World Health Organization
REGIONAL OFFICE FOR **Europe**

Better noncommunicable disease outcomes:
challenges and opportunities for health systems

Country assessment
KYRGYZSTAN

Melitta Jakab
Barton Smith
Nina Sautenkova
Aida Abdraimova

Adyl Temirov
Ryskul Kadyralieva
Suyumjan Mukeeva
Larissa Murzakarimovna

World Health Organization

REGIONAL OFFICE FOR Europe

Better non-communicable disease outcomes: challenges and opportunities for health systems

Kyrgyzstan Country Assessment: Focus on cardiovascular disease

Melitta Jakab

Barton Smith

Nina Sautenkova

Aida Abdraimova

Adyl Temirov

Ryskul Kadyralieva

Suyumjan Mukeeva

Larissa Murzakarimovna

Abstract

Cardiovascular mortality in Kyrgyzstan has decreased over the past seven years in part due to impressive health system reforms. However, moving towards the 25 by 25 targets and addressing the sizeable gender gap in premature mortality present a significant challenge. While Kyrgyzstan has made some strides in implementing anti-smoking policies, reducing the harmful effects of alcohol, and strengthening nutrition policies, there are still great opportunities through better enforcement and monitoring of legislation. Significant challenges also remain for coverage of core individual services especially in the effective diagnosis and management of key cardiovascular disease conditions, such as hypertension, and diabetes. The report identifies key health system challenges that prevent greater coverage of core NCD interventions and services and proposes three strategic directions to accelerate gains in CVD outcomes.

Keywords

Contents

List of figures

List of tables

Acronyms and abbreviations used in this document

ACE	angiotensin-converting enzyme
ADB	additional drug benefit
AMI	acute myocardial infarction
BAC	blood alcohol content
CAHP	Community Action for Health Promotion
CIS	Commonwealth of Independent States
CPG	clinical practice guidelines
CQI	continuous quality improvement
CVD	cardiovascular disease
DRG	diagnosis-related group
ECG	electrocardiograph
EBM	evidence-based medicine
FCTC	Framework Convention on Tobacco Control
FGP	family group practice
FGPNA	Family Group Practice and Nurses Association
FMC	family medicine centre
HAIG	Health Action International Global
HAKR	Hospital Association of the Kyrgyz Republic
HIS	health information system
HIV	human immunodeficiency virus
HPO	health promotion office
MHIF	Mandatory Health Insurance Fund
NCD	noncommunicable disease
NGO	nongovernmental organization
NICT	National Institute of Cardiology and Therapy
NRT	nicotine replacement therapy
NSC	National Statistics Committee
RCHP	Republican Centre for Health Promotion
SDC	Swiss Development Cooperation
SDR	standardized death rate
SGBP	State-Guaranteed Benefits Package
UHSIS	Unified Health Service Information System
VHC	village health committee

Acknowledgements

Introduction and rationale

Like many countries, Kyrgyzstan is facing a growing burden of noncommunicable disease (NCD), with cardiovascular disease (CVD) the main cause of mortality and morbidity. Cardiovascular disease has been one of the four priority health improvement programmes since 2006, reflecting the commitment and priority given by the Government to these health issues. Consecutive health system reform programmes – Manas, Manas taalimi and now Den Sooluk – have led to improved health system performance and a reduction in the burden of avoidable cardiovascular disease (section 1).

As part of its Joint Assessment Framework (JAF) for Den Sooluk, the Ministry of Health set out to conduct a Coverage and Health System Study for each of the four priority health areas, including cardiovascular disease. At around the same time, the WHO Regional Office for Europe embarked on a multicountry project to assess health system achievements and challenges in NCD control in a number of countries. A country assessment was undertaken for Kyrgyzstan to respond to both of these initiatives, and was carried out by a joint team of experts from the Kyrgyz health sector and the World Health Organization. Similar assessments were carried out in four other countries: Hungary, Republic of Moldova, Tajikistan and Turkey.

The objectives of the country assessment were twofold. First, it aimed to produce pragmatic, contextualized and implementable policy recommendations on health system strengthening, to allow faster improvements in cardiovascular disease outcomes. It is hoped that the assessment and its policy recommendations will feed into the policy dialogue in Kyrgyzstan on health system strengthening, and will be included in the annual workplans of the Ministry of Health. The assessment will also provide a baseline against which the achievements of Den Sooluk can be assessed at the end of the programme. Second, as part of the regional project, the assessment will contribute to knowledge and experience in the Region on common health system challenges to NCD control and promising approaches to overcome them. Early results of the assessment were featured in the High-level Meeting on Health Systems for Health and Wealth in the Context of Health 2020 in Tallinn, Estonia on 17-18 October 2013; the 10th Flagship Course on Health Systems Strengthening in Barcelona, Spain on 21–30 October 2013; the International Anniversary Conference Marking 35 Years of the Declaration of Alma-Ata on Primary Health Care in Almaty, Kazakhstan on 6-7 November 2013; and the WHO European Ministerial Conference on the Prevention and Control of NCDs in the Context of Health 2020 in Ashgabat, Turkmenistan on 3–4 December 2013.

This country assessment was carried out by a multidisciplinary team of experts from the Kyrgyz health system and WHO. The WHO Regional Office for Europe developed a common approach, based on a structured guidei and tailored to the specifics of each country. The Ministry of Health assigned the Health Policy Analysis Centre to lead the work in Kyrgyzstan, with a multidisciplinary group of experts as contributors and reviewers. Online meetings were held to discuss how to adapt the guide to Kyrgyzstan, and each working group member was allocated data collection and analytical tasks. A multidisciplinary mission took place on 27–31 May 2013, and intensive follow-up work was done after the mission. This assessment reflects the collective views of the experts participating in the review.

In order to have a clearer picture of the roles of family doctors and specialists in managing CVDs at primary health care level, a rapid assessment was carried out to solicit the opinions of health professionals and patients about changes that had occurred in NCD management at primary care level. The assessment was done in three regions of the country: Bishkek, the capital, Issyk-Kul in the north and Osh in the south. In total, 93 family doctors, 27 specialists (cardiologists, endocrinologists and neurologists) and 117 patients with CVD or diabetes and their complications

were interviewed at oblast and rayon levels. The results of the assessment are integrated into this report and the report itself is also published in the Policy Research Paper series of the Health Policy Analysis Center.

The structure of the report is as follows: section 1 outlines trends in key CVD outcomes in Kyrgyzstan, with a focus on mortality-based indicators; section 2 assesses the coverage of core population intereventions and individual services for CVD; section 3 discusses health system achievements and challenges in relation to coverage of these interventions and services; section 4 describes selected innovations and good practices in Kyrgyzstan; and section 5 concludes with policy recommendations.

1. Noncommunicable disease outcomes

Cardiovascular mortality in Kyrgyzstan has decreased over the past seven years among the entire population, and specifically among the population under 64 years of age. Nevertheless, there remains a gap between Kyrgyzstan and other countries of the WHO European Region, and closing this gap presents a significant challenge. Figures 1–4 show that mortality rates for circulatory conditions, ischaemic heart disease and stroke have declined since their peak in the early 1990s. This trend is very welcome, since Kyrgyzstan has the highest mortality for these conditions in the European Region. Cardiovascular disease is the main cause of mortality, accounting for more than 50% of all deaths. More than 18 000 people die of cardiovascular conditions every year, equivalent to 50 deaths a day. About 25% of these deaths occur in people under 64 years of age; most of these deaths are considered avoidable and are the main target of policy interventions.

Mortality data for all three causes have shown three distinct phases over the past 20 years. Data are presented for the population aged 0–64 years. The team also analysed trends for all age groups, which generally mirror those observed in the 0–64 years age group, with a few exceptions, as noted in the text.

- **Phase 1: rapid increase in mortality in the early 1990s.** In the early transition years after the break-up of the Soviet Union, there was a marked increase in cardiovascular mortality. This phenomenon was well documented across the Commonwealth of Independent States (CIS) and was linked to the social and psychological stress associated with transition, the catastrophic decline in public financing, including for health, deteriorating health services and increasing financial barriers.

- **Phase 2: decade of stagnation, 1995–2006.** A decline in mortality was observed in the mid-1990s from the peak, but this was not sustained and mortality rates stagnated until 2006. This was the time when health system reforms began to take shape (Manas National Health Sector Reform Programme), for implementation over the coming decade. The reforms had a number of beneficial effects but it was too early to observe a significant impact on mortality.

- **Phase 3: steady decline in mortality since 2007.** Mortality rates began to decline steadily in Kyrgyzstan from 2007, one year after the start of implementation of the comprehensive Manas taalimi National Health Sector Reform Programme, which was a logical continuation of the Manas reforms. The decline was continuous, leading to about 2000 fewer deaths in 2010 than in 2006. The decline has been most prominent for stroke, with a 29% decline in mortality among those under 64 years and a 23% decline among the entire population. The decline is observed among both women and men. The notable exception to this trend is ischaemic heart disease mortality, which is increasing among those aged 64 years or over.

Figure 1. Standardized death rates for circulatory diseases, 0–64 year age group [a]
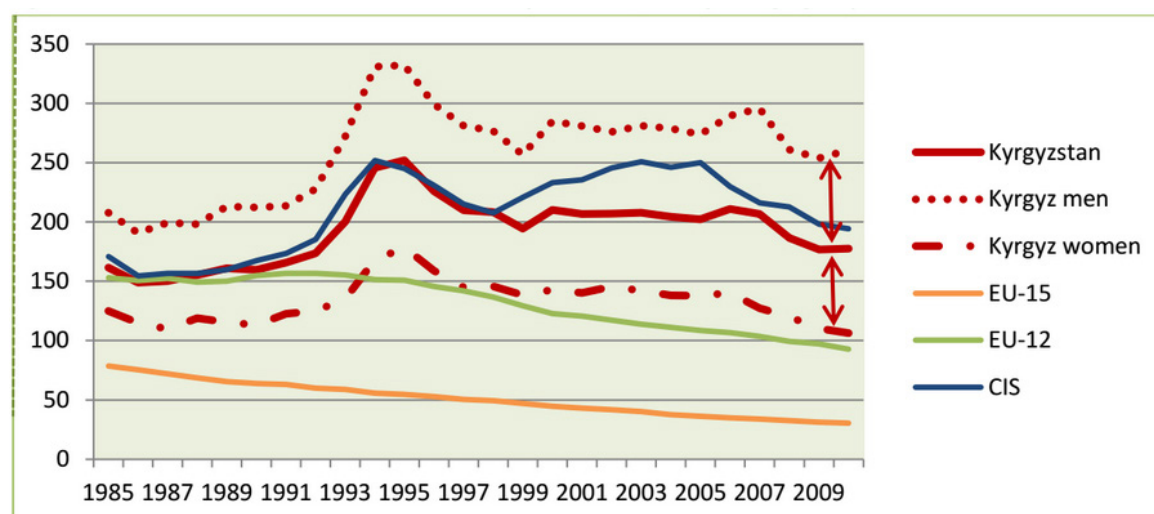
Source: WHO Health for All database.

Figure 2. Standardized death rate for ischaemic heart disease, 0–64 year age group
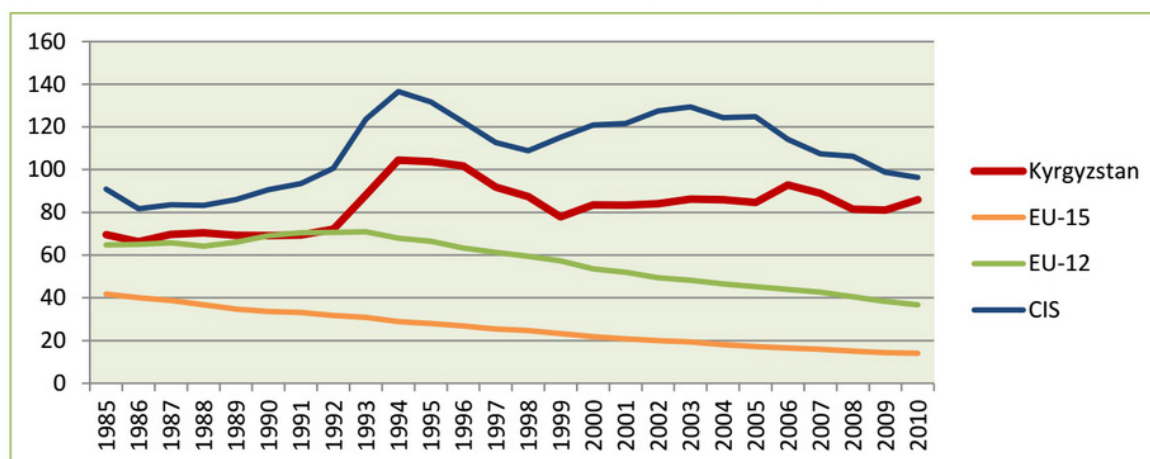
Source: WHO Health for All database.

Figure 3. Standardized death rate for stroke, 0–64 year age group
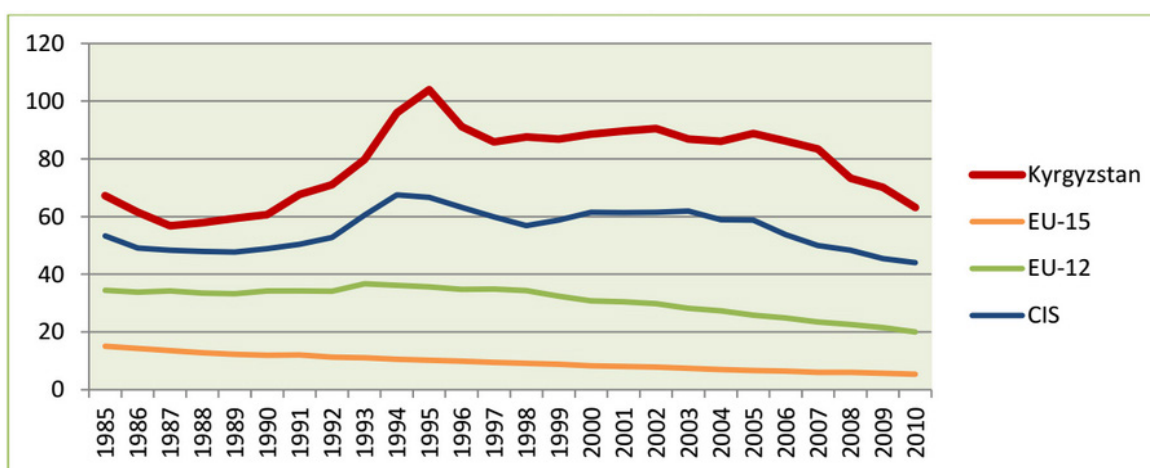
Source: WHO Health for All database.

There is a significant gender gap in premature mortality from cardiovascular disease. In the 0–64-year age group, male mortality from diseases of the circulatory system exceeds female mortality by a factor of 2.5, that from ischaemic heart disease by a factor of 3, and that from cerebrovascular disease by a factor of 1.9. Excess male mortality is associated with a number of factors, including high levels of smoking (see section 2), poor awareness of health conditions such as high blood pressure (see below), and low utilization of primary health care, leading to late detection and poor management of chronic conditions.

[a] See Annex 1 for an explanation of the country groupings.

Figure 4. Gender gap in cardiovascular disease mortality: standardized death rates (SDR) per 100 000 population, 2010
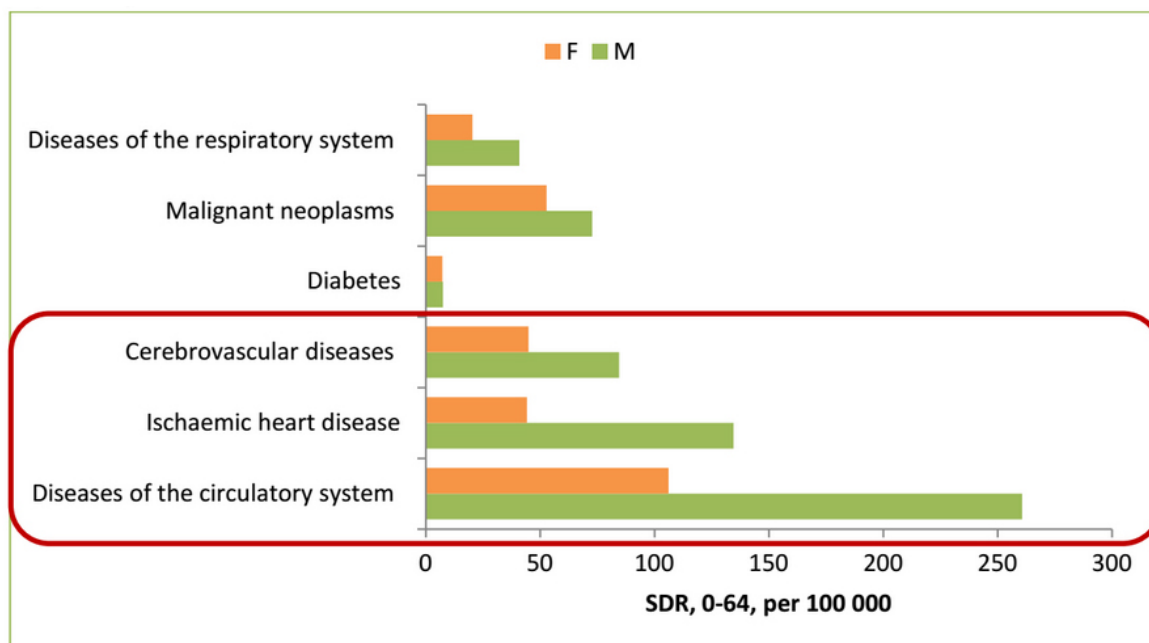
Source: WHO Health for All database.

2. Coverage of core CVD interventions and services

This section explores the coverage of core population interventions (related to tobacco, alcohol and nutrition) and individual services (for CVD and diabetes) that are closely linked with improving NCD outcomes (Table 1). 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 those specified in the Global and European Action Plans for the Prevention and Control of Noncommunicable Diseases 2013-2020.[2] Each intervention and service was evaluated by the assessment teams on a three-point scale, as limited, moderate or extensive. Exact criteria for the scoring were developed by WHO and can be found in the Assessment Guide.[1]

Table 1. Core population interventions and individual services for NCDs

Core population interventions	Core individual services
Anti-smoking interventions – Raise tobacco taxes to reduce affordability – Smoke-free environments – Warnings of dangers of tobacco and smoke – Bans on advertising, promotion, sponsorship – Quit-lines and nicotine replacement therapy (NRT)*	**CVD and diabetes** – Risk stratification in primary health care – Effective detection and management of hypertension – Effective primary prevention in high-risk groups – Effective secondary prevention after acute myocardial infarction (AMI) including acetylsalicylic acid – Rapid response and hospital for AMI and stroke*
Interventions to prevent harmful alcohol use – Use pricing policies on alcohol including taxes – Restrictions and bans on advertising/promotion – Restrictions on availability of alcohol in retail sector – Minimum purchase age regulation with enforcement* – Allowed blood alcohol level for driving*	**Diabetes** – Effective detection and general follow-up* – Patient education on nutrition and physical activity and glucose management – Hypertension management among diabetes patients – Screening for and managing complications
Interventions to improve diet and physical activity – Reduce salt intake and salt content in foods – Virtually eliminate trans-fatty acids from the diet – 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 activity	**Cancer – first line** – Prevention of liver cancer through hepatitis B immunization – Screening for cervical cancer and treatment of precancerous lesions **Cancer – second line** – Vaccination against human papilloma virus as appropriate if cost-effective according to national policies – Early case-finding for breast cancer and timely treatment of all stages – Population-based colorectal cancer screening at age >50 linked with timely treatment – Oral cancer screening in high risk groups linked with timely treatment

* Indicates interventions and services added to the list in the global action plan to allow more comprehensive assessment.

2. 1 Population interventions

While Kyrgyzstan has made some strides in implementing anti-smoking policies, reducing the harmful effects of alcohol, and strengthening nutrition policies, there are still great opportunities for gains that could have a significant impact on population health. In each of the three areas, there is reasonable legislation, but there is a complete lack of enforcement and monitoring. As a result, the laws remain unimplemented and thus have no protective effect on people's health, unlike in other countries. The lack of nationally representative data on smoking, alcohol consumption and nutrition is surprising, given that Kyrgyzstan is well advanced in turning analytical evidence into policy. Many aspects of its health system reforms are well researched and documented. Regular monitoring of health behaviour would provide an important driving force and instrument for the Ministry of Health in intersectoral discussions.

Tobacco

Kyrgyzstan's anti-smoking legislation has been partially brought into line with the Framework Convention on Tobacco Control (FCTC)[3], which opened up many opportunities for smoking prevention and control.[b] However, Kyrgyzstan has not yet taken advantage of these opportunities and the laws remain poorly enforced. As a result, there has been limited or moderate progress in implementing most of the effective anti-smoking population interventions. A summary of the assessment is given in Table 2, and each of the interventions is described in more detail below.

There is a surprising lack of data on the prevalence of smoking in the country. According to the Global Tobacco Control Report 2013, the current smoking prevalence is 21.8% among those over 15 years. An NCD risk factor prevalence survey is planned for 2014 to obtain more detailed data; continuous monitoring will be critical for tracking progress.

Table 2. Score card for tobacco-related population interventions

Intervention	Baseline assessment (2012–13)	Target by end of Den Sooluk (2016)
Raise tobacco taxes	**Limited.** The total tax varied from 30 to 45% of retail price depending on the brand.	**Moderate.** Gradual increase of tobacco taxes to 75% of retail price by 2016.
Smoke-free environments	**Limited.** Law exists and responsible institutions are well defined; law not enforced, except for schools and hospitals.	**Moderate.** Expand smoke-free environments and ensure enforcement.
Warnings of dangers of tobacco and smoke	**Limited.** In 2011, the Ministry of Health developed 12 warning labels with pictures, to cover over 30% of front and back of package. These have been approved by Government but are still not implemented.	**Moderate.** Implement and enforce Government-approved warning labels.
Bans on advertising, promotion, sponsorship	**Moderate.** Direct and indirect advertising and promotion are banned, with restrictions on advertising at points of sale.	**Moderate.** Strengthen enforcement of existing legislation.
Quitlines and nicotine replacement therapy (NRT)	**Limited.** Quit-lines do not operate. Government runs a cessation service through general practice groups, as part of capitation payment. NRT is allowed and available for full pay by individuals.	**Moderate.** Step-up support to those wishing to quit smoking through village health committees, primary health care counselling, and quit-lines.

[b] Two laws were updated to reflect the FCTC: the Law on Protection against Tobacco and the Advertising Law.

Price and tax measures are not adequate to reduce the demand for tobacco products; tobacco tax in Kyrgyzstan is among the lowest of all Member States of the WHO European Region. According to tax law of 2013, the total tax then is composed of 10.7% of VAT + 10 % of import duty + combined excise tax that depends on brand and cost. In 2013, the combined excise tax for tobacco comprised of a specific excise tax of 120 som per 1000 sticks plus an ad valorem excise tax of 8% levied on the retail price of a pack. The combined excise tax varies between 10 and 30% of the retail price of a pack. Putting it all together, the total tobacco tax in Kyrgyzstan varies from 30% for expensive brands to 45% for cheaper brands. This is significantly lower than the 75% total tax recommended by the WHO. As a result, the price of tobacco products has little potential to change people's smoking behaviour.

Exposure to tobacco smoke in public places and at work remains high, despite the enactment of a law on smoke-free environments. There are bodies authorized to examine violations of the Law on Protection against Tobacco and administrative penalties have been specified. However, there is no mechanism for monitoring compliance with the law or for imposing sanctions and fines for violations. As a result, heads of organizations, businesses, transport and public places, often do not comply with the legislative provisions.

Regulation of the packages of tobacco products has long remained unresolved, because of the resistance of the tobacco industry in Kyrgyzstan. The Ministry of Health has developed 12 pictorial warnings about the consequences of tobacco use, intended for use on both sides of packages of tobacco products. These illustrations were approved by the Board of Health of the Integration Committee of the Eurasian Economic Community in 2011. The provision remains unimplemented, because the Government has not yet developed and approved technical specifications for the definition of national technical rules on tobacco products. The tobacco industry is involved in the development of these technical regulations and actively lobbies against the introduction of pictorial warnings on tobacco products.

Direct and indirect advertising of tobacco products is banned, although the ban has not yet been fully implemented. Currently, there are no advertisements on television or in the streets. This is a major achievement. By law, the advertising of tobacco products is permitted only at points of sale. Permitted sizes of the advertising materials and the requirement for health warnings to be included in the advertisements have been approved. However, there is no enforcement.

Tobacco dependence treatment services remain limited. There is no hotline for smokers who want to quit. Nicotine replacement therapy (NRT) can be bought "out of pocket", but is not subsidized by the Government. Since these products are fairly expensive, only a few patients have resorted to such therapy. There are no plans at present to open quit-lines or to subsidize nicotine replacement therapy.

Alcohol

Kyrgyzstan is one of 16 countries in the WHO European Region without a national plan on alcohol. Despite this, there has been moderate progress in implementing interventions to reduce the harmful use of alcohol. Just as with anti-smoking interventions, legislation has been in line with expectations, but monitoring and enforcement are poor. As a result, the volume of alcohol consumed in the country has remained more or less the same for the past 5 years, at around 4.3 litres per capita per year. During the past 12 months, 50.6% of men and 72.4% of women abstained from alcohol. Among drinkers, therefore, average consumption is 13.6 litres of pure alcohol per year for men and 7.4 litres for women. A summary of the assessment is given in Table 3.

Table 3. Score card for interventions to reduce harmful use of alcohol

Intervention	Baseline assessment (2012–13)	Target by end of Den Sooluk (2016)
Raise taxes on alcohol	**Moderate.** Taxation of alcoholic beverages is in line with the current consumer price index. Tax level is related to alcohol content. Large proportion of illegal and imported alcohol creates problems for taxation policy.	Not highlighted in Den Sooluk
Restrictions and bans on advertising/promotion	**Moderate.** There are standards prohibiting the distribution of alcohol in public transport, government offices, institutions for children, education, health, sports and culture, parks and city squares, as well as in facilities located within 100 meters of them.	Not highlighted in Den Sooluk
Restrictions on availability of alcohol in retail sector	**Moderate.** There is a ban on sale and distribution of alcohol in government and education institutions. However, implementation is slow to spread and affect the behaviour of consumers.	Not highlighted in Den Sooluk
Minimum purchase age regulation and enforcement	**Limited.** Restriction of the sale of alcohol to people under the age of 18 is not enforced.	Not highlighted in Den Sooluk
Allowed blood alcohol level for driving	**Moderate.** Blood alcohol content (BAC) maximum of 0.3 g/L; zero for professional drivers. No specific level for novices.	Not highlighted in Den Sooluk
Multisectoral policy development	**Limited.** Strategies and concepts exist, but are largely limited to medical interventions. Bodies of intersectoral work are ineffective, the nongovernmental organization (NGO) sector is not developed.	Not highlighted in Den Sooluk

Alcohol taxes have been increased by the Government for domestic products. However, the large proportion of alcohol that is imported or illegally produced means that this policy instrument is less effective than it could be. The excise tax on alcoholic beverages has increased: there was a threefold increase for the period 2012–2013.1 However, these taxes cover only domestic products. According to data of the Tax Service, about 70% of alcohol in the country is illicit; it is therefore difficult to expect more resolute steps towards increasing the price of alcohol. There is also considerable smuggling of alcohol, which raises questions about how best to pursue the pricing policy, both for the purposes of health and for economic and trade policy. In addition, there is a growing problem of consumption of alcohol cocktails by teenagers. There are no special taxes on products attractive to young people; in 2012 a group of deputies tried to introduce such legislation, but without success.

There is reasonably restrictive legislation in place limiting advertising of alcoholic beverages, but enforcement is limited and the law is largely unimplemented. The Law on Advertising of 2006 prohibits direct and indirect advertising of alcoholic beverages in public places, places limitations on the length of advertisements on television and radio, and prohibits the sponsorship of events using the logos of alcoholic products. Over the past seven years, the situation has changed very little. Alcoholic beverages are still advertised in public places and shops. In addition, no liabilities are stipulated.

The ban on the sale of alcohol in public and educational institutions has not yet produced a perceptible effect on the prevalence of alcohol use or the behaviour of the population. A ban on such sales is included in the European action plan to reduce the harmful use of alcohol, and has been shown to reduce the harmful use of alcohol. In Kyrgyzstan, there are no rules limiting alcohol consumption in public and educational institutions, but since 2006 there are rules prohibiting the sale of alcohol in public transport, government offices, institutions for children, education, health, sports and culture, parks and city squares, as well as facilities located within 100 meters of them. However, these rules are not always observed. There are no restrictions on selling alcohol at certain hours or days, and no restrictions aimed at lowering the number of outlets. Furthermore, there are no restrictions on selling alcohol to intoxicated persons or at petrol stations.

A law was passed in 2009 prohibiting the sale of alcohol to people under the age of 18 years, but it is not enforced. Local government, individual entrepreneurs and legal entities engaged in the sale of alcohol products are not held accountable for violations of the law, as there are no mechanisms for enforcing penalties. There is extremely limited civil society action. Changes to the Law are currently being considered, to prohibit the sale of alcoholic beverages to people under the age of 21 years.

Legislation setting the maximum allowable blood alcohol concentration (BAC) for motorists has not yet been translated into improved statistics on drunk driving. In Kyrgyzstan, the maximum permitted BAC, 0.3 g/L, is in line with that recommended in the European Plan for 2012–2020 (less than 0.5 g/L). This figure applies to vehicle drivers tested for alcohol use, and to citizens admitted to health facilities in an emergency in a state of alcoholic intoxication. Over recent years, the number of cases of driving in a state of intoxication has been growing. In particular, approximately 70% of people examined medically for alcohol or substance abuse are found to be in a state of intoxication. Although there is some random roadside testing of alcohol levels in drivers, these are non-systematic and fines are not always transparently levied and collected.

Multisectoral policy development to prevent harmful alcohol use in Kyrgyzstan is weak. Most of the initiatives come from the Ministry of Health, which has relatively little influence in intersectoral processes on development issues. Virtually all the existing coordination bodies were set up for a short period of time and were based on plans and actions of a purely medical nature. While the elements of civil participation are widely developed in some other areas, such as the control of human immunodeficiency virus (HIV) infection and related drug use, there are no prominent and well-resourced NGOs or other civil society organizations in the field of alcohol.

Nutrition

The assessment team did not have a chance to carry out a full assessment of nutrition policies in Kyrgyzstan and the results below are based on limited observations. Preventive activities for healthy nutrition are poorly organized, and public awareness about nutrition is low. Health facilities at the primary level provide a minimum package of services for nutrition: nutrition status assessment, counselling on changes in diet (mainly for patients with CVD or diabetes), and treatment of a lack of micronutrients (iodine, iron) for children and pregnant women. Currently, a national interagency programme involving the Ministry of Health is being developed to improve the nutrition of the population; the programme is mainly aimed at combating malnutrition and micronutrient deficiency and ensuring food security.

2.2 Individual services

Impressive health system reforms implemented in Kyrgyzstan over the past 15 years have contributed to the decline in avoidable mortality (see section 1). However, significant challenges remain in the effective diagnosis and management of key cardiovascular disease conditions, such as hypertension, and diabetes. Coverage rates for core individual services for CVD and diabetes control are summarized in Table 4; each service is described in more detail below.

Table 4. Score card for individual CVD and diabetes services

Intervention	Baseline assessment (2012–13)	Target by end of Den Sooluk (2016)
Risk stratification in primary health care	**Moderate.** Patients with hypertension are routinely classified by risk group. Some, but not all, risk factors are documented. Smoking status, family history, and body mass index are usually absent. Systematic method to calculate 10-year CVD risk not being used. No clear link between stated CVD risk and patient management decisions.	**Moderate.** Improve risk stratification among patients with CVD risk factors other than hypertension. Introduce changes to health information system (HIS) to streamline documentation and track risk factors.
Effective detection and management of hypertension	**Limited.** Detection and registration are extremely low. Antihypertensive treatment is generally consistent with guidelines. Low levels of continuous use of antihypertensives and no efforts to address patient adherence.	**Moderate.** Aims to increase awareness of hypertension, through extensive voluntary health counselling and annual hypertension weeks with participation of VHCs. Unrealistic to achieve extensive coverage within 5 years.
Effective primary prevention in high-risk groups	**Limited.** Prescribers not aware of indications for primary prophylaxis. High-risk patients not prescribed statins. Acetylsalicylic acid prescribed indiscriminately to all hypertensive patients.	**Moderate.** Aims to strengthen implementation of existing clinical practice guidelines (CPGs), which include recommendations for primary prevention. Expand tobacco screening and tobacco cessation counselling.
Effective secondary prevention after acute myocardial infarction (AMI), including acetylsalicylic acid	**Limited.** Acetylsalicylic acid and beta-blockers routinely administered long-term after AMI. Only National Institute of Cardiology and Therapy (NICT) routinely prescribes statins on discharge (most rayon hospitals not aware of standard) and very few patients maintained on statins in primary health care.	**Extensive.** Expand use of statins after AMI.
Rapid response and secondary care after AMI and stroke	**Limited.** Limited availability/use of ambulance services for AMI. Some essential services available at rayon hospital level (acetylsalicylic acid, beta-blockers, angiotensin-converting enzyme (ACE) inhibitors, heparin), but limited access to thrombolytics. For stoke, management approaches are outdated, but new evidence-based CPG just completed.	**Moderate.** Expand thrombolytic use to rayon hospitals. Increase symptom awareness and care-seeking behaviour among population and strengthen emergency response system.

Risk stratification in primary health care

Patients with a diagnosis of hypertension are routinely assigned to a CVD risk category. However, it is often not clear how the risk category was determined. Patients with CVD risk factors other than hypertension are not typically assigned a CVD risk score. Since 2001, Kyrgyzstan has had a national clinical protocol on hypertension, which includes guidelines for CVD risk assessment. In 2008, a full clinical practice guideline (CPG) on hypertension was developed, which included a CVD risk assessment method consistent with the recommendations of the European Society of Hypertension. Patients with hypertension or diabetes are routinely assigned a 10-year CVD risk category. However, individual CVD risk factors are often not documented or are difficult to locate in the ambulatory medical record, making it difficult to verify the accuracy

of risk stratification. Ambulatory records of patients without hypertension, diabetes, or existing CVD usually do not include documentation of common CVD risk factors, such as smoking status, body mass index, family history of premature CVD, and elevated cholesterol.

Effective detection and management of hypertension

Kyrgyzstan has implemented a creative approach to improving blood pressure screening in rural communities. Nevertheless, hypertension remains markedly underdiagnosed, and only a small percentage of those diagnosed with hypertension maintain target blood pressure levels. Data from an integrated household survey in 2007 suggested a crude prevalence of hypertension in Kyrgyzstan of 30% in 2007.[4] However, only 33.1% of those who have high blood pressure are aware of their condition. Only 2.5% of the population is registered as having hypertension in official statistics of the Republican Medical Information Centre (Figure 5). These data suggest that fewer than 10% of cases are being detected and registered. Data from field visits confirm this. Registered cases of hypertension amounted to 1.0% of the adult population in a family medicine centre (FMC) in Bishkek and 2.4% in a suburban family group practice (FGP) in contrast to the estimated population prevalence of about 30%.

Figure 5. Hypertension prevalence and registration
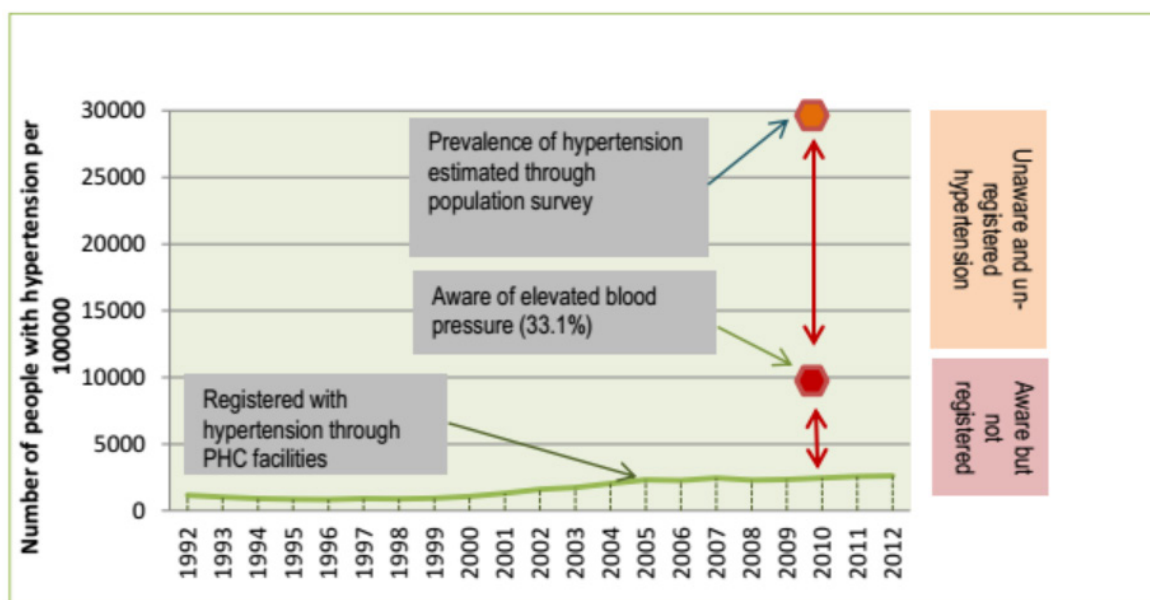
Source: WHO staff calculations based on unpublished data from the Kyrgyz Integrated Household Survey 2007[5] and from the Republican Medical Information Centre, 2013.

There have been a number of efforts to improve detection of hypertension over the past 8–10 years, including annual house-to-house screening campaigns by village health committee (VHC) representatives and primary care facility-based continuous quality improvement cycles, focused on hypertension, which include routine blood pressure measurement for all adults at each clinic visit. Operational research initiated by international development partners suggests that these interventions are having an impact, but overall detection rates remain surprisingly low.

The low detection rate has significant implications for patient awareness and adherence to treatment (Figure 6). Among patients diagnosed with hypertension, most are prescribed antihypertensives in accordance with national guidelines; however, fewer than 20% regularly take their medication and, of these, only about 14% have achieved the target blood pressure.4 Outcomes vary significantly by sex, with women demonstrating twice as much awareness and adherence to treatment as men. Focused quality improvement efforts, coordinated by the Family Group Practice and Nurses Association, appear to improve treatment effectiveness, but these initiatives have been implemented in fewer than 40% of primary health care facilities and the durability of their impact is unclear. (Annex 2 provides more detailed figures on hypertension awareness and treatment outcomes.)

Figure 6. Key indicators of effective hypertension control by sex
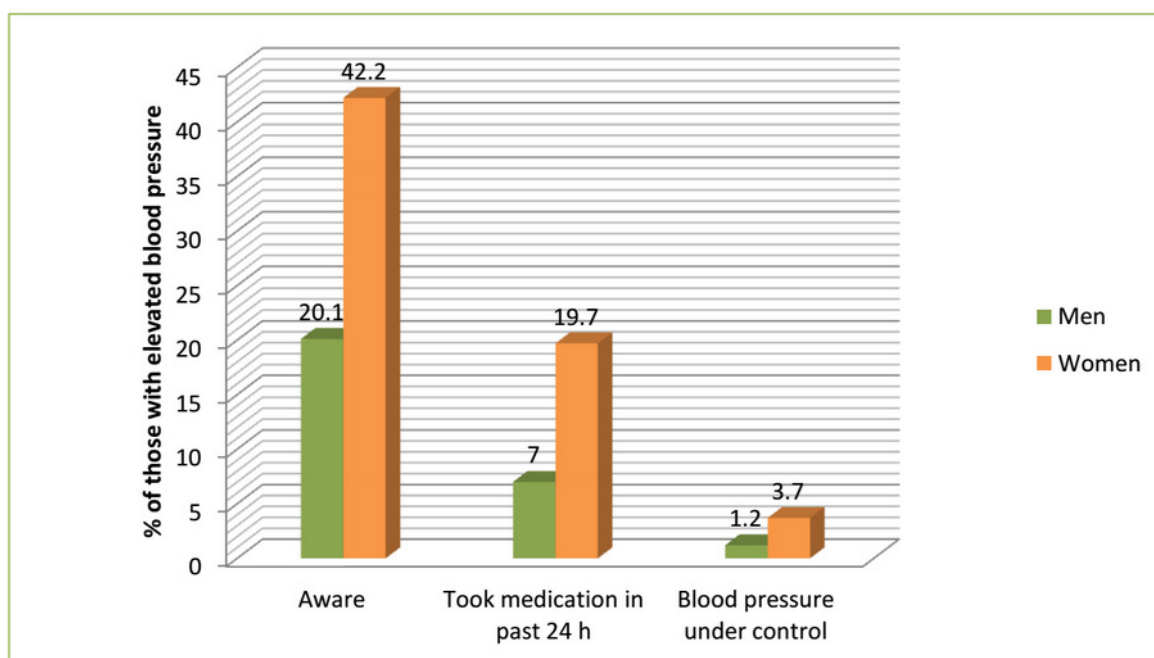
Source: WHO staff calculations based on unpublished data from the Kyrgyz Integrated Household Survey 20076 and 2010[6]

Risk stratification in primary health care

Hypertensive patients at high CVD risk routinely receive aspirin and counselling on lifestyle changes, but statins are rarely prescribed as primary prevention. Because only hypertensive patients are routinely assessed for 10-year CVD risk, there is a missed opportunity to provide counselling on primary prevention to a substantial percentage of at-risk patients. Essentially all hypertensive patients receive aspirin, despite recommendations in the national CPG to reserve it for those at high or very high CVD risk. In contrast, although the national CPG recommends prescribing statins as primary prevention to patients at very high CVD risk, in practice this is rarely done; only patients with hyperlipidaemia are considered for cholesterol-lowering treatment. Hypertensive patients are routinely counselled on salt reduction, exercise, and weight loss, but follow-up to assess patient progress is limited. There is no routine screening of all clinic patients for smoking status and primary health care providers have not been trained to provide focused counselling on smoking cessation. However, there is a new evidence-based clinical guideline on smoking cessation, and in-service training of primary health care providers on tobacco dependence screening and counselling has recently started.

Effective secondary prevention after AMI, including aspirin

The vast majority of patients who have suffered an AMI receive long-term therapy with aspirin and beta-blockers, but very few receive statins. As in primary prevention, effective interventions to promote tobacco cessation are limited. An in-depth study in 2007 looked at the quality of cardiovascular disease care in Kyrgyzstan.[7] There is considerable regional variation in post-AMI medical practice, with only 67% and 24% of post-AMI patients being prescribed aspirin and beta-blockers, respectively, at the time of hospital discharge in Naryn Oblast. As can be seen in Figure 7, statins are rarely prescribed as secondary prevention, except in the NICT in Bishkek. Several new clinical practice guidelines on CVD, including management of AMI, have been developed since operational research was conducted in 2007. However, a 2010 pilot project to address quality of inpatient CVD care in Naryn Oblast, using facility-level quality improvement methodologies, found almost no change in prescribing habits from the 2007 baseline. The project, which led to marked improvements, is described more fully in section 4: within one year, 87%

of post-AMI patients were being prescribed aspirin, beta-blockers, ACE inhibitors, and a statin at discharge. This approach has been included in the CVD priority programme of the national health strategy for country-wide scale-up.

Figure 7. Regional variation in discharge instructions after AMI, 2007
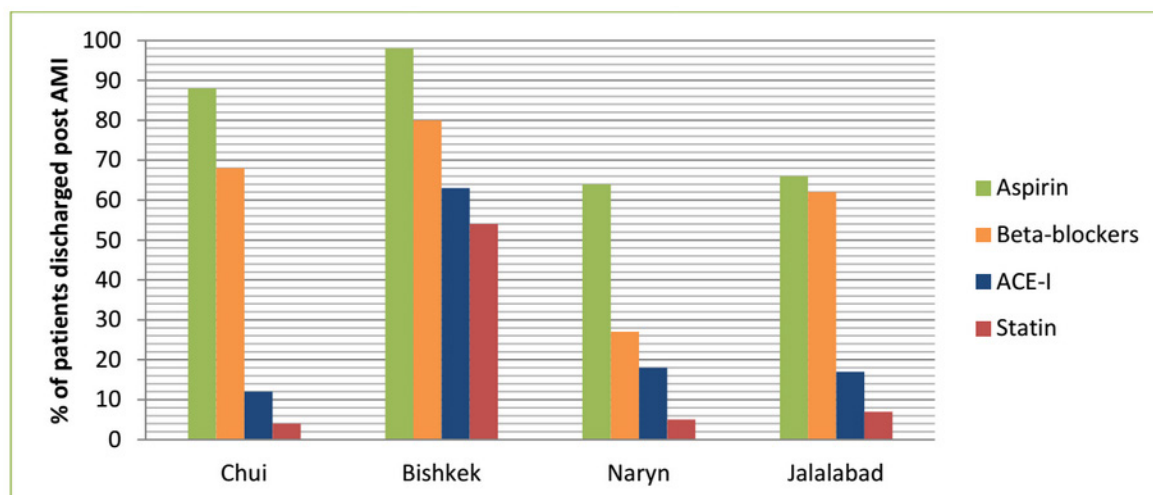
Source: Akunov et al. 2007[8]

There are no data on the percentage of patients who continue to take their prescribed medications for secondary prevention months after hospital discharge. Operational research and field visits during this study suggest that most patients continue to take aspirin and beta-blockers, but that few patients are taking long-term statin therapy. An interview with an outpatient cardiologist who routinely manages post-AMI patients at a Bishkek FMC suggests that despite high out-of-pocket expenses, most patients will agree to purchase and comply with long-term statin therapy if they understand the benefits and are closely monitored.

As with primary prevention, inadequate attention is given to supporting patients to stop smoking, even after acute cardiovascular events.

Rapid response and secondary care after AMI and stroke

Outside of Bishkek, the quality of pre-hospital care for patients with suspected AMI is limited; resources for ambulances are inadequate and the skills of the ambulance staff are limited. The majority of patients hospitalized with AMI receive aspirin, beta-blockers, and heparin, but there is significant variation in content of care by region, with thrombolytic therapy available only in Bishkek. Operational research from 2007 and field visits conducted during this mission suggest considerable variation in the management of patients with suspected or confirmed AMI between Bishkek and the regions, in terms of both pre-hospital and inpatient care. Although emergency services exist, outside of Bishkek they are typically inadequate for appropriate pre-hospital care of patients with AMI. Many ambulances are not equipped with an electrocardiograph (ECG). The 2007 study on the quality of cardiovascular care suggested that almost 90% of patients with AMI symptoms in Bishkek are evaluated with ECG before being admitted to hospital, in contrast to less than 40% in three study regions outside Bishkek.[7]

Hospitals do not have true emergency departments, so most critically ill patients are taken to intensive care units or wards, where they are stabilized and managed. Inpatient coverage with aspirin, beta-blockers and heparin is high, but that with ACE inhibitors is low, and morphine and thrombolytics (streptokinase) are rarely used. The initiative in Naryn Oblast mentioned above successfully introduced thrombolytic therapy in the oblast hospital and in two rayon-level hospitals, demonstrating that, for a relatively low investment, providers can be trained to administer thrombolytics, and that hospitals can procure streptokinase within existing budget limitations.

3. Health system challenges and opportunities to scale up core CVD interventions and services

Kyrgyzstan has been a pioneer in health system reform. The Manas and Manas taalimi National Health Sector Reform Programmes introduced the foundations of a well performing health system, with documented gains in financial protection, access to care, and efficiency. The Government's commitment to health system reform has been backed by annually increased budgets, which have allowed service coverage to be expanded. The single payer system, with its State Guaranteed Benefit Package, and the introduction of family medicine have been the cornerstone of the reforms.

Despite these successes, as elaborated in section 2, there is a need to increase coverage of core population and individual services if CVD outcomes are to improve. In particular, this will entail focused efforts to improve tobacco control and increase the coverage of core individual services. This section reviews fifteen important health system features that are associated with the successful scaling-up of core population interventions and individual services. For each feature, we focus on achievements and challenges and attempt to link observations to the pattern of core interventions and services presented in section 2.

Table 5. Fifteen health system challenges and opportunities to improve NCD outcomes

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: Roberts & Stevenson, 2014 (forthcoming)[8]

All fifteen health system features were reviewed by the assessment team and their impact on each of the core interventions and services was discussed (see Annexes 3 and 4). Each feature was rated on a scale from 1 to 4 as outlined below.

1. **Minor challenge.** This issue does not prevent delivery of core interventions and services or has been fully addressed.

2. **Moderate challenge.** This challenge has a moderate impact on the delivery of core interventions and services. The country has already found ways to address it, or has solid plans to do so.

3. **Major challenge.** This challenge has a large negative impact on the delivery of core interventions and services. The country has been struggling to find the right ways to address it, or the chosen paths have not worked.

4. **Major persistent challenge.** This is a systematic problem that is persistently on the health system reform agenda and the country has not found a sustainable implementable solution or has failed numerous times to implement it.

Each of the fifteen health system challenges was found to be salient in Kyrgyzstan. Three health system features were identified as having the potential to make the greatest impact on improving the impact of population interventions: interagency coordination; political commitment at the government level to enforce legislation; and explicit priority-setting approaches, with greater emphasis on public health. For individual services, the most important health system features included addressing human resource issues, changing incentives, and strengthening facility management. These six health system features were viewed as the main barriers to improving outcomes of cardiovascular disease.

Challenge 1. Political commitment to NCDs

There is a strong political commitment to population health in general in Kyrgyzstan. Nevertheless, political commitment was rated as one of the most significant challenges in seeking to improve delivery of population interventions, particularly against smoking. Health is included in key national strategic documents and on the agenda of the regular discussions between the Prime Minister, members of Parliament, the Vice Prime Minister responsible for social affairs, other high-level departments and offices, and representatives of civil society at the highest political level. Key health system reform issues have received political support from the Government at critical times. However, health and health policy are mostly viewed as the responsibility of the Ministry of Health, and the relationship between higher government levels and the health sector is often of a supervisory nature.

Political commitment is reflected in the continuous, comprehensive health sector reform programmes approved at the highest level of Government. Kyrgyzstan is currently implementing its third subsequent health sector programme, Den Sooluk, which covers 2012–2016. Together with the Government's National Strategy for Sustainable Development of the Kyrgyz Republic (2013–2017), the programme aims to create the conditions necessary for the protection and strengthening of public health, ensuring equity and access to quality health services. Den Sooluk follows two previous successful comprehensive health sector reform programmes, Manas (1996–2005) and Manas taalimi (2006–2011). Evaluation of these programmes revealed that significant progress has been made in ensuring the financial protection of the population, and the efficiency and availability of services.

In addition, political commitment to health has been reflected in the gradually increasing government budget for the health sector. Health sector funding increased from below 9% of total government expenditure in 2006 to about 13% in 2012. The increase has contributed to a reduced financial burden on patients, although out-of-pocket payments remain high, particularly for medicines. The Government has committed itself to maintaining this level of funding until 2016.

CVD in particular has been high on the agenda of the Ministry of Health and is one of four priority health programmes in the current and previous health sector programmes. The priority health programmes drive health system strengthening policies and actions in the current sector programme, and are thus very important. In addition, a comprehensive programme of CVD control in the Kyrgyz Republic was implemented from 2009 to 2013. It focused on improving population awareness of hypertension (knowledge, use of drugs, efficacy of treatment) and improving the quality of treatment at primary health care facilities and hospitals. Because of severe budget constraints, many of the planned actions had no financing and have not been fully implemented.

Beyond CVD, Kyrgyzstan is also paying attention to comprehensive NCD prevention and control. Development of a comprehensive programme for NCD control for the next two years has begun. Diabetes 1 and 2 and lung health (specifically asthma) have also been the focus of various interventions and programmes. Much discussion has taken place about cancer and its potential

inclusion as a priority in the current sector programme, but it was decided first to demonstrate good progress with the current four priority health areas before including cancer.

The main areas where government commitment is not strong enough are tobacco control, addressing the harmful effects of alcohol, and improving nutrition. As noted previously, reasonable legislation is in place for these areas, but is not enforced. Government level commitment is required to continue to increase tobacco taxes and enforce smoke-free environments, warning labels, and sales restrictions. In addition, population interventions have a relatively low priority and receive limited funding from the national budget. Currently, the implementation of activities related to disease prevention and health promotion depends mainly on the availability of funding from international donors. The state budget and donor funding provided through the sector-wide approach (SWAp) are used primarily for individual health services rather than population interventions. Large amounts of donor funds are allocated to tuberculosis and HIV through the Global Fund to Fight AIDS, Tuberculosis and Malaria, but not to NCDs and their risk factors. One notable exception is the Community Action for Health Project funded by the Swiss Development Corporation (SDC).

Challenge 2. Explicit priority-setting approaches

Explicit priority-setting approaches exist. Positive results include progressively increased funding to the health sector over the past seven years, regional equalization of funds since 2006, and an increased share of the health budget going to primary health care. The main weakness of current priority-setting approaches is the lack of objective criteria for choosing between population and individual interventions, leaving population interventions seriously underfunded. As a result, this was rated as a major persistent challenge for population interventions. The distribution of funds in the health sector is decided during the preparation of the programme budget at national level. The programme budget for the health sector covers five programmes, of which two are administered by the Mandatory Health Insurance Fund (MHIF) (the State-Guaranteed Benefits Package (SGBP) and an outpatient additional drug benefit). The Ministry of Health administers three programmes (management and administration, expensive and high-technology medical care, and public health). The distribution of funds across the five programmes is based largely on historical precedence rather than objective criteria.

The budgeting process is as follows. (1) The Ministry of Finance sends a budget circular to all ministries and agencies, including the Ministry of Health and the MHIF, with instructions on how to prepare a budget and expenditure ceilings. (2) The Ministry of Health and MHIF, together with their subordinate organizations, prepare budget requests and send them to the Ministry of Finance. (3) After the budget hearings and approval of all the parameters, the planned costs are included in the draft National Budget. After approval by the Government, it is sent to the Parliament for approval.

Public health is one of the five programmes in the programme budget of the health sector, but there is no explicit link to core population interventions. The public health programme budget aims to create a sustainable public health service, based on the integration of the disease prevention and health promotion programmes, wide intersectoral cooperation, and active participation of the community in the protection and promotion of health. The public health programme funds the following measures: (i) improving the efficiency of the public health service, with a focus on activities within the sanitary-epidemiological service; (ii) further developing new public outreach approaches, aimed at developing the Community Action for Health Promotion model and expanding the village health committees; and (iii) strengthening the role of public health through the development of technical regulations harmonized with international standards.

The State-Guaranteed Benefits Package and the additional drug benefit are the two key budget programmes for individual services. The SGBP provides minimum social guarantees to the population, up to the amount approved, using funds from the national budget and mandatory health insurance contributions. These funds are distributed among health facilities, using a per

capita mechanism in primary care and payment per treated case at hospital level. Introduction of these payment mechanisms led to significant equalization of funds across the country, especially when the budget allocation process was centralized from oblast to national level in 2006. A sizeable funding gap remains a key problem with SGBP implementation, which is one of the reasons why patients seeking medical care often make informal payments. This undermines explicit priority setting processes based on clear and transparent criteria.

Challenge 3. Interagency cooperation

The Government has been increasingly engaged in mobilizing multisectoral action, but efforts so far have been ineffective. As a result, interagency cooperation was highlighted during the assessment as the most persistent major challenge for population interventions. Recently, a Coordination Council on Public Health was established by the Government, to improve the coordination of activities for public health. The Coordination Council is expected to provide support to a number of public health interventions in Den Sooluk that require an intersectoral approach, including strengthening the prevention and control of noncommunicable diseases.

There is reason to be skeptical, however, since intersectoral action plans, such as the one to control tobacco use, have not previously been effectively implemented in Kyrgyzstan. An intersectoral coordination council has been set up to protect the health of citizens from the harmful effect of tobacco. However, the decisions of the council are only of an advisory and consultative nature, and the scope of responsibilities for the members of the council has not yet been defined. As a result, implementation of the intersectoral action plan has not made significant progress. This ineffectiveness is surprising, since the council is composed of senior executives (Vice Prime Minister, deputies of the ministries, and agencies of the Republic).

Unfortunately, the work of intersectoral bodies in preventing harmful use of alcohol is even more fragmented. While it is possible to note positive developments in the work of educational institutions and local governments, as well as in the information and educational work of the Ministry of Health, alcohol-related actions are for the most part purely medical and, therefore, remain within the jurisdiction of the Ministry of Health. Civil participation also needs to be more active in the field of alcohol control.

While the Ministry of Health is expected to lead intersectoral action in several areas, it has limited instruments to do so and requires a strong government mandate and backing for joint programmes, joint planning, joint budgeting and joint monitoring exercises. In general, during the first two national programmes, Manas and Manas taalimi, major attention was given to solving problems related to the activities of the health system itself (changing the funding system, improving efficiency, ensuring geographic and financial accessibility, etc.). However, experience shows that public health indicators cannot be improved only through the efforts of the health system. Related ministries and agencies, such as the Ministry of Education, the Ministry of Labour and Social Protection, the Ministry of Finance, and the Ministry of Agriculture and Water Resources, play an important role. During the preparation of Den Sooluk, these factors were taken into account and emphasis was placed on intersectoral action. The Ministry of Health aims to intensify measures to strengthen intersectoral cooperation, including developing an efficient mechanism of cooperation, implementation and monitoring of the jointly developed plans to address priority health problems.

Challenge 4. Citizen empowerment

Citizen empowerment was considered a moderate barrier for both population interventions and individual services. In general, there is a low level of awareness and a number of misconceptions about several health issues, particularly NCDs. The KIHS survey6, 7, for example, showed that only about 30% of people with hypertension were aware of their condition. Another evaluationi related to diabetes noted that many people "close their eyes to their illness" and visit health care facilities only when their condition begins to have an impact

on their daily life. The previous health sector programme, Manas taalimi, planned to involve the mass media in promoting prevention, but the primary preventive measures for NCDs remained invisible. Some activities to increase public awareness are organized on World Hypertension Day and World Diabetes Day.

One of the key factors explaining the low level of population awareness and preventive care is the insufficient attention that is given to public health education. Several initiatives to increase patient awareness have been undertaken, but have been poorly implemented because of a lack of sustainable funding mechanisms, the low commitment of doctors and poor patient adherence. There have also been efforts to create self-help groups for patients, including hypertension clubs and diabetes schools, but attendance is usually low and health care workers have little motivation to continue running them in the long term. At the FMC level, there are health promotion units with a mandate to focus on preventive activities and raise awareness of health issues. However, these units suffer from a lack of funding and their work so far has primarily been to train and coordinate the activities of village health committees. As a result, the integration of health promotion units into primary health care has not yet achieved its full potential. At FGPs, family physicians are responsible for conducting educational and preventive measures, but they are overstretched. The role of nurses in health education is insufficiently developed. As a result, patients are not well aware of what they should do in relation to their disease and there is no common understanding among patients of their rights within the health system.

Patients are not often in the driver's seat as regards their care. Doctor–patient relationships tend to be paternalistic, with insufficient focus on educating patients and involving them in decision-making about their own care. Patients rarely have access to reliable information about standards of care, so that they generally have to accept whatever the provider recommends. Questioning doctors' recommendations is not typically acceptable. The organization of services is not patient-centred. There is no appointment system and primary care waiting rooms are often overcrowded. Visiting the doctor, having necessary laboratory and diagnostic tests, and returning with the information to the doctor can take considerable time.

Challenge 5. Model of service delivery

The model of service delivery was rated as a moderate barrier overall (score of 14/20), but a major barrier to the detection and management of hypertension and the acute management of AMI and stroke. Kyrgyzstan has made remarkable strides in implementing family medicine and shifting from a hospital-based, highly specialized system to one based on strong primary health care using a multifaceted approach. There have been changes in infrastructure, sweeping health finance reforms, broad retraining of ambulatory care providers, and corresponding regulatory changes. At the ambulatory facility level, a shift towards comprehensive individual or family care, coordinated by one provider, is most visible in the regions. On the other hand, in Bishkek, even basic NCD services continue to be delivered by multiple specialists. Although, in principle, patients should be referred for specialized care and hospitalization by the primary health care provider with whom they are enrolled, self-referrals for both outpatient and inpatient care are common, leading to increased costs and undermining the principles of gatekeeping by primary care providers.

In both urban and rural areas, it is unusual to see consistent and efficient patient-flow processes at primary care facilities. Some facilities have nurse check-in rooms, but patients are rarely required to go through a standard nurse check-in examination with measurement of vital signs and screening questions; many patients go straight from registration to the physician's office. This is perhaps the greatest lost opportunity to screen for hypertension, overweight, and tobacco abuse on a consistent basis among asymptomatic patients, including young and middle-aged men who may visit the clinic infrequently, for mandatory work examinations or sick-leave formalities. Many key CVD screening and counselling interventions can be shifted to the nursing staff during routine patient check-ins, giving physicians more time to spend on other tasks.

Figure 8. Regional variation in the task profile for chronic conditions at primary care level
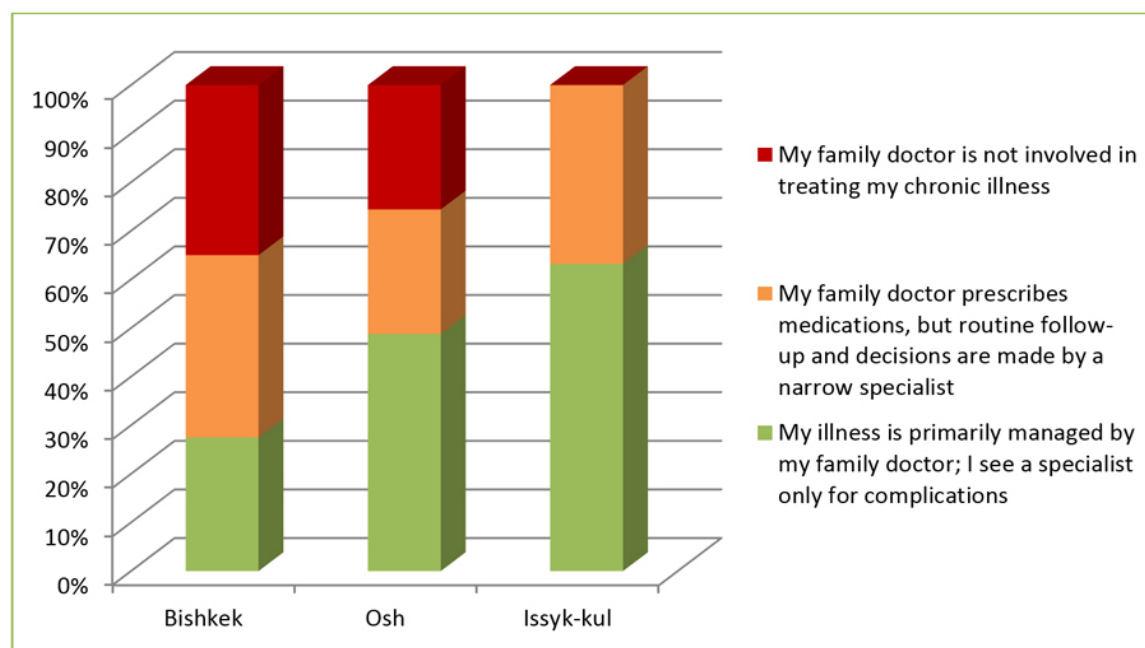
Source: Mukeeva, Abraimova and Urmanbetova, 2013[10]

In countries with a strong primary health care system, hypertension is managed almost exclusively by general physicians (general practitioner, family doctor or internist) or mid-level providers; hospitalization for hypertension is rare. Operational research conducted as part of this mission suggested that, where the principles of family medicine are strongly integrated, patients make fewer visits to specialists and are more content with the quality of care (Figure 8, 9).

Figure 9. Pattern of care for hypertension and patient satisfaction
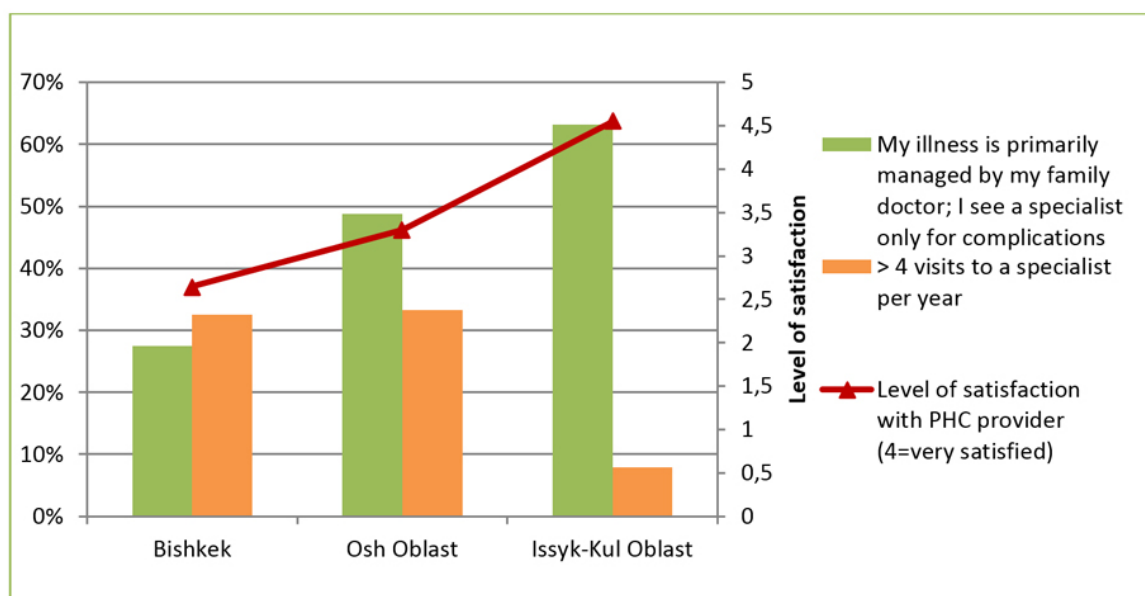
Source: Mukeeva, Abraimova and Urmanbetova, 2013[11]

Even in regions where family medicine is well integrated, patients with hypertension are routinely referred to a cardiologist for confirmation of diagnosis, adjustment of treatment, and at least once-yearly consultations. Cardiologists are typically located in FMCs, so primary care providers are inclined to view the management of patients with CVD as the responsibility of cardiologists. Given the worsening human resource crisis, other models of service delivery should be explored, e.g. having cardiologists connected with hospitals and providing consultation services in hospital-based outpatient speciality departments. Mid-level providers should be trained to detect, diagnose, and manage low-risk patients with hypertension. Primary care providers should be

expected to manage most patients with hypertension independently and to refer only high-risk, complicated patients to cardiologists.

Routine "preventive" hospitalizations are still practised for common NCDs, including hypertension and ischaemic heart disease, especially among elderly patients who grew accustomed to this practice prior to the health care reforms.

Many countries operate efficient and effective emergency medical systems using mid-level providers, so the fact that there are no physicians among the ambulance staff cannot be considered a primary barrier. However, poorly organized dispatch systems, undertrained providers, a lack of essential equipment and drugs, and inadequate communication between receiving hospitals and ambulance services are major barriers to acute management of AMI and stroke, where delays of minutes can have a major impact on clinical outcome. There have been significant training efforts in the past eight years to increase the capacity of ambulance feldshers, but their impact has not been assessed. Outside Bishkek, ambulances are connected to the rayon- or oblast-level FMCs and frequently treat patients with non-emergency conditions at home rather than routinely stabilizing them and transferring them to hospital for more thorough evaluation.

Finally, the absence of decentralization of thrombolytic therapy for AMI is negatively affecting clinical outcomes. Internists can be trained to administer thrombolytics where there are no cardiologists.

Challenge 6. Coordination across providers

Coordination was not rated as one of the more significant barriers to delivery of core services (score 12/20). There was general agreement among the assessment team that coordination of care between primary care providers and specialists is strong at the ambulatory level. However, there is room for improvement in coordination of care between ambulatory and hospital providers. Because outpatient specialists are located in the FMCs, and both specialists and primary care providers use the same patient record, coordination of care is usually strong. Problems occasionally arise with coordination of care after hospital discharge, as discharge summaries may be incomplete or not delivered to the primary care facility in a timely manner. The summaries are typically hand-written (except from NICT) and often difficult to read.

Transfer of patients from one hospital level to the next (rayon to oblast, oblast to tertiary) is often poorly coordinated. Patients are sometimes sent by private car without any referral documents or telephone communication between the sending and receiving physicians; often, the receiving physician is not specified. In addition, there is no clear system of regionalization of inpatient care for patients with AMI and stroke.

Gaps in coordination of care also occasionally arise between hypertension screening campaigns conducted by VHCs and primary care providers. Patients found to have high blood pressure during screening are themselves responsible for following up with their usual provider; there is no mechanism in place to track down patients who do not do so.

Although FGP directors are, in principle, required to make regular visits to monitor and support feldshers working in FAPs, in reality, budget constraints and lack of transportation make these visits nearly impossible. If basic CVD management tasks are to be shifted to mid-level providers, monitoring and supportive supervision by FGP physicians will be essential.

Finally, coordination within the health team of a facility could be improved by ensuring that all documentation of findings from nurse home visits and patient check-in examinations is included in the standard ambulatory health record.

Challenge 7. Regionalization, economies of scale and specialization

Kyrgyzstan has no formal system of regionalization of care for patients with AMI and stroke, and there are wide variations in availability and quality of services within and between regions. High-technology services are available only to a small fraction of the population, and there is no system of rationalization of such services to ensure access of poor and vulnerable groups. Transport of patients to well equipped regional centres with qualified staff is often problematic, because of the severe limitations of the emergency transport system (financing, equipment, staffing with trained personnel) and the absence of clear policies governing regionalization of care. Although all clinical practice guidelines for CVD developed over the past five years include specific criteria for hospitalization and referral, there is no formal system of regionalization of care for patients with AMI or stroke. There is however, some informal regionalization of care, in the sense that wealthier patients often bypass their regional hospital to seek care in Bishkek or Osh City, because of perceived differences in quality of care. The availability of services varies markedly between regions, particularly between Bishkek facilities and those at the rayon or oblast level.

Thrombolytic therapy for AMI is available only in Bishkek, even though it is reasonably easy to administer, relatively inexpensive, and time-sensitive (delays in delivery of the service decrease the effectiveness). Clinical outcomes could therefore be improved by decentralizing thrombolysis to the rayon level. Coronary angiography with stenting, a high-technology, high-cost procedure that is appropriate for the central level, is performed only in Bishkek and Osh City, and covers only about 3% of all patients with AMI. There is very limited government funding available for angiography and stenting.

Patients with stroke at rayon or oblast hospitals are typically not referred to higher levels, where more skilled personnel might exist to provide comprehensive care (the "stroke team" concept). It is an open question whether comprehensive stroke care exists even in tertiary facilities in Bishkek. There are no data on mid- and long-term stroke outcomes at different levels of care in Kyrgyzstan.

Challenge 8. Integration of evidence into practice

Remarkable progress has been made in integrating evidence-based medicine (EBM) into practice over the past six years, and this was rated as a minor barrier (total score 10/20) to delivering core services. Kyrgyzstan has been an example throughout the region in integrating evidence-based medicine. The steps integral to this success have included: development of a national EBM strategy; setting up of a national EBM unit; development and approval of a methodology and process for producing clinical practice guidelines; clear delineation of roles and responsibilities in the coordination of CPG development and approval; and integration of mandatory EBM training into the medical education curriculum. A CPG development calendar is coordinated by the Ministry of Health to prioritize topics. All CPG developers must go through training on EBM and CPG development methodology, and the EBM unit ensures that draft guidelines follow the established methodology. They also coordinate external review of the guideline content prior to approval, usually by foreign consultants. Guidelines are now being developed with implementation indicators, which can be used by health facilities to conduct internal audits to promote guideline implementation, and by the MHIF to conduct external quality assurance reviews. The EBM unit also takes an active role in revising the country's essential drugs list.

To promote implementation of new recommendations, conferences are held to introduce new CPGs to medical educators at undergraduate and postgraduate levels. Curricula for continuing education of primary care providers are created or updated on the basis of new CPGs. Finally, professional associations (FGPNA and HAKR) are involved in coordinating quality improvement cycles, using internal audits based on indicators from new guidelines.

Despite these remarkable successes, implementation of clinical recommendations in new CPGs at the facility level is far from complete. Barriers include lack of funding for printing and distribution of guidelines (all are available online but Internet access is available only in rayon- and oblast-level facilities) and a lack of commitment by facility managers to ensure guideline implementation through in-service training and monitoring. In addition, EBM skills among medical educators are still limited. Medical students continue to graduate without adequate skills for lifelong self-directed learning and without the ability to find evidence-based answers to clinical questions and to critically evaluate published studies or promotional materials distributed by pharmaceutical companies.

Challenge 9. Access to quality medicines

Access to quality medicines was rated as a major barrier overall (score of 13/20) and a major persistent barrier for the management of high risk groups despite several positive factors in the design and implementation of pharmaceutical policies. In 2000, the first outpatient drug reimbursement list (additional drug benefit (ADB) was introduced in Bishkek and Chui oblast; in 2003, it was rolled out nationally. The list currently includes 75 medicines, identified by their international nonproprietary name (INN), of which 14 are for cardiovascular conditions, mostly in line with the guidelines for these conditions:

- ACE inhibitors: enalapril and lisinopril;
- diuretics: hydrochlorothiazide, furosemide and verapamil;
- calcium channel blockers: amlodipine and nifedipine;
- beta blockers: bisoprolol and atenolol.

Statins are not on the reimbursement list, which is a recognized problem as it is in contradiction with the accepted guidelines on treating high-risk patients.

Although the additional drug benefit has contributed to improved access to medicines, high out-of-pocket payments for outpatient medicines continue to be the main cause of catastrophic and impoverishing expenditures. This is the result of several factors, including the limited number of drugs reimbursed, the low percentage of the price reimbursed, underuse of funds in the ADB, overprescribing, and overconsumption of unnecessary medicines. In addition, prices are not regulated in Kyrgyzstan, as it is presumed that the market will self-regulate. This leads to high prices for medicines for which demand is not strong enough to lead to sufficient competition.

For inpatient care, the SGBP stipulates that public funding and formal copayments should cover all medicines needed for the cause of hospitalization, and that hospitalized patients should not pay additionally for medicines. Out-of-pocket payments for inpatient medicines have declined since the introduction of the single payer system, but continue to exist for a number of reasons: the underfunding in the SGBP translates into underfunding for inpatient medicines; the patient may need a medicine that is not included in clinical protocols and therefore not procured; there may be occasional stock-outs; and medicines available in the hospital pharmacy may be of low clinical effectiveness.

There is a high use of generic drugs in Kyrgyzstan, where the market is small and traditionally generic. GPs are trained in generic prescribing. There is a long tradition of generic prescribing, starting with the implementation of the national health sector reform programmes, Manas and Manas taalimi and the national medicines policy. Regular monitoring of the implementation of the national medicines policy showed a steady growth in generic prescriptions. However, the national drug policy working group reported recently that generic prescribing is on the decline, linked to aggressive promotion of particular brands by manufacturers and distributors, and weak enforcement of the generic concept in the continuing education of prescribers.

Kyrgyzstan has been regarded as a leader among CIS countries in the development of an evidence-based formulary, since the first such formulary was produced in 1996. Further steps are, however, needed to improve prescribing practices. In spite of the fact that the national formulary and the essential medicines list are regularly updated and distributed to health facilities, there is little evidence of their use in prescribing practice. Treatment protocols and guidelines are not always followed, especially for patients in risk groups. Observation during the mission showed that almost all patients with hypertension are prescribed bisoprolol as first-line treatment, together with ACE inhibitors and diuretics. Bisoprolol is the most reimbursed medicine for hypertension in terms of amount of money, and the second one after enalapril in terms of number of prescriptions (see Figures 10 and 11). Official prescription forms are used only for medicines included in the ADB; all other prescriptions are hand-written on blank paper, without mention of the doctor, the patient or the illness, which makes analysis of overall prescribing behaviour impossible. Prescriptions contain on average 6–7 medicines.

Figure 10. Distribution of funds reimbursed to patients with hypertension, by drug
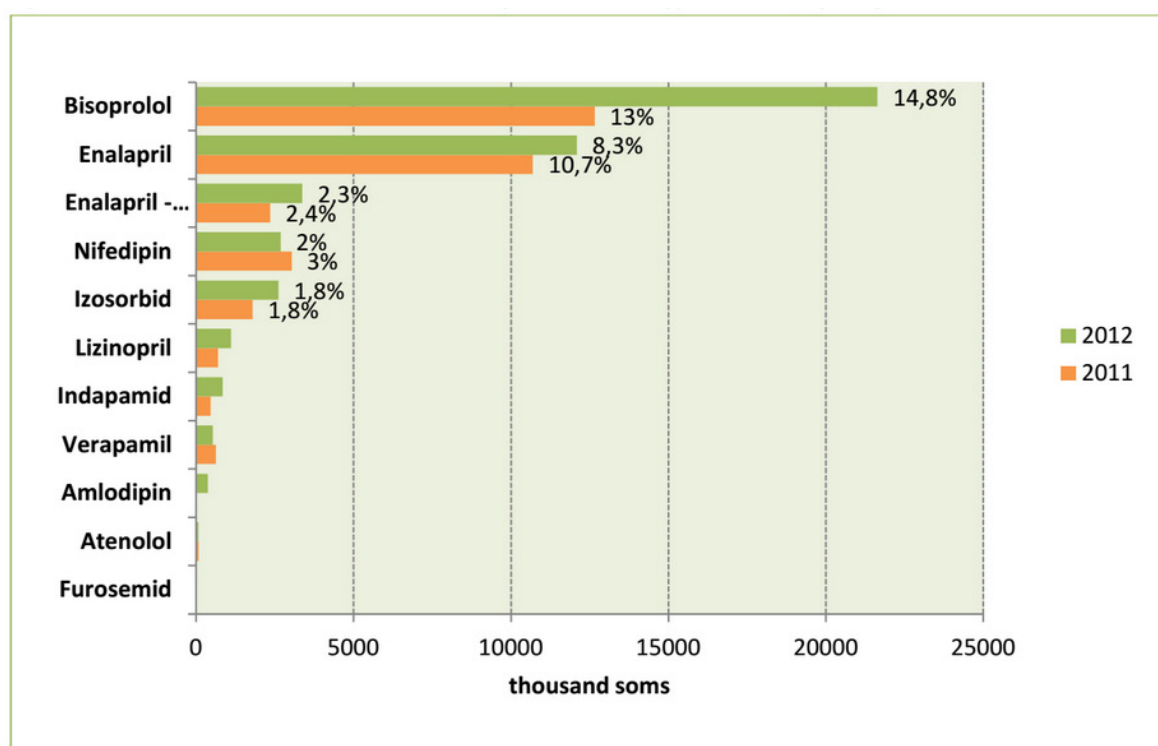
Source: MHIF

There is public perception that the lowest-cost generic drug does not always have a good clinical effect. This is not just a perception issue but it has been underscored by a WHO assessment in 2007 that highlighted quality problems with generic medicines due to substandard medicines. However, there is no pharmacovigilance system in place to follow-up complaints about low effectiveness and quality of some medicines, since there is no system for collection of information from health professionals. This may have to do with the limited capacity of the Department of Medicine Supply (DMS) to assess data on bioequivalence of generics and outdated registration requirements. Training in dossier assessment for staff of the DMS is highly recommended. At present, DMS cannot conduct unannounced inspections in pharmacies, as required by the anti-monopoly committee. Draft legislation is currently before Parliament to change this situation and clean up the illegal market in drugs.

All groups of antihypertensive drugs, including marker medicines, are available in pharmacies including in rural areas, but statins are available only in large wholesale pharmacies. There are many pharmacy outlets that have a doctor or other health professional who has completed a special 6-month training course on pharmacology given by the Medical Academy. This increases the availability of medicines, but presumably leads to conflicts of interest and overprescribing.

Figure 11. Distribution of prescriptions for hypertension, by drug
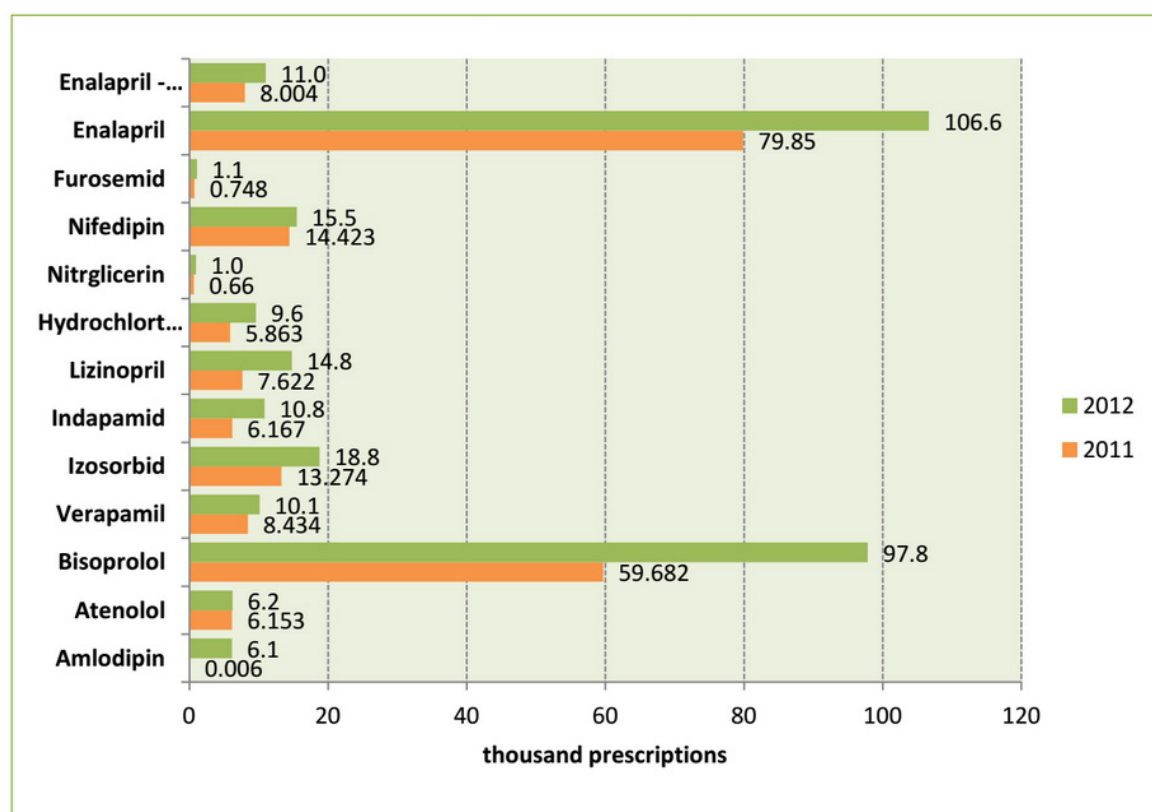
Source: MHIF

Table 6. Comparison of median drug prices in Kyrgyzstan with international guide for wholesaler prices

Drug	Dosage	Median wholesale guide price per tablet (US$)	Median price per tablet, Kyrgyzstan (US$)	Multiplier
enalapril	5 mg	0.017	0.018	1.06
atorvastatin	20 mg	0.0511	0.62	12.13
simvastatin	20 mg	0.0306	0.37	12.09
hydrochlorothiazide	25 mg	0.0132	0.083	6.29
aspirin	100 mg	0.0043	0.069	16.05

Comparison of median prices in Kyrgyzstan with the international guide price for wholesalers showed that acetylsalicylic acid (100 mg) and statins are particularly expensive in Kyrgyzstan, at 16 and 12 times the international price, respectively (Table 6). This suggests that acetylsalicylic acid and statins are not used in big volumes in Kyrgyzstan, and there is insufficient competition to drive prices down. This could be because statins are not regularly prescribed by FGPs, despite their inclusion in protocols for patients with a high CVD risk. This is a vicious circle, however, because physicians often mention that they do not prescribe statins because patients cannot afford them. Conversely, they do prescribe other medicines not included in treatment protocols.

The drug prices translate into a significant proportion of household resources, particularly for statins: one month's supply of statins costs the equivalent of 19–31 days of the minimum wage or 1.5–3 days of the average wage. Using methodology developed by WHO and Health Action International Global,[11] the affordability of treating a variety of chronic conditions was assessed (Table 7). The median cost of treatment using standard regimens was compared with the minimum daily wage for public sector workers of 28 som (approximately US$ 0.60). Chronic disease treatment costing more than one day of wages for a 30-day supply of medicines are generally considered unaffordable. The average daily wage in Kyrgyzstan in February 2013 was reported by the National Statistics Committee (NSC) as 346 som (approximately US$ 7.2 a day).

Table 7. Affordability of selected medicines for the treatment of NCD, 2013

Drug	Dosage	Days of minimum wage for a month's supply of medicine	Days of average wage for a month's supply of medicine
enalapril	5 mg	1.8	0.15
atorvastatin	20 mg	31	2.58
simvastatin	20 mg	18.5	1.5
hydrochlorothiazide	25 mg	8.3	0.69
acetylsalicylic acid	100 mg	3.45	0.28

Challenge 10. Incentives

The current incentive system in primary care and hospital care was rated as a major challenge overall (score of 16/20) requiring modernization to enable scale up of all core individual services.

Incentives for primary health care

Capitation payments were introduced gradually in primary health care from 1997. This represented an important departure from historical line-item budgets and led to equalization of funds across the population. Capitation payment is based on the number of people enrolled (or estimated to be enrolled) with a health care provider, with coefficients for parameters such as age, sex, and remoteness. This payment mechanism was appropriate for a transition economy, as it:

- reinforced the autonomy and raised the status of primary health care providers;
- helped contain health expenditures at the system level at a time when purchaser and provider management capacities were still weak;
- allowed resource allocation to be based on population distribution rather than historical patterns and input-based norms;
- allowed purchaser capacity to develop step-by-step towards a more strategic orientation of making purchasing decisions in function of health gains.

However, Kyrgyzstan has now entered a new phase, in which capitation payments alone may not be sufficient to ensure progress in health outcomes. This may be the right time to introduce blended payments. This assessment found significant undercoverage of key primary care diagnostic and disease management interventions for chronic conditions. The financial incentives associated with capitation payment do not encourage providers to be more proactive in detection and registration of disease, counselling, secondary prevention and disease management. As countries seek to address the disadvantages of capitation payments, many have moved to so-called blended payments, combining capitation payment in primary health care with fee-for-service for certain specified conditions or with pay-for-performance (e.g. Estonia, Hungary, Kazakhstan and the Republic of Moldova).

Kyrgyzstan already has experience with pay-for-performance schemes in primary health care, through a bonus payment mechanism supported by the GAVI health system strengthening project. Lessons learnt from its evaluation can be helpful in designing future programmes. With the support of GAVI, the MHIF developed and pilot-tested a bonus payment mechanism for primary health care in Issyk-kul and Chui oblasts. It was rolled out to Osh, but then cancelled. The mechanism used a parsimonious set of indicators for pregnancy, child health, hypertension and chronic obstructive lung disease. Evaluation showed that, although the mechanism had a number of positive effects, the payments were too small to make a significant difference in the behaviour of health care personnel. In addition, the complicated formula used to calculate the bonus payment exacerbated transparency issues related to formulation of payments. Nevertheless, the evaluation reinforced the notion that the main health worker

motivation issue remains financial, as the gap between earned and expected salary in primary health care continues to grow. Thus, it is appropriate to comprehensively rethink the payment mechanism for primary health care, in order both to improve chronic disease detection and management and to reduce health workforce migration.

Incentives for hospitals

Kyrgyzstan gradually introduced case-based payments for hospitals from 1997. This catalysed much-needed hospital restructuring, but also contributed to steadily increasing hospitalizations, including for conditions that could be treated at primary care level. Case-based payments evolved gradually into a broad diagnosis-related group (DRG) approach, with about 150 case categories. Implemented in the context of systematic reforms, this step allowed a break with historical line-item budgeting, which was seen as the key obstacle to eliminating unaffordable excess hospital capacity. It led to demonstrated improvements in a range of technical efficiency measures. However, rates of hospitalization have steadily increased since 2002, a phenomenon seen in many countries that use case-based payments without effective volume controls. The MHIF has recently attempted to address this by introducing volume caps in purchaser–provider contracts.

Rates of hospitalization for hypertension remain high, despite early success in bringing them down. Early monitoring in the single-payer system showed a reduction in hospitalizations for conditions that could be treated in primary care, such as asthma, pneumonia, hypertension and ulcer. A number of factors contributed to this, including investment in family medicine, training of family medicine physicians, an increase in the proportion of the health budget going to primary care, the availability and affordability of drugs, including through the additional drug benefit, and the fact that primary care remained free of charge while copayments were introduced for hospitalizations. These trends were transient, however, and hospitalization rates for hypertension increased by 65% between 2002 and 2007. This was followed by a moderate decline of 16% between 2007 and 2012 (Figure 12). In 2012, 57 million soms were spent on hospitalizations related to hypertension, according to the MHIF.

Figure 12. Number of hospitalizations for hypertension
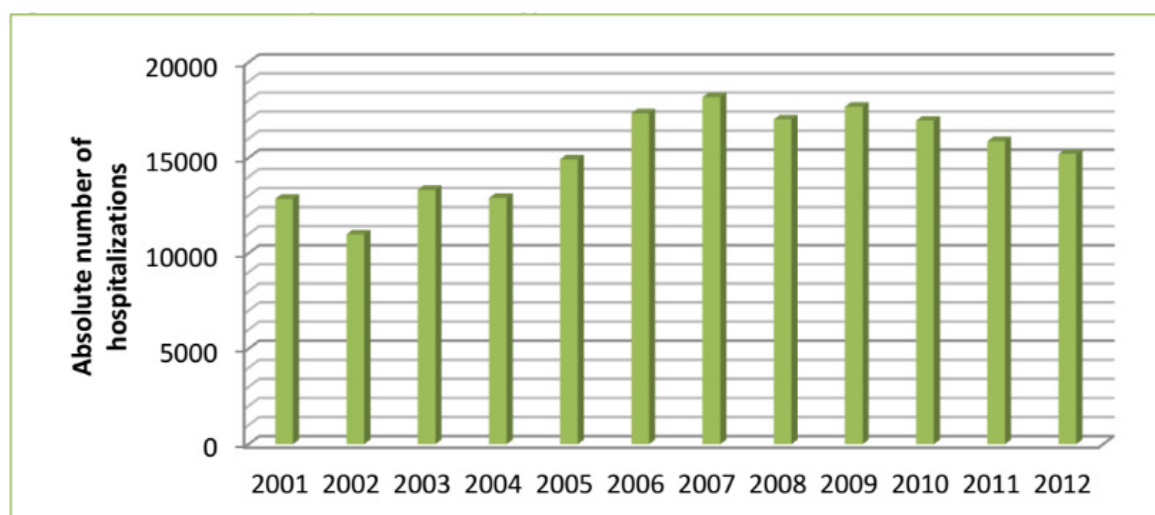
Source: MHIF

The current mix of financial incentives and other factors contribute to excessive hospitalizations for hypertension.

- Financial incentives at primary health care level do not encourage early detection or continuous management of chronic conditions, since the discontinuation of the bonus programme mechanism supported by GAVI.

- Financial incentives at the hospital level encourage hospitalization. The MHIF has not yet approached case payments in a strategic manner, by reducing payment to hospitals known to have poor cost-effectiveness.

- Cultural factors mean that specialists and hospital care receive more respect than family medicine, especially in urban areas.

- Many patients find hospitals more convenient, since primary care is not well organized from a care process perspective (no appointment system, no formalized lines), referral to outpatient specialists takes time and more waiting, the laboratory system is disorganized, and patient records are not shared.

- There is a lack of monitoring and few consequences for hospitals that admit patients unnecessarily.

Incentives for outreach and social care

One of the important innovations in the Kyrgyz health system is the Community Action for Health Programme (see section 4). Since 2011, there are financial mechanisms to support one health promotion worker in each rayon FMC, to work with VHCs in the rayon and link their work to FGPs and the rayon FMC. The health promotion worker is a salaried staff member of the FMC and the salary comes from the MHIF.

Demand-side incentives

Little emphasis has been given to demand-side incentives, to steer people towards healthier decisions. While patient education and counselling about NCDs are available, there are no associated demand-side financial incentives. Such incentives exist for individual services, e.g. the copayment structure is designed to discourage hospitalizations without referral. Those who seek non-urgent hospital admission without a written referral from primary health care have the largest copayments. However, this has not been very effective in holding down hospitalization rates.

Challenge 11. Human resources

Despite the emphasis on strengthening primary health care over the past 10 years, Kyrgyzstan is facing a potential human resource crisis at the primary care level, particularly in rural areas, because the aging workforce is not being replaced by young physicians. Human resources were rated as the greatest challenge to the delivery of core individual services (score of 20/20). The country has made numerous efforts to attract and retain physicians in rural areas, without any lasting effect. Medical education is being reformed to emphasize primary health care, but recent trends show no increase in the number of medical school graduates choosing to work in primary care. The human resource deficit is compounded by low motivation among primary care staff and competencies that do not match service delivery needs.

Figure 13. Density of physicians and nurses per 1000 population, various countries, 2011*
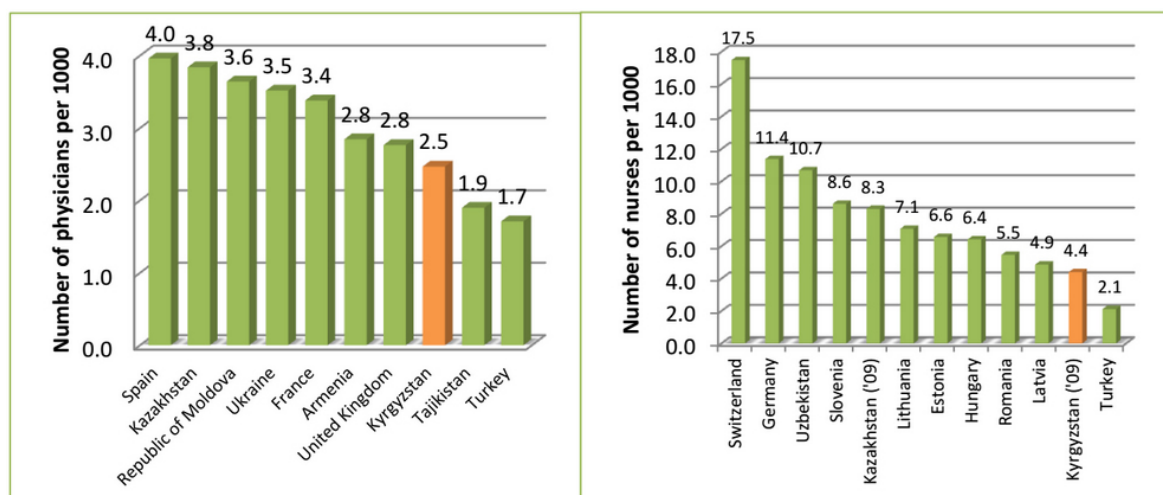
* Data for Kyrgyzstan and Kazakhstan from 2009.
Source: data for Kyrgyzstan from Ministry of Health statistics; other data extracted from the WHO Global Health Observatory, 24 July 2013.

Human resource issues were considered by the assessment team to be the most significant health system barrier to effective delivery of NCD services. Kyrgyzstan currently has a physician density of 2.5 per 1000 population and a nurse density of 4.41000. The numbers have been relatively stable over the past few years, but are among the lowest in the WHO European region (Figure 13). Although 39% of all physicians work at the primary care level, only 17% are family physicians; the other 22% are specialists. Staffing levels vary tremendously, from 100% in Bishkek to 44% in Suylukta Rayon of Batken Oblast (Figure 14). Even these official staffing levels are artificially inflated, as many doctors occupy more than one position, with an overall rate of 1.4 staff positions per doctor.

Figure 14. Regional variation in occupied FGP positions
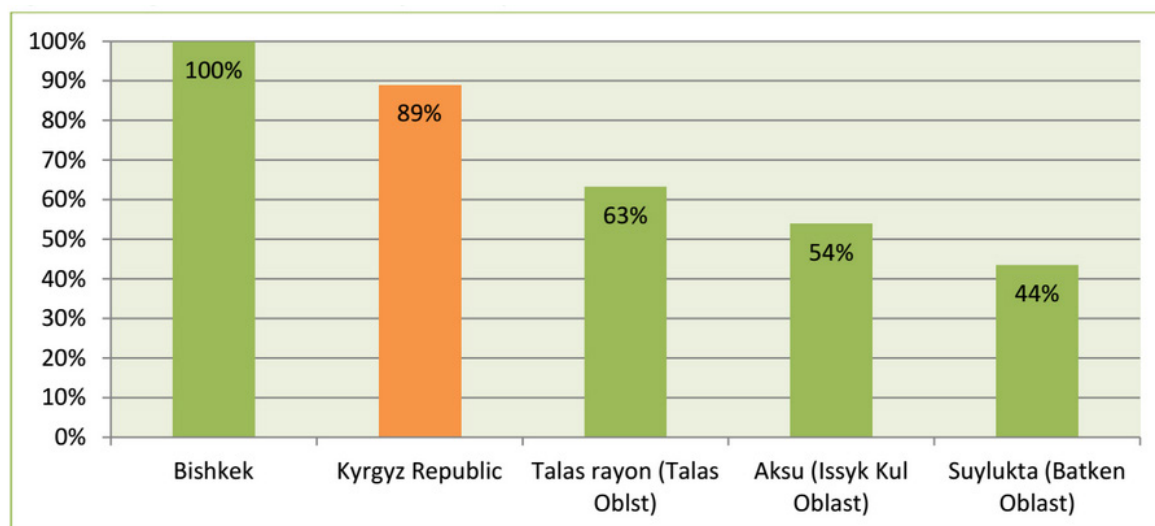
A family group practice should have at least three physicians, yet 60 FGPs in the country have no doctors and 198 have only one. The number of people enrolled in a practice can be up to 18 000, compared with a typical patient population of 1000 per provider in Bishkek (Figure 15). Nearly 97% of nurse positions in the country are filled, with little urban/rural variation; most nurses occupy only one staff position.

Figure 15. Distribution of FGPs by number of doctors
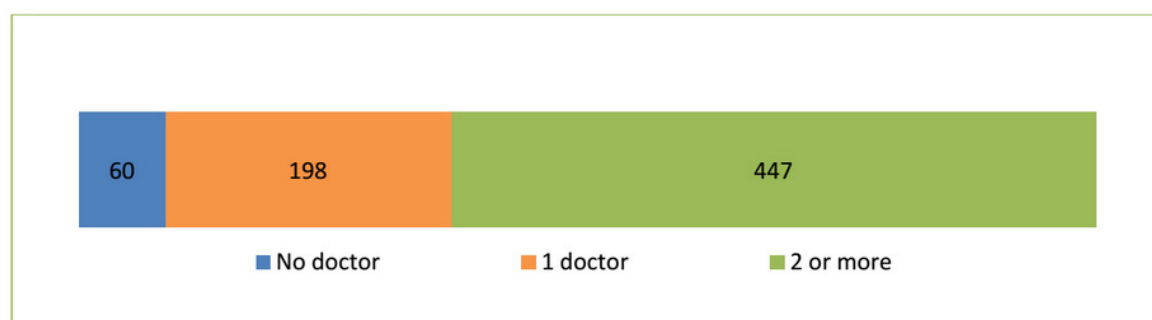
The Ministry of Health has implemented a number of programmes to address the rural deficit of primary care providers, including a deposit programme for young doctors with government contributions to a saving deposit for years of rural service, agreements with local administrations to provide housing for recent residency graduates, and mandatory regional internships for all medical school graduates; none of these, however, has successfully addressed the problem. Service in public health facilities can be required only of graduates whose education was financed by the Government, who now account for fewer than 20% of all medical students. The vast majority of graduates seek employment in Bishkek (57%) or republican health institutes (32%); young physicians are rarely to be found in rural health facilities.

Low salaries, difficult working conditions, and a punitive style of management contribute to low motivation among health care workers. The vast majority of family physicians are specialists (internal medicine specialists, paediatricians, or obstetricians/gynaecologists) who

have retrained as family doctors through a 4-month, mostly didactic course. These providers had a limited scope of practice in the health system prior to recent reforms, and most remain insufficiently trained to manage the broad range of preventive and curative services expected of family physicians, including NCD screening and primary and secondary prevention of NCDs. Nevertheless, the scope of work of primary care providers has been steadily expanded through a comprehensive, annual, continuing medical education programme. This programme was reformed in the early 2000s and is delivered in all regions by the Kyrgyz State Medical Institute for Retraining and Continuing Education. The regular development of clinical protocols provides evidence-based tools for these providers, but they have limited clinical support for implementing new skills and practices.

Health reforms over the past 15 years have given priority to primary health care and have rarely focused on the professional development of hospital providers and specialists, resulting in specialized care that is not consistent with international standards. Chart reviews during field visits confirmed that specialists are much more likely than primary care providers to prescribe large numbers of medications that are not evidence-based. Operational research suggests marked variations between Bishkek and the regions in both patient expectations and physician confidence in managing NCDs, with less reliance on specialists and higher patient satisfaction outside Bishkek where primary health care is stronger.

Medical education is being reformed with an emphasis on preparing broadly trained doctors for the primary health care workforce. There are plans to introduce a mandatory internship in family medicine for all graduates. However, reforms are slow and it will be a challenge to train adequately such large numbers of interns, given the limited clinical skills of medical school graduates and the very small number of clinic-based family medicine trainers in the country. Similar challenges exist in nurse training, which has traditionally not prepared nurses or feldshers in basic clinical assessment or management of common, uncomplicated NCDs. These skills may become essential to provide care to rural populations with the expected shortage of primary care physicians.

Challenge 12. Health systems management

Poor management of health facilities was highlighted as a major persistent challenge (score of 16/20), one of the top three barriers standing in the way of scaling up coverage of individual CVD services. Weak health facility management is associated with appointments not based on merit, a lack of training, and a lack of performance measurement and monitoring.

The heads of health facilities are appointed according to the basic laws governing the health system, the Law on the Protection of Public Health and the Law on Health Facilities. At present, appointment does not depend on academic performance and is not based on merit or quality of work. To strengthen the procedure for appointment of facility managers, the Ministry of Health has approved a set of Regulations on the Competitive Selection of Managers of the Medical and Preventive Treatment Facilities (May 2013), which specifies requirements and criteria for appointment of managers.

One of the requirements is for managers of health facilities to have been trained in health management. Within the framework of the first health reform programme, Manas (1996–2005), efforts were made to establish training courses for health facility managers. Initially, all-round training was conducted, and extensive academic courses were planned for the future. A health summit in September 2007 concluded that there was a need for long-term health management training. The preliminary planning was carried out, but the initiative has not been implemented because of lack of leadership and funding.

Since 2008, managers of health facilities have moved to a contractual form of work, as a result of which the Regulations on the Heads of the Health Facilities was passed, specifying the scope of their authority, the qualifying requirements, and their responsibilities, duties, and basic rights.

Existing regulations and instructions are not linked to incentives to improve the performance of the facilities, as the current system of remuneration is based only on workload,

and not on performance. **For this reason the leadership of managers is weak, as they pay more attention to administrative matters** rather than the overall performance of the facilities and the quality of services. Managers' use of information for internal management is weak.

The shortage of human resources in the regions exacerbates these problems, as the lack of personnel does not allow regulating their activities on the changes in the results of the provision of services.

Challenge 13. Poor information systems

The elements of an information and communication infrastructure for medical use have been established. The foundations for the utilization and expansion of modern information and communication technologies in the health service have been laid. However, the Unified Health Service Information System (UHSIS) has not been completed. This health system feature is considered a moderate barrier to better NCD control.

The current information system is based on the collection of information via email. However, the regions are not yet fully automated or connected to Internet, and many facilities still use paper records. Medical personnel spend a significant amount of their time filling in forms. The existing data are analysed for the purposes of planning and policy-making. The main difficulty is to ensure that the data are reliable and valid, and that they are used by managers in formulating policy and strategies for the health services.

Two institutions are mainly involved in collecting data on the key health indicators: the National Statistics Committee (NSC) and the Republican Medical Information Centre (RMIC). Data are published and are available on request. Household surveys and patient surveys are conducted at regular intervals, and provide key information on some risk factors (smoking, overweight) and on utilization of medical services (access to services, financial security, etc.) that cannot be obtained from routine sources.

There are opportunities to increase the use of the data available, particularly for monitoring the impact of the reforms and public health programmes.

The main indicators for CVDs can be disaggregated by sex, but not by level of income or nationality. Death records in the country use a single standard model form that complies with WHO requirements; this contains no information on nationality or socioeconomic status of the deceased, or on the risk factors associated with the disease that caused death.

Routine statistical reports contain data on utilization of services rather than on diseases. Data on utilization of services at health facilities are available only for some indicators of quality for six monitored diseases.

There is a reporting system at the health facilities, but there is no assessment of data quality. There are no systematic surveys of health facilities for operational readiness or assessment of data reliability through research and external evaluation. In addition, the system that should allow full exchange and sharing of information between health facilities at different levels is not fully debugged.

Work has begun to introduce an electronic version of the outpatient medical record. A pilot project is under way in three institutions at different levels. This software is designed to automate the medical, accounting and management activities of the health facilities. However, standard reporting on parameters that characterize the workload, patient capacity, the length of a visit, and the time of waiting is not included. In August 2012, the Ministry of Health approved an updated standard ambulatory medical record (paper-based), which includes a flowsheet for recording of blood pressure, body mass index, tobacco use, and excessive alcohol consumption. This should significantly improve documentation and tracking of CVD risk factors. The record also includes charts for documenting screening for cervical and breast cancer. Disease-specific flowsheets were also approved for hypertension, ischaemic heart disease, and diabetes, which help remind providers to assess all relevant risk factors and conduct periodic screening for complications.

Many special applications for analysis of health data are used in the country, but there are no approved national standards that would facilitate transferability and interoperability. In addition, no information systems have been introduced to allow patients to be more involved in their own treatment, such as access to medical records or the possibility to communicate with doctors via email or other electronic means.

There is no system or regulatory legal framework for data protection, which is necessary for the exchange and sharing of medical and statistical information. The formalization of such initiatives is currently of interest in the country. A legal framework for the protection of individual data is available, but there is no security policy in the health sector and no way of ensuring compliance with the principles of data protection through legal sanctions or other means.

Challenge 14. Resistance to change

Resistance to change was viewed as a moderate barrier for most interventions and services, and a significant barrier to the implementation of tobacco control policies. The national Den Sooluk health system development strategy for 2012–2016 clearly focuses on CVD as one of the priority areas and identifies a number of aspects that need to change. The proposed strategy assumes health system institutional development with a broad involvement of all organizational structures, through decentralization of management functions. The main aims, objectives and activities of the programme apply to all levels of management and should be performed by every service and health facility.

Attempts to increase tobacco control are often resisted by the tobacco industry and the Government has not yet overcome this resistance. Tobacco companies' interests often prevail over health policy interests. As noted in the last needs assessment for implementation of the Framework Convention for Tobacco Control in Kyrgyzstan, "there are no norms that protect the health policy design and implementation processes against the tobacco industry's commercial interests".i This is illustrated by the tobacco industry's participation in the process to introduce warnings about the consequences of smoking on tobacco packaging. Regulations setting national technical norms for tobacco products have not yet been approved by the Government, because the tobacco industry participates in their development and actively lobbies against the introduction of pictorial warnings on tobacco products.

Another example is the reluctance to raise tobacco taxes, which are the lowest in the WHO European Region. The tobacco industry has actively influenced the perception of government officials that increasing the price of tobacco products will inevitably lead to an increase in smuggling from neighbouring countries and a reduction in tax revenues. Consequently, they oppose stricter price and tax controls on tobacco products. However, the problem of smuggling of tobacco products ceased to be a major problem in Kyrgyzstan long ago. By 2003, smuggling accounted for no more than 5% of the total tobacco products consumed in the country.[13] The Government needs to establish measures to allow the Convention to be implemented without the interference of the tobacco industry and to ensure the transparency of all interactions with it.

Challenge 15. Access and financial burden

Physical and financial barriers to access have reduced significantly in the past ten years and there is no significant gap in utilization between the poor and the non-poor. The proportion of survey respondents who needed care, but did not seek it because of distance or affordability, fell from 11.2% in 2000 to 4.4% in 2009. Similarly, the utilization gap between the poorest 20% and the richest 20% narrowed over the same period for both primary health care and hospital care.[14] This outcome is a result of the single payer reforms and the introduction of the State-Guaranteed Benefit Package. Although good progress has been made in moving towards more equal access to care, the human resource crisis experienced in rural areas in the past few years is likely to have a negative impact, in particular on the ability to expand the primary care task profile to include detection and management of chronic conditions.

While socioeconomic status does not appear to be a major factor in utilization of primary health care services, there is a significant gender gap, which may explain some of the observed gaps in mortality and hypertension outcomes. In the 2010 household survey, more than twice as many women as men over 18 years reported using primary health care. The male–female utilization gap in the 19–39 year age group can be explained by visits related to reproductive health and pregnancy. However, a more than twofold gender gap remains even among those over 40 years (Figure 16).

Figure 16. Gender gap in the utilization of primary health care
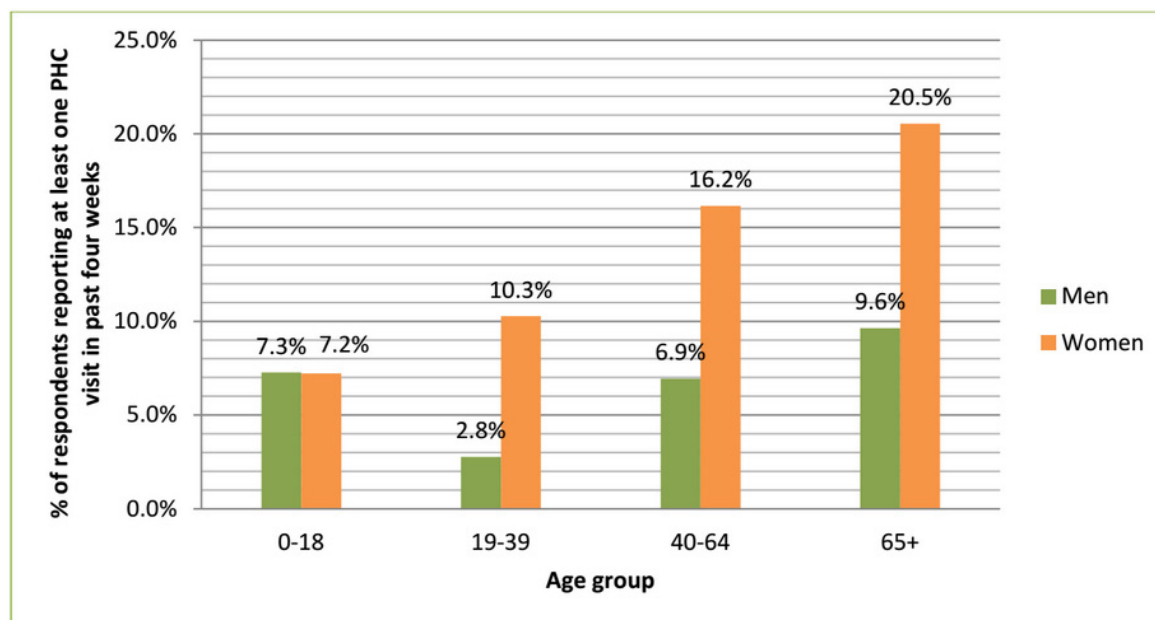
 Source: WHO staff calculations based on unpublished data from the Kyrgyz Integrated Household Survey 2007[7] and 2010[8]

Although access to health care appears to be ensured in general, the financial burden for those seeking care is high, including for the poor, mainly because of the high out-of-pocket spending on medicines. Average health spending among those who reported any contact with the health system was 30.8% of household consumption in the poorest quintile and 21–23% in the other four quintiles. The incidence of catastrophic and impoverishing health expenditure is significant. Primary care is free and reported informal payments are few. Out-of-pocket payments in hospitals – comprising formal copayments and informal payments – remain significant. While informal payments for medicines are decreasing, those to personnel continue to increase.

Overall, this pattern of expenditure appears to be the result of demand-side and supply-side clinical decision-making processes. Specifically, reducing the unnecessarily high rates of hospitalization for conditions that can be handled in primary care would not only contribute to better patient care and more efficient use of resources but would also reduce the financial burden on patients. Similarly, moving towards more rational use of medicines and reducing the number of prescriptions per patient would also have a positive impact on patients' financial burden.

4. Innovations and good practices

The high burden of avoidable mortality from cardiovascular disease was noted in the Manas taalimi National Sector Programme, and great efforts were made to improve the detection and management of CVD-related conditions, particularly hypertension. Studies conducted between 2006 and 2010 contributed to the understanding that success in these areas depended on a two-pronged approach: community mobilization to improve awareness, care-seeking and adherence to treatment; and improvement of standards of care for better detection and management of these conditions.

The innovations described in this section reflect this two-pronged approach. Community Action for Health Promotion (CAHP) focused on raising population awareness and developed a new approach to hypertension. The Continuous Quality Improvement Programme focused on improving standards of care and ensuring appropriate management of cardiovascular risk factors at the primary health care level, and the treatment of AMI at the hospital level. These initiatives are described below in detail. This two-pronged approach remains highly relevant today and the innovations described below need to be expanded to reach a broader population.

Community Action for Health Promotion

The CAHP programme is considered to be the main mechanism for long-term community mobilization and health promotion in Kyrgyzstan. It aims to involve communities in establishing health priorities through participatory analysis and to develop contextualized health action to address them. The CAHP programme expands the opportunities of local communities to address their primary health problems and promotes the establishment throughout the country of village health committees consisting of trained volunteers. The key partners in this process are the Ministry of Health, the primary health care organizations and the Health Promotion Service.

The programme was first launched as a pilot in 2002 in Djumgal rayon of Naryn oblast with the support of SDC, and is therefore also known as the Djumgal model. At present the CAHP programme is being implemented in almost all the regions of the country. A total of 1312 VHCs have been established in 1254 villages, i.e. more than 60% of the villages in Kyrgyzstan and 96% of those in the target areas. The programme covers 2.7 million people living in rural areas.

The main element of the CAHP model is the VHC, which – with the assistance of specialists from the health promotion offices (HPOs) of the family medicine centres – implements the various strategies for health promotion, under the name "Actions for Health". Medical professionals in the villages are also involved in implementing these Actions for Health, which allows the health promotion activities to be integrated in primary health care. Strategies for health promotion are developed by the Republican Centre for Health Promotion (RCHP), with the assistance of various international partners.

Hypertension, heart disease and disability caused by stroke have been high on the agenda of communities from the beginning, but finding the optimal role for VHCs in these areas has been a process of trial and error. In the first phase (2006), CAHP initiated action research with the VHCs using automatic blood pressure cuffs. In three regions VHCs measured the blood pressure of over 140 000 adults. The house-to-house campaign and the simple act of measuring blood pressure in itself raised awareness. It also helped to start the development of the health sector strategy on hypertension, since the action research found an average prevalence of hypertension of over 40% among adults. While the population in this action research was not representative, the high prevalence raised alarm and triggered the planning of a representative countrywide study in 2007.

In the second phase, CAHP started with a very broad approach, in which VHCs were given a number of tasks, including screening, raising awareness about generic drugs, increasing compliance, and controlling and documenting blood pressure. However, these all-in-one approaches failed because they were too complex. On the one hand, people did not like to come together in groups

and the VHCs spent more time collecting them for meetings than holding meetings. On the other hand, going regularly from house to house was a far too demanding task for a high prevalence disease like hypertension.

In the third phase, a more focused approach has been adopted. Screening was recognized as the strength of the VHCs, and it was agreed with other partners in the emerging national hypertension strategy that VHCs should focus on raising awareness about hypertension through screening. Other partners would focus on improving the quality of primary and secondary care of hypertension and its complications.

In order to focus the efforts of VHCs and attract the attention of the population, CAHP decided to concentrate screening in a hypertension action week. The project produced a one-minute television spot on the dangers of hypertension, which ended with the announcement of the "Week of Hypertension". In addition, national and local newspapers ran stories about the action week. During this week, there were numerous occasions for people to have their blood pressure measured. In urban areas, primary health care providers measured blood pressure in busy public areas, as well as in specially designated sections of their premises for anybody who came in.

Each VHC was equipped with one semi-automatic, upper-arm blood pressure monitor. The volunteers were taught how to measure blood pressure properly, document the results, and send people with high blood pressure to the nearest primary care provider. These people received a leaflet containing basic information about hypertension, on which their measured blood pressure was noted. In the latest hypertension week, 12% of the adult population was included in the screening activity (Table 8).

Table 8. Results of screening during the Week of Hypertension

	2011	2012
Number of people examined	311 342	403 717
Number of people found to have high blood pressure	13 182	22 077

Continuous quality improvement

Methodologies for continuous quality improvement (CQI) were first introduced into selected primary health care facilities in Kyrgyzstan in 2001 through the Family Medicine Department of the Kyrgyz State Medical Institute for Retraining and Continuing Education (KSMIRCE). They encompassed the main principles of patient-centred care, system and process analyses, team-based efforts, and decision-making based on data. Facilities were supported in collecting data through chart audits, facility reviews, observation of provider skills, and patient satisfaction surveys and in developing action plans based on analysis of the results. In 2005, responsibility for coordinating CQI at the primary health care level was transferred to the FGPNA and emphasis was placed

Box 1. CQI approach

1. Select topic based on national health priorities and availability of approved, evidence-based guidelines.
2. Identify standards of care in approved guidelines.
3. Use focus group to conduct system mapping and identify quality gaps.
4. Develop quality indicators and instruments:
   – checklist for essential resources;
   – data collection tool for chart audits;
   – patient satisfaction survey;
   – skills checklist (if appropriate).
5. Conduct training on standards and CQI.

on using CQI approaches to support implementation of new clinical protocols. One theme was selected each year, and a structured approach was used to develop indicators and instruments for monitoring (Box 1). The themes were hypertension in 2006 and again in 2009, asthma in 2007 and antenatal care in 2008.

Box 2. CQI indicators for hypertension, 2006

1. Percentage of adults over 18 years visiting the facility who had their blood pressure checked.

2. Percentage of medical workers who use appropriate technique to measure blood pressure.

3. Percentage of facilities that have the basic equipment necessary to screen and manage patients with hypertension.

4. Percentage of patient charts that document pertinent cardiovascular risk factors.

5. Percentage of patients with hypertension who have been counselled on non-pharmaceutical (lifestyle) interventions to lower blood pressure.

6. Percentage of patients who have been prescribed appropriate first-line medications (in accordance with the current clinical protocol).

With support from the US Agency for International Development (USAID) and SDC/Swiss Red Cross, CQI for hypertension was introduced in 386 primary health care facilities in 2006, using the indicators listed in Box 2. Significant improvements were seen over four quality improvement cycles. Figure 17 shows the impact on recorded blood pressure before and after a year of CQI cycles. Figure 19 shows changes in numbers of patients registered with hypertension, numbers of ambulance call-outs related to hypertension, and hospitalization rates for hypertensive crises; the figures suggest that CQI had a positive impact on the diagnosis and management of hypertension.

Figure 17. Systolic and diastolic blood pressure recorded in health facilities before and after one year of CQI
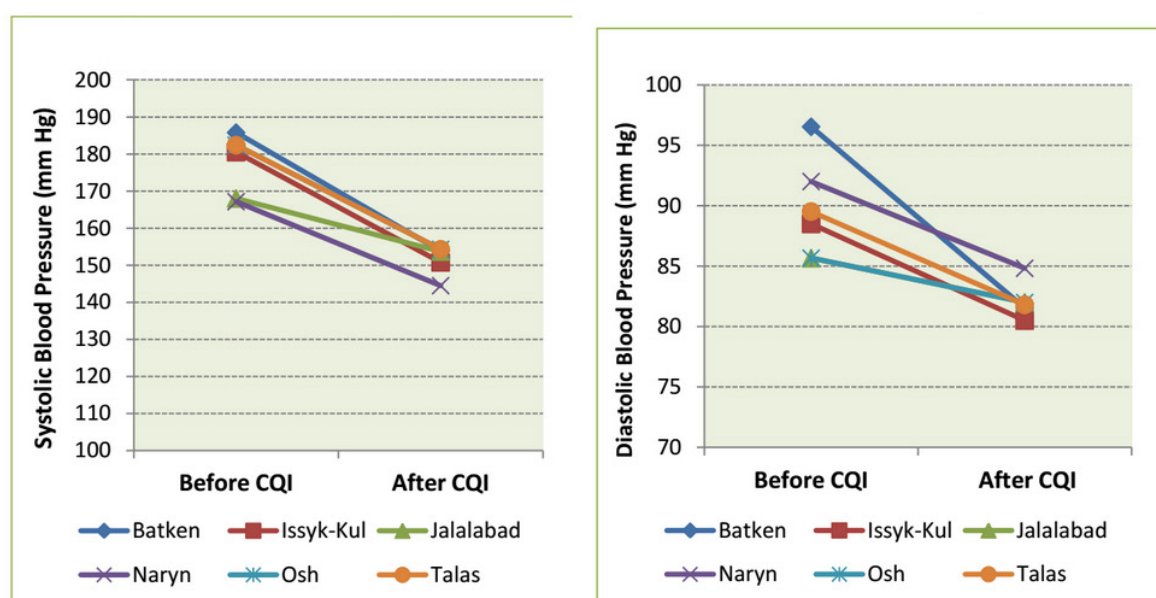
CQI approaches were later used to improve the quality of hospital management of patients with acute coronary syndrome and to introduce thrombolytic therapy for AMI at oblast- and rayon-level hospitals. Working in all Naryn hospitals, where operational research in 2007 demonstrated significant quality gaps in the management of AMI,7 USAID supported the Hospital Association of the Kyrgyz Republic in developing quality indicators (Box 3) and instruments for internal audits, using a process similar to that described for CQI at the primary health care level.

Figure 18. Registration of hypertensive patients and treatment of emergency conditions

Standards of care were taken directly from the newly approved CPGs on acute coronary syndrome and AMI developed by the NICT. The guideline developers worked closely with HAKR to prioritize indicators, develop checklists to assess skills, select "test" ECGs for assessment of interpretation skills, and conduct baseline monitoring. Clinicians actively involved in the management of

patients with AMI from each facility were given training on the new CPGs and presented with results of baseline monitoring. They were then supported to conduct problem analysis where indicators were low, and develop improvement plans. HAKR conducted quarterly visits to each facility to support providers in conducting internal audits and making follow-up improvement plans based on the results. A key intervention was the organization of a 3-week clinical practice at NICT to develop clinicians' capacity to conduct thrombolytic therapy (two providers from each facility).

The initial plan was to introduce thrombolytic therapy in only two of the five Naryn facilities (oblast merged hospital and one rayon hospital). However, a second rayon hospital expressed interest and successfully implemented thrombolysis. Each facility purchased streptokinase using existing budgets. Representative results are shown in Figure 19 and 20. Marked improvements were seen in resources, providers' skills, and service delivery coverage, leading the Ministry of Health to include expansion of this model to the remaining oblasts in the national health strategy for 2012–2016.

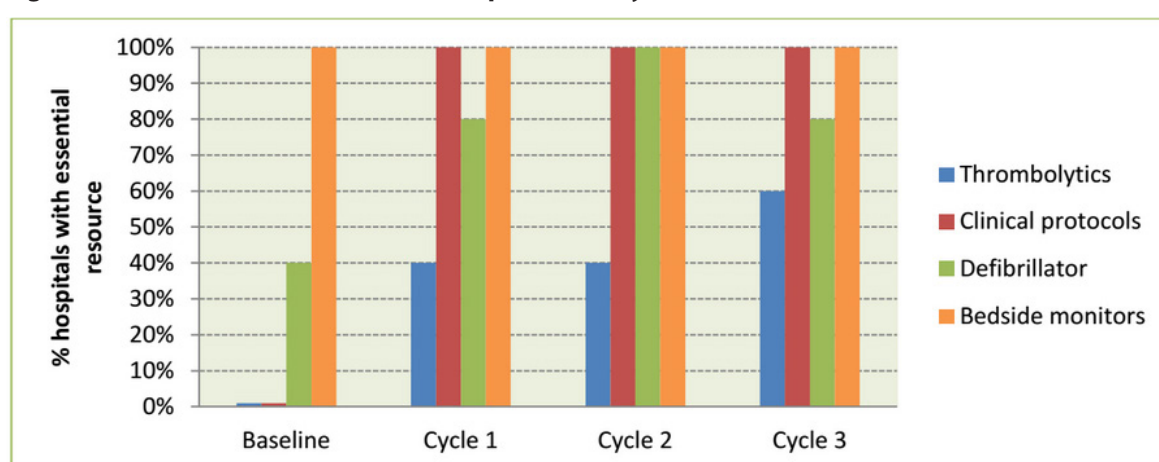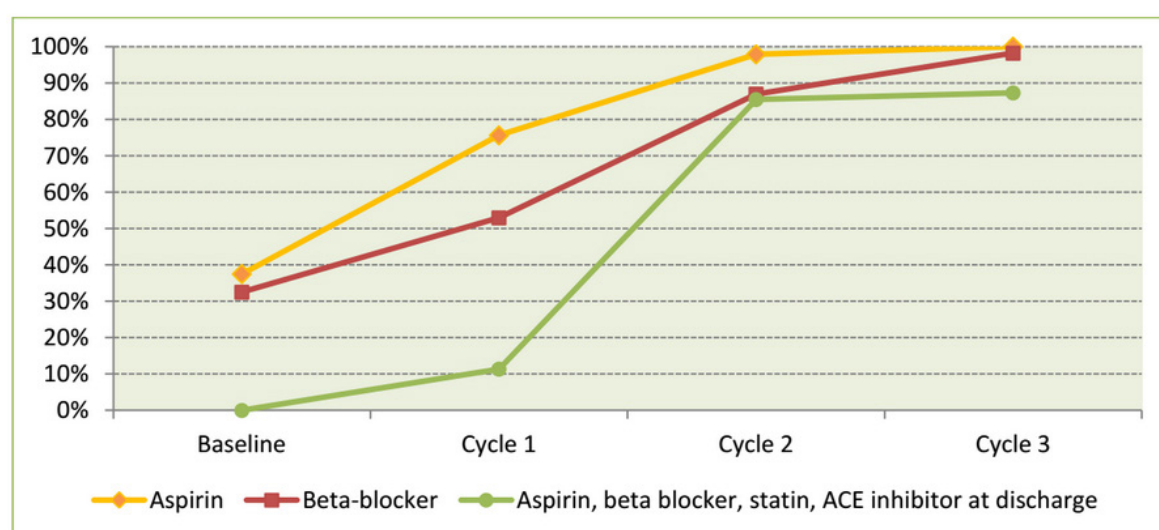**Figure 19. Essential CVD resources in hospitals in Naryn Oblast, 2011–12**

Figure 20. AMI treatment in hospitals in Naryn Oblast, 2011-12

5. Policy recommendations

A large number of policy recommendations follow from this report. The assessment team, including national counterparts and the Ministry of Health, prioritized the recommendations and agreed on three main strategic directions for the immediate future. These are described below. Detailed measures related to each of the fifteen health system barriers can be found in Table 9.

Strategic direction 1. Step-up tobacco control efforts

The greatest scope for improving cardiovascular disease outcomes in Kyrgyzstan is through a series of measures to reduce the prevalence of smoking, through better adherence to the FCTC and better enforcement of existing regulations. Given the limited capacities, it is advisable for Kyrgyzstan to focus on tobacco control measures during the period of Den Sooluk and to achieve tangible results, rather than trying to address tobacco, alcohol and nutrition simultaneously. To bring Kyrgyzstan in line with its FCTC commitments, the most urgent task is to stimulate political debate on tobacco control rather than focusing on technical discussions. It is clear what needs to be done, but all the measures require political commitment, leadership and will. The most significant actions to be given priority over the next 2–3 years are as follows.

- **Foster political support for tobacco control.** Foster political commitment to tobacco control by identifying opinion leaders willing to support control measures, enabling exchange with countries of good practice, and putting in place incentives for behaviour change.

Strategic direction 2. Further strengthen primary health care for earlier detection and better management of hypertension and diabetes

The greatest scope for improving outcomes through individual services is through further strengthening of primary health care, and further integration of the outreach services provided by village health committees into family medicine. The specific areas where improvement is needed include: (1) mainstreaming comprehensive cardiometabolic risk stratification in primary health care; (2) improving detection, registration and management of hypertension; (3) strengthening effective primary prevention in high-risk patients; and (4) strengthening effective secondary prevention after AMI and stroke.

The most significant actions to be given priority over the next 2–3 years are as follows.

- **Fine-tune the model of care.** This will involve: (a) further integrating the outreach services provided by VHCs into family medicine, particularly to strengthen coordination and follow-up of patients identified with high blood pressure; and (b) expanding the role of nurses and feldshers in detecting CVD, including carrying out and documenting comprehensive cardio-metabolic risk assessment, and participating in counselling on risk factors and other aspects of patient education (e.g. compliance with medication regime).

- **Revisit financial incentives.** Combining the currently well developed capitation mechanism with a pay-for-performance incentive could provide extra motivation to efforts to improve detection, registration and management of hypertension and diabetes, and to change the model of care. Several countries that have pay-for-performance mechanisms incorporate incentive payments for hypertension and diabetes; their experiences could be of interest for Kyrgyzstan. Further, Kyrgyzstan has already had an evaluated experience with a pay-for-performance mechanism in pilot form. The lessons learnt from that experience should be used in designing the new incentive mechanism.

- **Adjust human resource policies and training.** In changing the model of care, as described above, human resource policies should be reviewed, with a focus on redefining the role of mid-level providers and updating their training curriculum to reflect the expanded scope of work.

Strategic direction 3. Improve the response to acute complications of CVD (heart attack and stroke) and strengthen secondary prevention in secondary care.

The challenges to achieving extensive coverage of acute care after heart attack or stroke are significant and major investments are required to overcome them. It is critically important to recognize that investments alone will not lead to desired outcomes, unless actions are taken to improve patient engagement, service delivery models, regionalization of services, and capacity of ambulance staff and hospital providers. The most significant actions to be given priority over the next 2–3 years are as follows.

- **Improve first response (response time and quality of care) after suspected AMI and stroke.** This can be achieved through population education about symptoms of AMI and stroke, strengthening the capacity of the ambulance services, standardizing pre-hospital care, equipping ambulances with ECGs, defibrillators, pulse oximeters, and glucometers. The possibility of transmitting ECG traces from ambulances to the receiving hospital via cell telephone should be explored, to facilitate pre-hospital administration of medications. Ambulance feldshers should receive regular continuing medical education, with priority given to CVD care. To strengthen monitoring, health coordinators should be required to report on ambulance response times and content of care indicators for call-outs for chest pain.

- **Expand thrombolytic therapy.** Roll out the pilot-tested and evaluated Naryn model for rayon-level thrombolytic therapy. Apply and promote facility-based audits of CVD service delivery, using the Naryn model, with quality indicators based on national clinical practice guidelines. Consider brief (1–3 months) cross-training of internists (therapists), so that they can provide cardiology care in rayons without cardiologists, with additional support from oblast-level cardiologists.

Table 9. Summary of recommendations in relation to the fifteen health system challenges and opportunities

	Strategic direction 1. Step up tobacco control efforts	Strategic direction 2. Further strengthen primary health care for earlier detection and better management of hypertension and diabetes	Strategic direction 3. Improve the response to acute complications of CVD (heart attack and stroke) and strengthen secondary prevention in secondary care
Political commitment	Establish measures at central Government level to prevent the tobacco industry interfering with the enforcement of the FCTC; ensure that all interactions with the industry are transparent. Develop a long-term plan for a stepwise increase in tobacco taxes to 70% of retail price by 2020 and include it in the new government programme.		
Explicit priority-setting	Introduce an explicit budget line for implementation of tobacco control measures in line with the FTCT; discuss possible ways of having joint budgets across responsible ministries.		
Interagency cooperation	Strengthen the role, functions, and executive power of the intersectoral Public Health Committee and the intersectoral Coordination Council to Control Smoking.		
Citizen empowerment	Create a supportive environment for civil society to participate in the design and implementation of anti-tobacco measures.	Conduct a public education campaign, involving VHCs, to raise awareness that hypertension is a "silent killer", that all adults should have periodic screening, and that patients should take their medication daily, regardless of how they feel. Consider implementing financial disincentives for high-risk patients who continue to smoke. Use public education campaigns to raise awareness of the need for lifelong treatment to prevent the recurrence of heart attacks and strokes.	Conduct public education campaigns to raise awareness of AMI and stroke symptoms, emphasizing the need to seek medical care urgently.

Category			
Effective model of service delivery	The management of patients with suspected AMI at the pre-hospital level should be standardized, using straightforward, algorithm-based protocols; all ambulances should be equipped with ECG, defibrillator, pulse oximeter, and glucometer. Cardiac enzyme analysis should be available in all hospitals.		Establish mandatory nurse check-in of all patients in primary health care facilities. Check-in at every visit should include blood pressure measurement, weight (with calculation of body mass index), tobacco use screening, and assessment of compliance with prescribed medications. Expand scope of work of FAP providers to diagnose and manage stage 1 hypertension in low-risk patients without physician consultation, using simple, algorithm-based protocols.
Coordination across providers			Use internal audit system at primary care level to ensure that VHCs transmit names of patients with high blood pressure and that those patients are quickly followed up.
Regionalization	Implement Den Sooluk plans to expand the Naryn model for introduction of thrombolytic therapy at rayon level. Develop and implement a regionalization strategy for management of stroke patients. Develop a transparent and equitable policy for rationalization of limited funds for PTCA/stenting.		
Integration of evidence into practice			
Access to quality medicines			Conduct feasibility analysis of providing hypertensive patients with free or cheap anti-hypertensives. Consider adding statins to ADB.
Incentive systems	Ensure health financing mechanisms are in place to reimburse hospitals for short (12–48 hours) hospitalizations for observation of patients with chest pain to rule out or confirm myocardial infarction, using serial laboratory tests and ECG.	Consider regional competitions at rayon or oblast level for reduction in smoking prevalence, with a reward.	Provide incentives to primary health care providers to (1) register patients with hypertension, and (2) manage low- and moderate-risk patients with hypertension without involving a cardiologist (consider fee-for-service or bonus model administered by MHIF). Consider brief (1–3 months) cross-training of internists (therapists) to provide cardiology care in rayons without cardiologists, with additional support from oblast-level cardiologists. Ensure regular continuing medical education for ambulance feldshers, with priority given to CVD care.

Distribution and mix of human resources	Expand role of mid-level providers. Empower nurses to collect and document the information listed above in the standard ambulatory medical record and to contribute to risk factor counselling and patient education during patient check-in. Ensure feldshers and nurses at FAPs conduct similar screening and documenting in a standard health record. Update nurse and feldsher training programmes (nursing school curricula and continuing medical education) to reflect expanded scope of work. Conduct continuing medical education to train primary health care providers in tobacco cessation; integrate training modules into medical education and internship/residency curricula. Raise awareness of standards of secondary prevention among all primary health care providers, including feldshers, through effective continuing medical education programmes; ensure integration of new clinical practice guidelines in medical education and internship/residency curricula.	Consider brief (1–3 months) cross-training of internists (therapists) to provide cardiology care in rayons without cardiologists, with additional support from oblast-level cardiologists. Ensure regular continuing medical education is provided to ambulance feldshers, with priority given to CVD care.
Effective management	Use Den Sooluk mechanisms to require health managers to carry out internal audits to track and report on coverage and quality of CVD risk factor screening and documentation. Through Den Sooluk, raise awareness among health managers that increased registration of patients with hypertension should be encouraged, not punished. Require health managers to conduct internal audits on hypertension, using indicators previously introduced through FGPNA and encourage internal recognition of high-performing clinicians. Through Den Sooluk, require health managers to coordinate periodic internal audits on management of patients with prior AMI or stroke.	Use Den Sooluk mechanisms to promote facility-based audits of CVD service delivery, using Naryn model, with quality indicators based on national clinical practice guidelines. Require health coordinators to report on ambulance response times and content of care indicators for calls related to chest pain.

Adequate information solutions	Prioritize wide-scale implementation of the revised standard ambulatory record in all primary health care facilities to facilitate documentation and tracking of CVD risk factors. Include a disease-specific flowsheet for hypertension. Use disease-specific flowsheet for ischaemic heart disease.	Options should be explored for transmission of ECGs from ambulances to the receiving hospital via cell telephone, to facilitate pre-hospital administration of medications.
Managing change	Foster political commitment to tobacco control by identifying key supporters; provide opportunities for exchange with other countries that have applied inspiring models, e.g. Turkey and Ukraine; conduct campaigns to influence public opinion.	
Ensuring access and financial protection		Use internal audits and MHIF quality assurance reviews to track prescription of commonly used non-evidence-based medications for management of inpatients with AMI, stroke, acute coronary syndrome or unstable angina, to reduce out-of-pocket expenses for patients.

Annex 1. Country subgroups

The country subgroups mentioned in this guide reflect those defined in the Health for All database, as outlined below.

- EU-15: the 15 Member States that belonged to the European Union (EU) before 1 May 2004: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom.

- EU-12: the 12 new Member States that joined the EU in May 2004 or in January 2007: Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia and Slovenia.

- CIS (Commonwealth of Independent States until 2006): Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, the Republic of Moldova, the Russian Federation, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

Annex 2. Hypertension prevalence, awareness, and treatment

Two nationally representative household surveys in Kyrgyzstan have established that there is a high prevalence of elevated blood pressure, which contributes to the high premature mortality from CVD.[d,e] The crude prevalence of high blood pressure among the population aged 18 years and older was estimated at 28% in 2007 and 24% in 2010.[f] Prevalence was slightly higher for women than for men.[g]

The surveys found that both awareness and adherence to treatment were low, so that the overall effectiveness of treatment was poor[h] (Figure A2.1). Only 26% of those with high blood pressure in 2006 were aware of their condition. On a positive note, this proportion increased substantially between 2006 and 2009, indicating that the Community Action for Health Promotion and primary health care quality improvement processes implemented during Manas taalimi had been successful (see section 4). Adherence to treatment was poor, with only 14% of those with high blood pressure having taken all their medications in the previous 24 hours in both survey years. The factors behind these figures are complex, but can be traced back to a poor general understanding of hypertension as a chronic condition, practice patterns and a poor quality of generic medicines (see also section 3).

There is an important gender aspect to hypertension outcomes, with men at a disadvantage compared with women and with a higher premature CVD mortality (Figure A2.2). While hypertension prevalence is slightly higher among women than men, twice as many women as men are aware of their own high blood pressure: 42.4% in 2009 compared with only 20.4% of men. Not surprisingly, this gap in awareness translates into gaps in treatment and effectiveness. Only 15.1% of men with high blood pressure had taken their antihypertensive medicines in the previous 24 hours as opposed to 36.6% of the women. These differences in awareness and treatment adherence translate into a large difference in controlled hypertension – 1.2% for men and 3.7% for women.

Improving the detection and management of hypertension is a key priority in Den Sooluk, through a mix of population interventions and individual services. However, the measures are not gender-sensitive and there are no specific approaches to increase awareness and treatment among men. Den Sooluk programmes use a balanced approach that includes risk factor control, mass media messages, Community Action for Health Promotion, improving health facility-based detection and disease management. The indicators cited above have been included in the Den Sooluk joint assessment framework and will be followed through two consecutive household surveys scheduled for 2014 and 2016.

[d] National Statistical Committee. (2007). Kyrgyz Integrated Household Survey 2007. Health Module. (Datafile and codebook)

[e] National Statistical Committee. (2010). Kyrgyz Integrated Household Survey 2010. Health Module. (Datafile and codebook)

[f] This is a crude estimate. If prevalence is standardized to the world population, it comes to 31%.

[g] Jakab M, Lundeen E, Akkazieva B. Health system effectiveness in hypertension control in Kyrgyzstan. Health Policy Analysis Centre, November 2007 (Policy Research Paper No. 44).

[h] These are internationally accepted indicators of effective detection and management of hypertension gathered from survey data. See Jakab, Lundeen, Akkazieva above in reference (g).

Figure A2.1 Awareness, treatment adherence, and effectiveness of treatment among patients with hypertension
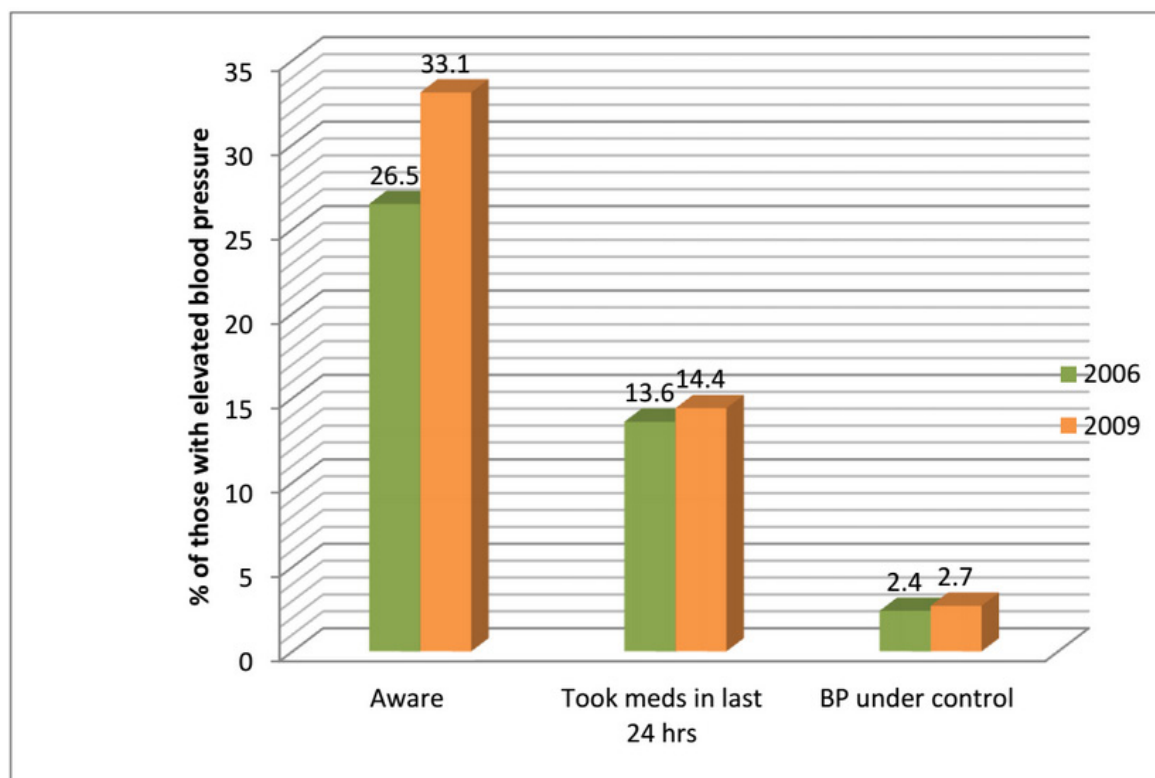
Source: WHO staff calculations based on unpublished data from the Kyrgyz Integrated Household Survey 2007 and 2010.

Figure A2.2. Hypertension outcomes and gender
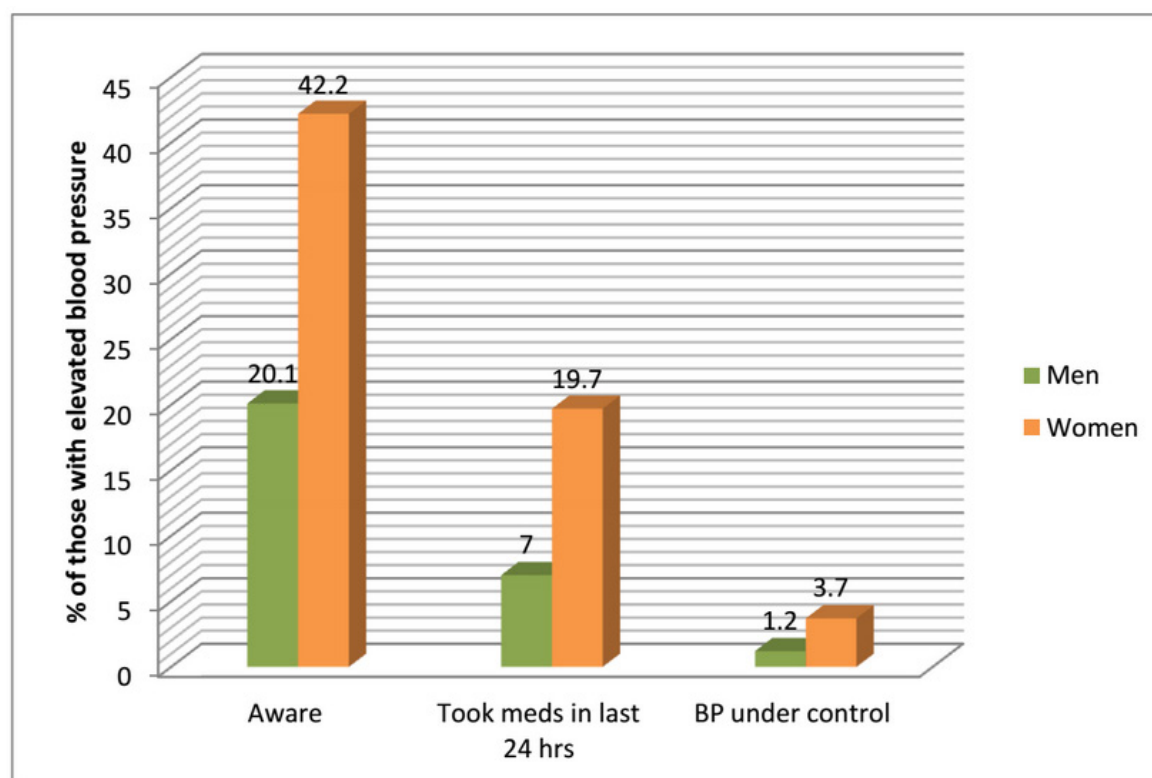
Source: WHO staff calculations based on unpublished data from the Kyrgyz Integrated Household Survey 2007

Annex 3. Summary of challenges to scale up

Scoring of challenges 1. Minor 2. Moderate 3. Major 4. Major persistent	1. Commitment	2. Priority-setting	3. Interagency cooperation	4. Citizen empowerment	5. Model of service delivery	6. Coordination across providers
Range of anti-smoking interventions (FCTC)	**16**	**16**	**17**	**10**	**7**	
Raise tobacco taxes	4	4	4	2	1	
Smoke-free environments	4	4	4	2	1	
Warnings of dangers of tobacco and smoke	3	3	4	2	1	
Bans on advertising, promotion, sponsorship	2	2	2	1	1	
Quit-lines and nicotine replacement therapy (NRT)	3	3	3	3	3	
Interventions to improve diet and physical activity	**18**	**18**	**16**	**12**	**11**	
Reduce salt intake and salt content in foods	3	3	3	3	2	
Virtually eliminate *trans-fatty* acids from the diet	4	4	3	2	2	
Reduce free sugar intake	3	3	2	1	2	
Increase intake of fruit and vegetables	4	4	4	2	2	
Reduce marketing pressure to children	3	3	3	2	1	
Promote awareness about diet and activity	1	1	1	2	2	
Interventions to prevent harmful alcohol use	**16**	**16**	**19**	**6**	**-**	
Raise taxes on alcohol	2	2	3	1	-	
Restrictions, bans on advertising and promotion	4	4	1	0	-	
Restrictions on availability of alcohol in retail sector	4	4	1	0	-	
Minimum purchase age regulation and enforcement	2	2	4	1	-	
Allowed blood alcohol level for driving	1	1	1	1	-	
Multisectoral policy development	3	3	3	1	-	
Salience of barrier (total)	**50**	**50**	**52**	**28**	**18**	

core population interventions for NCDs

7. Regionalization	8. integration of evidence into practice	9. Access to quality medicines	10. Incentives	11. Human resources	12. Management	13. Information systems	14. Resistance to change	15. Access and financial burden
			6	**7**	**8**	**5**	**14**	**7**
			1	1	1	1	4	1
			1	1	4	1	3	1
			1	1	1	1	3	1
			1	1	1	1	2	1
			2	3	1	1	2	3
			14	**12**	**12**	**-**	**14**	**-**
			2	2	2	-	2	-
			2	2	2	-	2	-
			2	2	2	-	2	-
			2	2	2	-	2	-
			3	1	1	-	3	-
			3	3	3	-	3	-
			8	**6**	**6**	**-**	**13**	**-**
			1	1	1	-	2	-
			1	1	1	-	2	-
			1	1	1	-	2	-
			3	1	1	-	3	-
			1	1	1	-	1	-
			1	1	1	-	3	-
			28	**25**	**26**	**5**	**41**	**7**

Annex 4. Summary of challenges to scale up

Scoring of challenges 1. Minor 2. Moderate 3. Major 4. Major persistent	1. Commitment	2. Priority- setting	3. Interagency cooperation	4. Citizen empowerment	5. Model of service delivery	6. Coordination across providers
CVD and diabetes						
Risk stratification in primary health care				2	2	2
Effective detection and management of hypertension				3	4	3
Effective primary prevention in high-risk groups				3	2	3
Effective secondary prevention after AMI including acetylsalicylic acid				3	2	2
Rapid response and secondary care after AMI and stroke				3	4	2
Total				**14**	**14**	**12**

core individual services for NCDs

7. Regionalization	8. integration of evidence into practice	9. Access to quality medicines	10. Incentives	11. Human resources	12. Management	13. Information systems	14. Resistance to change	15. Access and financial burden
1	2	1	3	4	3	3	3	2
1	2	2	4	4	4	3	3	3
1	2	4	3	4	3	3	2	3
1	2	3	3	4	3	3	3	3
3	2	3	3	4	3	2	3	4
7	**10**	**13**	**16**	**20**	**16**	**14**	**14**	**15**

References

[1] *Better noncommunicable disease outcomes: challenges and opportunities for health systems.* Copenhagen: WHO Regional Office for Europe; 2014.

[2] *Global action plan for the prevention and control of noncommunicable diseases 2013-2020.* Geneva: World Health Organization; 2013.

[3] *WHO Framework Convention on Tobacco Control.* Geneva: World Health Organization; 2013. (http://www.who.int/fctc/text_download/en/)

[4] Jakab M, Lundeen E, Akkazieva B. *Health system effectiveness in hypertension control in Kyrgyzstan.* Bishkek: Health Policy Analysis Centre, November 2007 (Policy Research Paper No. 44).

[5] National Statistical Committee. (2007). *Kyrgyz Integrated Household Survey 2007. Health Module.* (Datafile and codebook)

[6] National Statistical Committee. (2010). *Kyrgyz Integrated Household Survey 2010. Health Module.* (Datafile and codebook)

[7] Akunov N et al. *Quality of treatment and prevention of cardiovascular disease in the Kyrgyz Republic.* Bishkek: Health Policy Analysis Unit, 2007 (Policy Research Paper No. 45).

[8] Roberts MJ, Stevenson MA. *Better Noncommunicable Disease Outcomes: Fifteen Challenges and Opportunities for Health Systems.* Copenhagen: WHO Regional Office for Europe, 2014 (forthcoming).

[9] Abdraimova A, Beran D. *Rapid Assessment Protocol for Insulin Access in Kyrgyzstan.* Bishkek: Health Policy Analysis Center, 2009. (Policy Research Paper Series No. 66.) (http://www.hpac.kg/images/pdf/prp66_eng.pdf)

[10] Mukeeva S, Abdraimova S, Urmanbetova A. *Evaluation of PHC specialists' roles and functions in CVD management.* Bishkek: Health Policy Analysis Center, 2013 (Policy Research Paper Series No. 81)

[11] World Health Organization, Health Action International Global. 2008

[12] *Needs assessment for implementation of the WHO Framework Convention on Tobacco Control in the Kyrgyz Republic. Mission Report.* Geneva: World Health Organization. FCTC Secretariat. August 2012

[13] Kupadze A with reference to Tobacco Control Resource Centre (http://contact.tobinfo.org/2003/02/kg-030224.htm).

[14] Aleshkina J, Akkazieva B, Jakab M. *Access to healthcare services and out-of-pocket payments in Kyrgyzstan: household survey from 2001 to 2010.* Bishkek: Health Policy Analysis Research Centre, 2011 (Policy Research Paper No. 76). (http://www.hpac.kg/images/pdf/prp76kihs_eng.pdf)

Member States

Albania
Andorra
Armenia
Austria
Azerbaijan
Belarus
Belgium
Bosnia and Herzegovina
Bulgaria
Croatia
Cyprus
Czech Republic
Denmark
Estonia
Finland
France
Georgia
Germany
Greece
Hungary
Iceland
Ireland
Israel
Italy
Kazakhstan
Kyrgyzstan
Latvia
Lithuania
Luxembourg
Malta
Monaco
Montenegro
Netherlands
Norway
Poland
Portugal
Republic of Moldova
Romania
Russian Federation
San Marino
Serbia
Slovakia
Slovenia
Spain
Sweden
Switzerland
Tajikistan
The former Yugoslav Republic
  of Macedonia
Turkey
Turkmenistan
Ukraine
United Kingdom
Uzbekistan