and coding. Data are coded using the International Classification of Diseases, 10th revision (ICD-10) and aggregated into mortality tables with support of the Analysing mortality levels and causes-of-death (ANACoD) electronic tool. The proportion of deaths with ill-defined cause has increased in recent years and was 15% in 2015. Cause of death data are used in the assessments of the Ministry of Health and Medical Industry, the State Committee of Turkmenistan on Statistics and for national reporting, including SDGs. Population data are not readily available, thus making calculation of rates difficult. In-depth assessment of the death register and use of cause of death data were outside of the scope of the NCD assessment mission.

NCD surveillance is largely based on periodic, externally supported surveys. Turkmenistan has conducted adult NCD risk factor surveys using the WHO STEPwise approach to surveillance twice, in 2013 and 2018. Both surveys were conducted with technical support from WHO. The 2013 report (19) and the 2018 report (10) are in press. Turkmenistan joined COSI and conducted the first round of data collection in 2015/2016. The HBSC survey was conducted in 2011 and 2013. The Demographic and Health Survey (DHS) was conducted in 2000, and the latest Multiple Indicator Cluster Survey (MISC-5) in 2015/2016. In addition, the State Committee of Turkmenistan on Statistics regularly conducts household budget surveys, which collect information on expenditures for medicines, but not other medical costs.

An abundance of data is collected in medical facilities, mostly in paper-based form, but it is not used for monitoring and improving clinical processes and outcomes to the extent possible. Data and information are frequently transcribed manually several times (for example, hospital discharge statistics, medical bills, disease registries in spreadsheet format, etc.) and use of information and communications technology in medical facilities is limited. In hospitals, physicians specializing in medical statistics compile statistical data using paper-based statistical cards, forming a summary report of the movement of patients in the hospital; these summary reports are sent to the Ministry of Health and Medical Industry on a monthly basis. In those summary reports, diagnoses are recorded using blocks and not individual ICD-10 codes. In addition to diagnosis, the anatomical site is recorded in cases when a surgery was performed. Procedures are not coded. Bills for hospital services are compiled in a separate step and transferred to the Division of Finance, Accounting and Reporting of the Ministry of Health and Medical Industry to analyse the financial activities of hospitals. Hospitalization rates are routinely monitored but data on waiting times are not routinely collected as it is not seen as a problem.

Data collected in electronic medical records (EMRs) are not structured, which limit analytical possibilities and further use of data. Medical records in hospitals and PHC facilities are in a mixture of paper-based and electronic format, varying from facility to facility, including the PHC-level chronic disease registries (journals). Computers with EMRs are connected with a dedicated network of the Ministry of Health and Medical Industry for security reasons. All three levels of medical facilities in velayats and Ashgabat are connected by fiber optic lines that facilitate the flow of information, and a software program can analyse the information gathered. Establishing electronic document flow systems in etrap-level facilities is also planned. With EMRs, the majority of data is collected in forms allowing free text entry. Structured data are used only for coding of diagnoses, using four-digit ICD-10 codes. No classification is used for prescribed pharmaceuticals and performed procedures, so this information is recorded using free text. Currently, EMRs do not have a clinical decision support system such as the reminder/prompt functionality. EMRs are used solely to document medical care, and no reports are prepared using collected data. Patients have no dedicated access to EMRs although, if requested, medical facilities can give patients a printed copy of their personal electronic record. In facilities using EMRs, data are also collected on paper records in parallel.

A number of disease registries in different stages of development exist. The cervical cancer register seems to be the best developed. It is available in a form of a computer program and reports are produced annually. Registers for diabetes and CVD are available in rudimentary format, with data entered manually into spreadsheet programs. The coverage of those registers seems to be low, as each had only a few hundred records entered for 2018 as of November. No reports are compiled using data available in the diabetes and CVD records. There are apparently national ACS, stroke and diabetes registers, which are used to support care. Annual reports of data from the registers are apparently issued but were not seen during the mission. Data are confidential and not meant to inform the public.

Challenge 14. Managing change

Health system leaders have identified changes in the health system to improve organization and delivery of care, although achievement of better NCD outcomes was not specifically the driver. The State Health Programme “Saglyk” (2015–2025) explicitly identified the need to reduce hospitalization rates as part of its health care reform. At the start, annual length of stay was 24–27 days and it has already been reduced to 15 days. One strategy is to do pre-admission examinations and another is to shift inpatient care to ambulatory care. Units within the Ministry of Health and Medical Industry monitor these changes to ensure progress. The Division of Treatment and Prevention of the Ministry of Health and Medical Industry monitors the introduction of reform programmes, and the Division of Statistics and Information provides support by analysing the use of beds and other indicators as well as receiving, generating and distributing monthly data.

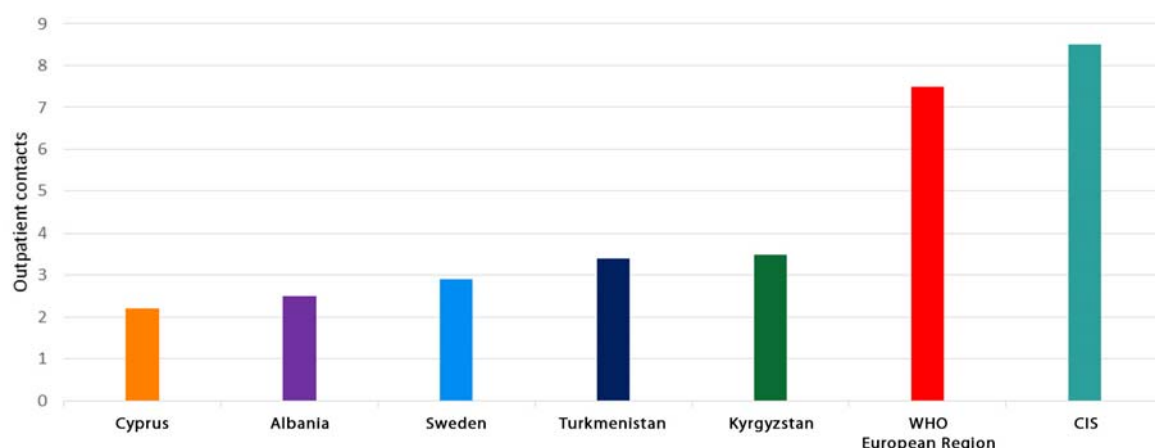
In principle, **management of change is supported by regular meetings as well as feedback on statistics.** The President of Turkmenistan pays great attention to the health care system and has strategic and operational oversight of it. The President holds regular strategic meetings with key stakeholders in the country including the Cabinet of Ministers, ministers and institutional representatives. At these meetings, challenges are identified and ways to address them are outlined. Facility managers have received general management training (see Challenge 12).

There have been some efforts to involve stakeholder groups and the public in the change agenda, but patients and their families are not systematically involved in service improvements. For example, the interagency coordination committee includes other ministries, NGOs and the public. Another example is the involvement of the public in developing the State Health Programme “Saglyk”, which was developed with the support of WHO. The draft health programme went through an iterative review process with all stakeholders. It was discussed at district level and with civil society through the health schools. It received numerous proposals from the regional level and took into account the opinion of patients.

Challenge 15. Ensuring access to care and reducing financial burden

The Government of Turkmenistan has made impressive progress towards ensuring physical access to PHC throughout the country. Major investments in infrastructure and equipment throughout the country – with all villages having new or renovated PHC facilities – have ensured that the population has equitable physical access to modern PHC facilities. At the same time, PHC is not fully staffed with adequate numbers of human resources for health. However, physical access to care is necessary, but not sufficient to ensure utilization. On average, the number of outpatient contacts in Turkmenistan was only 3.3 per person per year in 2016, which is very low in comparison to averages of 8.4 and 7.5 contacts per person per year, respectively, for the CIS countries and the European Region as a whole (Fig. 4).

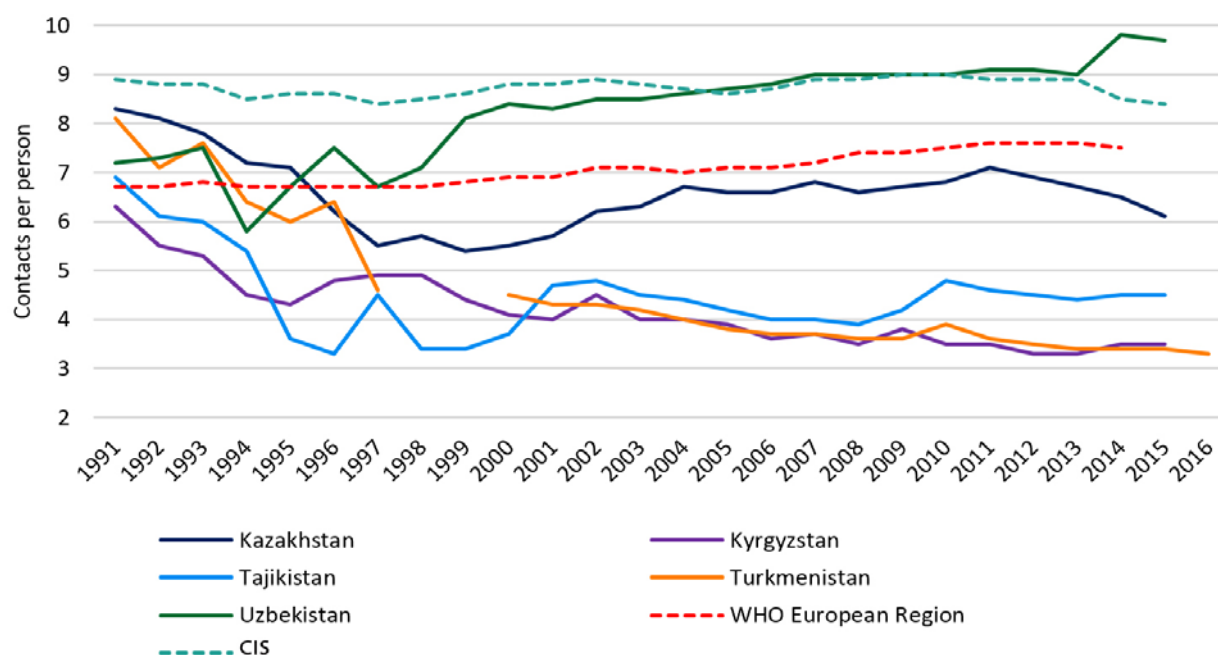
Fig.4. Outpatient contacts per person per year: the five countries with the fewest outpatient contacts in the WHO European Region, the Region and CIS, latest year available



Source: WHO Regional Office for Europe (63).

The rapid reduction in utilization of outpatient health care services that occurred after independence has slowed, but the declining trend continues to this day, albeit at a slower pace. Fig. 5 shows that ambulatory care visits in Turkmenistan declined rapidly between 1991 and 1997, going from 8.1 visits per year – among the highest in the European Region – to 4.6 in 1997, corresponding to a 9% reduction annually during this period. Between 2000 and 2016, the average number of outpatient visits per person per year declined from 4.5 to 3.3 visits per person per year, or 2% annually. Given Turkmenistan’s high rate of premature mortality due to NCDs – despite low risk factors – this would suggest that access to ambulatory care, including PHC services is inadequate. Since lack of physical access is not the source of the low utilization of outpatient health services, the cause must lie elsewhere. However, the absence of population-based surveys that allow an analysis of the distribution of private health expenditures makes it difficult to directly assess the extent to which the cost of ambulatory care contributes to the low utilization rates of outpatient care.

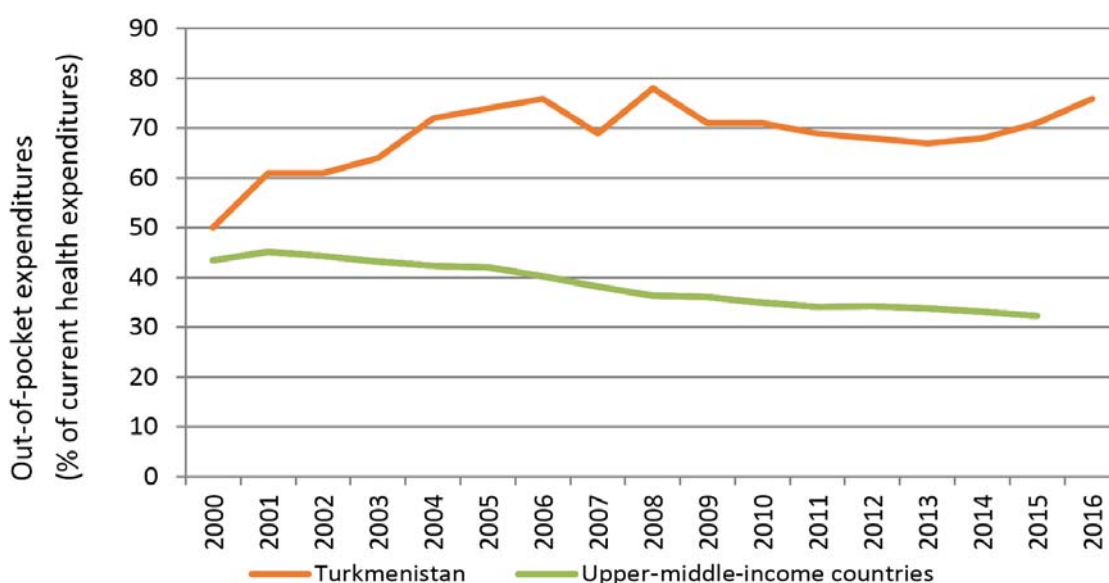
Fig.5. Outpatient contacts per person per year in central Asian countries, the WHO European Region and CIS (1991–2016)



Source: WHO Regional Office for Europe (63).

Out-of-pocket health expenditures are very high, suggesting that financial protection is inadequate. An important dimension of universal health care is the extent to which a country's health care financing system adequately protects the population against catastrophic or impoverishing expenditures due to poor health. In the absence of data to estimate the specific level of health expenditures, the level of out-of-pocket payments (as a percentage of health expenditures) is typically used as a proxy measure for financial risk protection, because evidence suggests that adequate financial protection is ensured only when out-of-pocket expenditures are below 15% (64). With out-of-pocket expenditures exceeding 70% (Fig 6), one would expect just over 4.1% and 2.0% of households with catastrophic and impoverishing health expenditures, respectively (64).

Fig.6. Out-of-pocket expenditures as a share of total spending on health (2000–2016)



Sources: WHO (65) and the World Bank (66).

Low and declining levels of government expenditures on health as a percentage of gross domestic product (GDP) also confirms that financial risk protection is inadequate.

Although public health expenditures as a percentage of GDP have been increasing slowly since 2008, when it was only 0.9%, it is still far from the 3.2% it was in 2000 (Fig. 7). This is in contrast to upper-middle-income countries, which as a group have experienced significant growth in public expenditures on health and now far surpasses that of Turkmenistan. The level of public expenditures on health is also much below the 5% level, above which evidence suggests financial protection is adequate (64). Public expenditures on health as a percentage of total government expenditures (9%) have also declined – from 13% in 2000 to 9% in 2015 (Fig. 8) – and is now below the minimum level of 12% recommended by WHO.

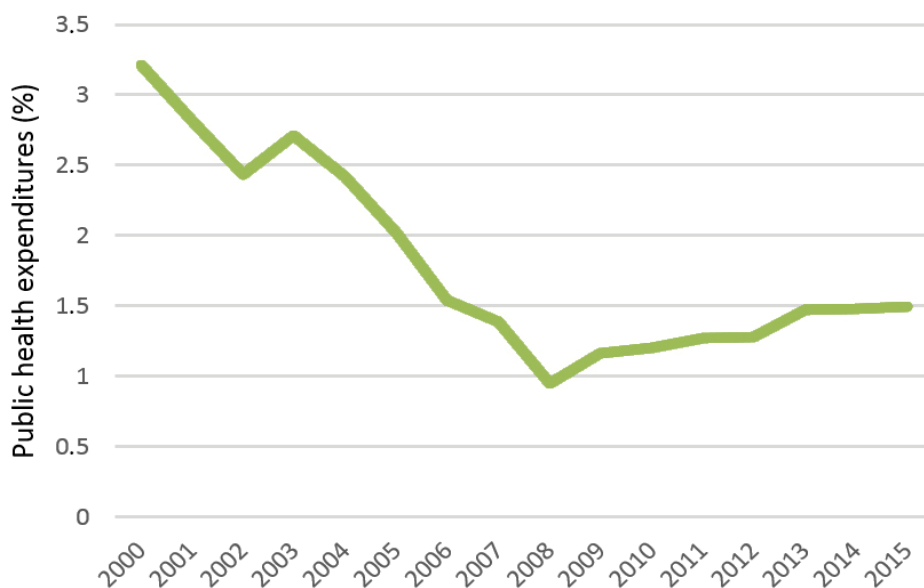
Out-of-pocket payments in Turkmenistan have increased by 52% since 2000, while in the group of all upper-middle-income countries they have declined by 27%.

For people covered by the medical health insurance system in Turkmenistan, the price of covered health care services and medicines is “discounted” by 50%. In addition, patients with socially significant diseases like diabetes receive all health services and medicines free of charge. Certain vulnerable groups, for example, the poor and older people are also eligible to receive health services and medicines free of charge. However, evidence from other countries indicates that this kind of targeting (of patients with specific diseases, for example, diabetes and cancer, and particular vulnerable groups such as the poor or people with disabilities) does not provide adequate financial protection on a population basis, because the main source of out-of-pocket payments is typically for pharmaceuticals, often for medicines to treat NCDs (67). While there are no data on the main sources of out-of-pocket payments, there is no reason that the situation would be different in Turkmenistan given the high burden of NCDs and the relatively limited coverage of medicines (and health services) for CVD and other NCDs

that are not eligible for the 100% “discount”. Furthermore, anecdotal evidence suggests that patients with NCDs frequently stop taking their medication(s), which could in part be due to the limited coverage by the medical insurance system.

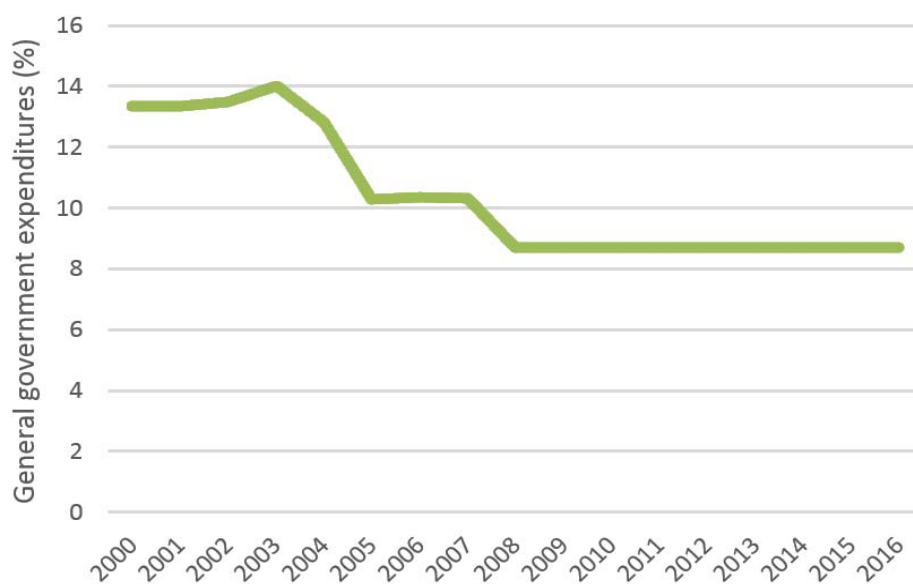
The low level of utilization of outpatient services and the high level of out-of-pocket payments suggest the need to revise health care financing mechanisms to reduce these payments and cover all the ‘best buys’ for NCDs free of charge (for both services and medicines). Doing so would help improve not only health outcomes but also the financial protection of the population against poor health and make progress towards universal health care. However, without disaggregated data by income group, gender and residence for indicators like utilization of outpatient services, out-of-pocket payments, etc., the Government of Turkmenistan is missing a critical tool for determining who is being left behind and the extent to which progress is actually made on universal health care.

Fig. 7. Public expenditures on health as a percentage of GDP (2000–2015)



Source: WHO (65).

Fig.8. Government expenditures on health as a percentage of general government expenditures (2000–2016)



Source: WHO (65).



5. Innovations and good practice

5.1 Tobacco control

Tobacco control is one of the main public health priorities in Turkmenistan. Since 2000, the Government, using a cross-sectoral approach, has conducted systematic work in tobacco control demonstrating great **political commitment**. In 2000, a presidential decree that prohibited smoking was adopted, and a fine was introduced for smoking tobacco in public places. Several other high-level normative acts followed: the prohibition of nasvay, a type of smokeless tobacco for oral use (2004), and the prohibition on the production, trade and use of nasvay as a tobacco product (68) (2008). Among central Asian countries in the WHO European Region, only Turkmenistan has comprehensively prohibited nasvay (68). The “Law on the protection of the health of citizens from the effects of tobacco smoke and the consequences of tobacco consumption” (15) was adopted in 2013. The Law was in line with the action plan and national programme on the implementation of the WHO FCTC for 2012–2016 and gave the necessary **comprehensive regulatory basis** for further actions. In addition to strong legislation, the Government has enacted other **pricing measures**. The average retail price for cigarettes in Turkmenistan is currently the highest (69) among central Asian and former Soviet countries.

An **intergovernmental coordination committee** was established as part of the framework of the national programme on the implementation of the WHO FCTC, led by the Ministry of Health and Medical Industry, which facilitates the implementation of cross-sectoral measures.

Awareness-raising activities, especially among young people, are an important component of the national response to tobacco use. Tobacco-free activities in Turkmenistan are usually held in May, such as “No Tobacco May”, a public information campaign in Ashgabat Park (2017), “Tobacco-free car” in the framework of the United Nations Global Road Safety Week (2017), etc. In addition, capacity-building activities to educate journalists on how to report on tobacco-related issues (70) were organized in 2016.

As part of the framework of the new national programme on the implementation of the WHO FCTC for 2017–2021, new and potentially innovative measures are planned to enforce tobacco control (such as plain packaging or a text messaging service for basic tobacco-related medical consultations).

At international level, Turkmenistan is one of the leading countries in terms of political commitment for global tobacco control work. Turkmenistan has hosted several international WHO meetings related to NCDs and tobacco control: the WHO European Ministerial Conference on the Prevention and Control of NCDs in the Context of Health 2020 (2013) that led to the Ashgabat Declaration (71) in 2013 and the adoption of the Roadmap of actions to strengthen implementation of the WHO Framework Convention on Tobacco Control in the European Region 2015–2025 (72) by the WHO Regional Committee for Europe in 2015; and a regional meeting on implementing the WHO Framework Convention on Tobacco Control (2016). In 2014, Dr Gurbanguly Berdimuhamedow, the President of Turkmenistan, received the WHO Director-General’s Special Recognition certificate for contributions to global tobacco control on the occasion of World No Tobacco Day.

As one of the first countries to ratify the WHO FCTC (2011), as well as the Protocol to Eliminate Illicit Trade in Tobacco Products (2015), Turkmenistan supported implementation of tobacco control measures throughout the WHO European Region through a voluntary contribution

to the work of WHO within the framework of the project “Implementation of the Ashgabat Declaration: towards a tobacco-free European Region for 2015–2018”.

Turkmenistan is also using sports to promote healthy lifestyles. The 5th Asian Indoor and Martial Arts Games, hosted by Turkmenistan in 2017, were declared tobacco free and presented an opportunity to discuss (73) the importance of health promotion in such events.

As a result of the President’s leadership in tobacco control and relevant political commitments, comprehensive multisectoral national measures, enforced by law, together with a particular political and cultural context, Turkmenistan demonstrates a successful example of progress achieved in implementing strong tobacco control policies with clear health outcomes. Turkmenistan has the lowest prevalence of current smoking in the WHO European Region (74) and intends to become the first tobacco-free (with the smoking rate at 5% or less) country in the European Region by 2025. A few WHO recommendations not yet implemented could help the country achieve more progress and save more lives (16). WHO will continue to provide technical support to Turkmenistan to help it become tobacco free.



6. Policy recommendations

In conclusion, there appears to be a strong commitment to NCD prevention and control in Turkmenistan. The strengths of the health system include:

- political commitment to prevention and control of NCDs and health promotion
- low levels of behavioural risk factors
- an HPV vaccination programme for boys and girls, rolled out without opposition
- health schools and education booklets
- infrastructure improvements
- the introduction of an EMR system.

This report also highlights the achievements in tobacco control in particular.

There is an apparent paradox between the relatively low population-level prevalence of behavioural risk factors for NCDs and the high premature mortality from NCDs. The score card assessments of implementation of the WHO 'best buys' for NCD prevention and control indicate that tobacco and alcohol control is more advanced than implementation of interventions for improving nutrition. Maintenance and enforcement of tobacco and alcohol control measures, as well as measures aimed at better nutrition and increased physical activity, based on WHO strategic documents, are recommended. Regarding individual services, there is an opportunity for better control of cardiovascular risk factors and detection of diabetes, and prevention of complications. While there is a strong focus on periodic preventive medical examinations, international evidence suggests that these do not lower the burden of CVD in society. Cancer screening, early detection and palliative care are areas that warrant particular attention.

A comprehensive and aligned approach to health systems strengthening for better NCD outcomes is needed, and the health system reforms provide opportunities. Policy recommendations for further strengthening the health system are presented in the form of the nine cornerstones for health systems strengthening.

Strengthened governance ensures coherent policy frameworks and sustainable intersectoral action for NCDs connecting national, regional and local levels. Within Turkmenistan, there is strong management of the health system but inadequate focus on health outcomes and efficient use of resources. Recommendations include:

- development of a comprehensive NCD strategy/legislation that targets improved NCD and health system policies and services, including financing;
- greater policy coherence so that health is more clearly on the agenda of other policy frameworks, and improved NCD outcomes are more clearly a goal for the health and development agenda;
- the engagement of stakeholders throughout the policy cycle that includes patients, their carers and representatives, and members of the public;
- gender and people-centred perspectives to further enhance the approach; and
- taking into account the impact of other sectors' decisions and their potential leverage on the health sector's measures regarding implementation of population-based interventions for NCD prevention.

Well-resourced public health services lead health promotion and disease prevention programmes, applying universal proportionalism to drive the equity focus in public health actions. Within Turkmenistan, the focus on NCD prevention already shows results; nevertheless, while clinical prevention is welcome, frequent health checks can be resource intensive and expensive, and may not improve outcomes. Health schools in PHC facilities would benefit from evidence-based approaches to behavioural change. Some cancer screening programmes are not evidence based.

It is recommended to:

- further strengthen NCD prevention particularly regarding nutrition;
- review the system of preventive health checks to consider more effective and efficient use of resources and achievement of better outcomes, and to reduce the burden and costs for patients;
- prioritize cervical cancer screening over breast and colorectal cancer screening as it has the potential to save more lives, and streamline and optimize referral pathways for cervical cancer patients (see the WHO Guide to cancer early diagnosis (37));
- develop early diagnosis programmes of breast and colorectal cancer (see the WHO Guide to cancer early diagnosis (37)); and
- not invest in screening for stomach cancer as there is no evidence that screening by endoscopy decreases mortality and the possibility that associated harm may exceed benefits even when targeting high-risk groups.

Multiprofile integrated PHC proactively manages community health and well-being. The shift to family medicine is encouraging, but the role of family doctors and nurses could be further developed. It is recommended to:

- define, design and embed multidisciplinary teams (including allied health professionals such as dietitians and case coordinators) in primary care;
- invest in coordination and integration, empowering the role of the family doctor as coordinator of care; and
- strengthen the capacity of nurses and family doctors to understand and act on the impact of gender stereotypes in the provision of care and access to services.

Adequately regionalized specialist services provide efficient and timely care for acute conditions. While new infrastructure for hospital services are being introduced, these need to be enabled to function better as clinical networks and pathways, with a stronger focus on quality and outcomes. It is recommended to foster new ways of working between care levels and provide support through better coordination and information, for example:

- establish governance at national level, to increase visibility and coordinate activities (definition of clinical pathways and protocols, care levels, policies, treatment guidelines and regional hospital networks for AMI and stroke);
- define objectives at regional level, and clear accountabilities to their achievements (regional budget, standardized care at different levels, number of inpatients and treatments, timeliness and appropriateness of interventions, respect of guidelines and clinical protocols);
- promote cross-functional training and communication and visits to increase consistency of prevention, treatment and therapy (guidelines dissemination strategy, clinical outreach visits, opinion leaders, computerized clinical decision support and case studies review);
- establish a regional quality management system for specialist services and professionals (audit and feedback); and
- establish regional risk management and response plans that take account of analysis of trends in patient access to emergency service (for transient ischaemic attack/stroke/ACS), bed occupancy rates in specialized wards, inventory replenishment planning for medicine – for example, alteplase – and consumable devices, maintenance plans for critical diagnostic instruments.

People-centredness needs to be reflected in all health system functions. While the shift to ambulatory care is welcome, it needs to ensure that it achieves health outcomes and is patient-centred. Integrated health and social care at home is innovative and could be strengthened further by the introduction of palliative care. It is recommended to:

- invest in health literacy and innovative mechanisms to facilitate behaviour change;
- invest in patient empowerment and strengthen individual responsibility;
- design health services around patients to facilitate access and ensure that PHC is the point of first contact to the health system; and
- challenge the gender stereotypes that act as barriers to behaviour change.

A fit-for-purpose health workforce delivers people-centred interventions and services based on evidence. For NCDs a broader range of disciplines are required to support prevention (for example, nutritionists) and care (speech therapists in stroke care). In addition, as already highlighted, the family doctor and nurse are relatively underutilized.

Strong investment in physical infrastructure should be balanced by stewardship of human capital, including education, performance and capacity building. Capability improvements would also be supported through enhanced analysis and monitoring of the workforce, and through planning of and investing in the future workforce in cooperation with stakeholders and across government. It is recommended to:

- develop health workforce planning analysis and activities, aligned with NCD burden, clinical strategy and service planning;
- consider the human resources for health requirements of CPGs and develop mechanisms to better utilize the existing workforce and develop the relevant roles;
- develop the roles of allied health professionals (such as dietitians and case coordinators) in primary care;
- develop national education programmes and positions to ensure the availability of needed allied health professionals;
- identify the barriers to multiskilled approaches including role substitution and support the development of new skills and competencies;
- empower the family doctor and nurse to deliver people-centred interventions;
- develop national expertise in palliative care, for example by introducing it into all medical university and nursing school programmes, training future trainers, and by developing centres of excellence;
- address the gender stereotypes that lead to horizontal and vertical segregation of the health workforce; and
- challenge the gender imbalance on the provision of paid and unpaid care.

Adequate and prioritized health financing enables coverage of important services and aligns incentives with service delivery goals. Universal health coverage requires access to needed health services for all population groups as well as financial protection against catastrophic and impoverishing health expenditures. The current low level of public expenditures on health (both as measured as a percentage of total government expenditures and as a percentage of GDP) and the very high (and rising) level of out-of-pocket payments on health are clear indications that financial protection is poor and that public expenditures on health are inadequate. If Turkmenistan wants to make serious progress towards universal health coverage and reduce the premature mortality due to NCDs, it will need to increase public spending on health and ensure that out-of-pocket payments are significantly reduced.

To achieve adequate financial protection, Turkmenistan will need to reform its medical insurance system. Evidence from other countries suggests that targeting specific diseases and certain vulnerable population groups, as is currently the case, is not an effective mechanism for achieving financial protection, in part because the most important category of out-of-pocket payments is for NCD medicines for patients and/or diseases not specially exempted from payment. Instead, the entire population should have the same basic benefit package.

Furthermore, in a system that relies on wage-based taxes, an actuarially sustainable premium should be contributed by the government for those people who are not contributing to the system to ensure that the health care financing system is financially sustainable and adequately funded. It will be critical to increase the level of coverage from the current 50%. Evidence from other countries suggests that hospital admissions are usually covered at much higher rates of discount as are outpatient visits and medicines.

It is therefore recommended that:

- the current medical insurance system be reformed to include coverage for the entire population, with funding for the non-working population provided by the Government in an actuarially sustainable manner;
- a uniform basic benefit package is established for the entire population that provides PHC services, in particular all NCD 'best buys' and NCD medicines free of charge;

- the coverage rate for hospitalizations be increased significantly over the current 50% discount;
- provider payment methods (i.e., funding of health care institutions and remuneration of health care providers) be revised to establish incentives that encourage a more efficient use of resources and rewards early diagnosis and better management of patients with NCDs; and
- the household budget survey be revised to enable the routine collection of household expenditure data on all health expenditures to enable accurate monitoring of the percentage of households with catastrophic and impoverishing health expenditures, and using these data to provide additional coverage for those families with catastrophic or impoverishing health expenditures.

Access to quality medicines is ensured through comprehensive coverage, pricing policies and promotion of generics. In Turkmenistan, an essential drugs list exists but alignment with prescribing, dispensing, evidence-based protocols and a benefits package is needed. The burden of high out-of-pocket expenditure is already highlighted in the section above. It is recommended to:

- ensure coverage of priority NCD medicines with no or minimal out-of-pocket payments (as recommended above);
- align NCD medicines with agreed clinical guidelines and prescribing protocols;
- promote the use of generic medicines; and
- revise opioid regulation to increase access to opioids by:
 - significantly extending opioid prescription duration and quantities;
 - extending the numbers of professionals who can prescribe opioids;
 - making oral morphine easily available throughout the country; and
 - reducing the control requirements for professionals who administer opioids and pharmacies that sell opioids.

Information solutions support population health management, condition management in primary care, and coordination across providers for seamless care and self-management. The NCD surveillance system is perhaps over-reliant on externally supported population surveys and makes less use of the potential of routine data within the health system. Data are not used to monitor and improve quality of care and patient outcomes. Clinical decision support systems are not available. The EMR system could be more optimally structured to facilitate this and to enable the analysis of population-based outcome data for patients with NCDs at the clinic level. A population-based breast cancer register is available and used, but registers for other NCDs are in very early stages of development. It is recommended to:

- ensure regularity and sustainability of high-quality population-based risk factor surveys;
- design and use the EMR to its full potential, including but not limited to establishing clinical databases with outcome-oriented data at the facility level that can be used to improve quality of care and patient outcomes, particular among patients with NCDs;
- reduce the duplication of data collection and reporting efforts (EMRs, routine hospital statistics, bills for patients, etc.);
- develop ACS and stroke registers and use them to improve quality of care and to ensure better clinical outcomes;
- develop cancer registration at the national cancer centre and deploy dedicated software for cancer registration (for example, CanReg5 by the International Agency for Research on Cancer) to monitor the quality of cancer registration and to better analyse and understand cervical cancer patterns and trends;
- develop a national diabetes register that includes information on both intermediate (for example, HbA1c, hypertension and cholesterol measures) and ultimate outcomes (complications) and use them to monitor progress and revise treatment protocols and services on a regular basis; and
- ensure that efforts to improve and develop information solutions include collection, analysis and use of sex-disaggregated data and links with socioeconomic variables.



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Annex 1. Data sources and methods

The principal sources of data on demographic and health-related indicators for this report were from the European Health for All databases accessed through the European Health Information Gateway (1) and the Global Health Observatory data repository (2). The indicators selected for analysis are based on expert recommendations and practical considerations of the available evidence.

Estimates and projections from data reported annually by the 53 Member States of the WHO European Region were used. Country subgroups defined in the European Health for All database were applied to distinguish regional trends where relevant:

- EU-15: the 15 Member States in the European Union before May 2004: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom;
- EU-13: the 13 Member States that joined the European Union since May 2004: Bulgaria, Croatia, Cyprus, Czechia, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia and Slovenia; and
- the Commonwealth of Independent States until 2006: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, the Republic of Moldova, the Russian Federation, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

The countries in the European Region that are not in these groups are: Albania, Andorra, Bosnia and Herzegovina, Iceland, Israel, Monaco, Montenegro, North Macedonia, Norway, San Marino, Serbia, Switzerland and Turkey.

References

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Annex 2. Criteria for scoring tobacco-, alcohol- and nutrition-related interventions

Table A2.1. Criteria for scoring coverage of population-based interventions on tobacco control

Coverage	Limited	Moderate	Extensive
Range of antismoking interventions (WHO Framework Convention on Tobacco Control)	Prevalence among adults > 30%	Prevalence among adults 18–20%	Prevalence among adults <18%
Raise tobacco taxes	Tax is <25% of retail price	Tax is 25–75% of retail price	Tax is >75% of retail price
Smoke-free environments	100% smoke-free environment enforced only in schools and hospitals	100% smoke-free environment enforced in hospitals, schools, universities, public transport and workplaces	100% smoke-free environment enforced in all public places, including hospitality sector
Warnings of dangers of tobacco and smoking	Warning labels required on tobacco products (size not specified)	Warning labels required on all tobacco products covering ≥ 30% (front and back)	Warning labels required to cover > 50% (front and back), with graphics (standardized packaging)
Bans on advertising, promotion and sponsorship	No ban on national television, radio or in print	Ban on direct and indirect advertising and promotion	Ban on all advertisement and promotion, including points of sale, with effective enforcement
Quit lines and nicotine replacement therapy*	No quit lines; Government-funded cessation services, with nicotine replacement therapy allowed if paid in full by the individual	Quit lines; Government-funded cessation services available (possibly with payment by individuals); nicotine replacement therapy available if paid in full by the individual	Free-of-charge quit line, with cessation services and nicotine replacement therapy available and affordable (covered at least partially)

*Additional criteria not included in the Global action plan for the prevention and control of noncommunicable diseases 2013–2020 (1).

Source: WHO Regional Office for Europe (2).

Table A2.2. Criteria for scoring coverage of population-based interventions to prevent harmful use of alcohol

Coverage	Limited	Moderate	Extensive
Raise taxes on alcohol	Alcohol taxes follow price index	Alcohol taxes follow price index, with special taxes on products attractive to young people	Alcohol taxes follow price index and are related to alcohol content, including special taxes on products attractive to young people
Restrictions or bans on advertising and promotion	Regulatory framework regulates the content and volume of alcohol marketing	Regulatory framework regulates the content and volume of alcohol marketing, including direct and indirect marketing and sponsorship	Full ban on alcohol marketing of any kind
Restrictions on availability of alcohol in retail sector	Regulatory framework exists on serving alcohol in government and educational institutions	Regulatory framework exists on serving alcohol in government institutions, and serving alcohol is banned in educational institutions	All governmental and educational institutions must be alcohol free
Minimum purchase age regulation and enforcement*	Minimum purchase age of 18 years for all alcohol products	Minimum purchase age of 18 years for all alcohol products and effective enforcement measures are in place	Minimum purchase age of 18 years for all alcohol products, effective enforcement measures are in place with loss of licence for illegally selling alcohol to people aged < 18 years
Allowed blood alcohol content for driving	Maximum of 0.5 g/L	Maximum of 0.5 g/L and zero for novice and professional drivers	Maximum of 0.2 g/L and zero for novice and professional drivers
Multisector policy development*	Multisector national strategy on alcohol policy	Multisector national strategy and a coordinating council on alcohol policy	Multisector national strategy, a coordinating council on alcohol policy and an adequately resourced nongovernmental sector, free of potential conflict of interest with public health

* Additional criteria not included in the Global action plan for the prevention and control of noncommunicable diseases 2013–2020 (1).

Source: WHO Regional Office for Europe (2).

Table A2.3. Criteria for scoring coverage of population-based interventions on diet and nutrition

Coverage	Limited	Moderate	Extensive
Reduce salt intake and salt content in foods	≤ 10% reduction in salt intake has been registered since the mid-2000s	Salt intake has been reduced by ≥ 10% since the mid-2000s	Salt intake has been reduced by > 10% since the mid-2000s
Virtually eliminate <i>trans</i> -fatty acids from the diet	No evidence that <i>trans</i> -fats have been significantly reduced in the diet	<i>Trans</i> -fats have been reduced in some food categories and in certain industries but not overall	<i>Trans</i> -fats are virtually eliminated from the food chain through government legislation and/or self-regulation
Reduce free sugar** intake*	Reduction of the intake of free sugars** is mentioned in policy documents, but no action has been taken	Reduction of the intake of free sugars** by 5% is mentioned in policy documents and partially achieved in certain food categories	Reduction of the intake of free sugars** by 5% is monitored, with a focus on sugar-sweetened beverages
Increase intake of fruit and vegetables*	The aim to increase consumption in fruit and vegetables is mentioned, but no monitoring data have been collected	The aim to increase consumption of fruit and vegetables is in line with the WHO/FAO recommendations of ≥ 400 g/day, and some initiatives exist	The aim to increase consumption of fruit and vegetables is in line with the WHO/FAO recommendations of ≥ 400 g/day, with population initiatives in place and incentives to increase availability, affordability and accessibility
Reduce marketing pressure of food and non-alcoholic beverages to children*	Marketing of foods and beverages to children is noted as a problem, but has not been translated into specific action in government-led initiatives	WHO recommendations on marketing have been acknowledged and steps have been taken in self-regulatory approach to reduce marketing pressure on children	WHO recommendations on marketing and a framework for implementation are followed consistently, including a mechanism for monitoring
Promote awareness about diet and activity	No workforce development for nutrition and physical activity; nutrition and physical activity are not priorities in primary care	Some workforce has been developed for nutrition and physical activity; nutrition and physical activity are considered priorities in primary care	Workforce has been developed for nutrition and physical activity; nutrition and physical activity are priorities in primary care

FAO: Food and Agriculture Organization of the United Nations.

*Additional criteria not included in the Global action plan for the prevention and control of noncommunicable diseases 2013–2020 (1).

**Free sugars are monosaccharides (such as glucose, fructose) and disaccharides (such as sucrose).

Source: WHO Regional Office for Europe (2).

References

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Annex 3. Criteria for scoring coverage of individual services

NCD	Limited	Moderate	Extensive
CVD and diabetes			
Risk stratification in PHC	10-year CVD risk documented in fewer than 30% of records of patients aged >40 years with at least one main CVD risk factor. Specific risk factors not routinely documented.	10-year CVD risk documented in 30–60% of records of patients aged >40 years with at least one main CVD risk factor. Incomplete risk factor documentation or not using systematic method.	10-year CVD risk routinely documented in more than 60% of records of patients aged >40 years with at least one main CVD risk factor. Systematic method of calculation with routine documentation of specific risk factors.
Effective detection and management of hypertension	Fewer than 30% of estimated cases with high blood pressure identified in PHC, evidence-based generic antihypertensive drugs infrequently prescribed, no efforts to address patient adherence.	30–60% of estimated cases with high blood pressure identified in PHC, evidence-based antihypertensive drugs often (25–75%) prescribed, some efforts to increase patient adherence but not systematic.	More than 60% of estimated cases with high blood pressure identified in PHC, evidence-based generic antihypertensive drugs routinely (>75%) prescribed; government-funded systematic efforts to increase adherence.
Effective primary prevention in high-risk groups	Prescribers unaware of indications for primary prophylaxis. Under 10% of patients with very high (>30%) 10-year CVD risk identified and prescribed multidrug regimens (antihypertensive, acetylsalicylic acid and statin) for primary prophylaxis. Acetylsalicylic acid prescribed indiscriminately to all hypertensive patients.	Prescribers aware of indications for primary prevention with multidrug regimen. Low coverage (10–25%) of very high-risk patients with primary prophylaxis or appropriate drug regimens prescribed but very low patient adherence. Acetylsalicylic acid prescribed indiscriminately to all hypertensive patients.	Routine prescription of multidrug regimens, including statins, for patients at very high CVD risk. Coverage of at-risk patients exceeds 25%. Evidence of good long-term patient adherence. Acetylsalicylic acid not prescribed to hypertensive patients with low or medium CVD risk.
Effective secondary prevention after AMI including acetylsalicylic acid	Fewer than 25% of patients after AMI receive acetylsalicylic acid, beta-blockers and statins.	25–75% of patients after AMI receive acetylsalicylic acid, beta-blockers and statins.	More than 75% of patients after AMI receive acetylsalicylic acid, beta-blockers and statins.
Rapid response and secondary care after AMI and stroke ^a	Fewer than 25% of those with AMI or stroke receive diagnosis and care within six hours of first symptoms.	25–50% of those with AMI or stroke receive diagnosis and care within six hours of first symptoms.	More than 50% of those with AMI or stroke receive diagnosis and care within six hours of first symptoms.

	Limited	Moderate	Extensive
Diabetes			
Effective detection and general follow-up ^a	<p>Fewer than 75% of PHC practices establish and maintain a register of all patients aged ≥ 17 years with diabetes.</p> <p><25% detection/registration rate, based on estimated prevalence of type 2 diabetes in adult population. Not using evidence-based, systematic method to select asymptomatic patients for screening.</p>	<p>25–75% of PHC practices establish and maintain a register of all patients aged ≥ 17 years with diabetes.</p> <p>25–50% detection/registration rate, based on estimated prevalence of type 2 diabetes in adult population. Using evidence-based, systematic method to select asymptomatic patients for screening, but limited coverage.</p>	<p>More than 75% of PHC practices establish and maintain a register of all patients aged ≥ 17 years with diabetes.</p> <p>More than 50% detection/registration rate based on estimated prevalence of type 2 diabetes in adult population. Using evidence-based, systematic method to select asymptomatic patients for screening with high coverage.</p>
Patient education on nutrition and physical activity and glucose management	<p>Fewer than 25% of those diagnosed with type 2 diabetes made at least three PHC visits in past year.</p> <p>Fewer than 25% of registered people with diabetes receive organized dietary counselling.</p> <p>PHC gives no counselling about physical activity.</p> <p>Fewer than 25% of registered people with diabetes had glycosylated haemoglobin measurement in past 12 months.</p>	<p>25–75% of those diagnosed with type 2 diabetes made at least three PHC visits in past year.</p> <p>25–75% of registered people with diabetes receive organized dietary counselling.</p> <p>PHC routinely offers counselling on physical activity.</p> <p>25–75% of registered people with diabetes had glycosylated haemoglobin measurement in past 12 months.</p>	<p>More than 75% of those diagnosed with type 2 diabetes made at least three PHC visits in past year.</p> <p>More than 75% of registered people with diabetes receive organized dietary counselling.</p> <p>PHC routinely offers counselling and options for physical activity through partnerships.</p> <p>More than 75% of registered people with diabetes had glycosylated haemoglobin measurement in past 12 months.</p>
Hypertension management among diabetes patients	<p>Fewer than 25% of registered people with diabetes with hypertension have achieved a blood pressure <140/90 mmHg; ACE inhibitors not routinely prescribed as first-line antihypertensive.</p>	<p>25–75% of registered people with diabetes with hypertension have achieved a blood pressure <140/90 mmHg; ACE inhibitors routinely prescribed as first-line antihypertensive.</p>	<p>More than 75% of registered people with diabetes with hypertension have achieved a blood pressure <140/90 mmHg; ACE inhibitors routinely prescribed as first-line antihypertensive.</p>
Preventing complications	<p>Fewer than 25% of registered people with diabetes had foot and eye examinations (fundoscopy) and urine protein test in past 12 months.</p>	<p>25–75% of registered people with diabetes had foot and eye examinations (fundoscopy) and urine protein test in past 12 months.</p>	<p>More than 75% of registered people with diabetes had foot and eye examinations (fundoscopy) and urine protein test in past 12 months.</p>

NCD	Limited	Moderate	Extensive
Cervical, breast and colorectal cancer screening			
Screening coverage	Screening is not population-based ^b (coverage is usually unknown).	The screening programme is largely population based ^b but coverage remains below 50% of the eligible population.	The screening programme is population based ^b and coverage is above 50% of the eligible population.
National screening guidelines	Absence of clear guidelines (or various contradicting guidelines) regarding age to screen, frequency of screening and test to use. OR Use of tests that are not evidence based. ^c	Clear guidelines regarding age to screen, frequency of screening and test to use AND (Guidelines partly not evidence based (for age group, ^d frequency of screening ^e and tests used ^c) OR Gaps in the way guidelines are applied.)	Clear guidelines regarding age to screen, frequency of screening and test to use. AND Guidelines are evidence based (for age group, ^d frequency of screening ^e and tests used ^c). AND Guidelines are applied throughout the whole country.
Screening algorithm to follow up those screened positive	Unclear or inadequate algorithm regarding steps to follow after a positive screening test. OR Major gaps in the way algorithms are applied throughout the whole country. OR Follow-up for those screened positive is not free of charge.	Clear and adequate algorithm regarding steps to follow after a positive screening test. AND (Gaps in the way algorithms are applied throughout the whole country. OR Follow-up for those screened positive is not free of charge.)	Clear and adequate algorithm regarding steps to follow after a positive screening test. AND Algorithms are applied throughout the whole country. AND Follow-up for those screened positive is free of charge.
Monitoring and evaluation	Absence of monitoring and evaluation system. OR Monitoring and evaluation system largely inadequate. OR Data are largely missing.	A monitoring and evaluation system is in place but there are gaps in its design or in the data collection.	An adequate monitoring and evaluation system is in place.

^a Indicates criteria additional to those mentioned in the Global action plan for the prevention and control of noncommunicable diseases 2013–2020 (Geneva: World Health Organization; 2013).

^b Population based: i.e. all people in a defined age group are identified from population registries and are invited individually by means of a letter/email/text message on a regular basis (every 2, 3 or 5 years according to national guidelines).

^c The following tests are evidence based: HPV test, Pap test, visual inspection of the cervix, mammography, faecal occult blood test, sigmoidoscopy and ?.

^d Evidence-based age groups are: 50–69 years for mammography screening (not younger), 30–49 years for cervical screening (but can be extended to 25–65 years) and > 50 years for colorectal cancer screening (should not begin before the age of 50).

^e Frequency of screening should not be more than every 2 years for mammography and the faecal occult blood test.

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World Health Organization Regional Office for Europe

UN City, Marmorvej 51, DK-2100 Copenhagen Ø, Denmark
Tel: +45 45 33 70 00 Fax: +45 45 33 70 01
Email: eurocontact@who.int
Website: www.euro.who.int