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Better noncommunicable disease outcomes: challenges and opportunities for health systems

Country assessment

ARMENIA

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Abstract

Like many countries Armenia is facing a growing noncommunicable disease (NCD) burden. This report examines the opportunities and challenges for Armenia to accelerate improvement in cardiovascular and diabetes outcomes.

Significant progress on population-level prevention is required and efforts and enforcement modalities for alcohol and tobacco control could be stepped up. Obesity is a growing challenge yet interventions to improve diet and physical activity are limited. A multisectoral platform backed up by targets, monitoring and accountability would help overcome sectoral segmentation in the public administration. Organization of general practitioner services create a good platform for the detection and management of NCDs, although fragmentation of patient care between providers needs to be overcome. Nurses could be better used throughout the system particularly in counselling and management of patients with chronic conditions. Public spending on health care is relatively low. Increasing health care spending requires raising more funds to be spent on health services, for example through earmarked taxes, and freeing up resources through more efficient and effective use of existing resource.

Keywords

CHRONIC DISEASE
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Acronyms and abbreviations

AMI	acute myocardial infarction
BBP	basic benefit package
CIS	Commonwealth of Independent States
CVD	cardiovascular diseases
EDRC	Economic Development and Research Center
EMS	emergency medical services
ESC	European Society of Cardiology
EU	European Union
FAO	Food and Agricultural Organization of the United Nations
GDP	gross domestic product
HIAC	Health Information Analytical Center
HSPA	health system performance assessment
IAEA	International Atomic Energy Agency
IARC	International Agency for Research on Cancer
IHME	Institute for Health Metrics and Evaluation
MTEF	medium-term expenditure framework
NCDs	noncommunicable diseases
NCDCP	National Center for Disease Control and Prevention
NGO	nongovernmental organization
NIH	National Institute of Health
NRT	nicotine replacement therapy
PCI	percutaneous coronary intervention
PHC	primary health care
SAN-EPID	sanitary epidemiological service
SCDMTE	Scientific Centre of Drug and Medical Technology Expertise
USAID	United States Agency for International Development
WHO FCTC	WHO Framework Convention on Tobacco Control

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Introduction and rationale

Noncommunicable diseases (NCDs) are the leading cause of death, disease and disability in the WHO European Region. The four major NCDs (cardiovascular diseases (CVD), cancer, chronic obstructive pulmonary diseases and diabetes) account for the vast majority of the disease burden and of premature mortality in the Region. In Europe, NCDs (more broadly defined) account for nearly 86% of deaths and 77% of the disease burden, putting increasing strain on health systems, economic development and the well-being of large parts of the population, in particular people over 50 years of age (WHO Regional Office for Europe, 2014c).

NCDs also have a significant macroeconomic impact and exacerbate poverty (Bloom et al., 2011). Most NCDs are chronic and require repeated interactions with the health system and recurring and continuous medical expenses, often requiring catastrophic, impoverishing expenditure. It has been estimated that the loss of productivity due to NCDs is significant: for every 10% increase in NCD mortality, economic growth is reduced by 0.5%.

Several policy documents have called for a comprehensive health system response to reduce the NCD burden; however, there is a lack of pragmatic implementable policy recommendations on which such a response should be based.

This country assessment is part of a project of the WHO Regional Office for Europe to increase support to Member States for strengthening their health systems for better NCD outcomes. In Armenia, the country assessment is timely as it coincides with the development of a NCD action plan and could inform its development.

Twelve assessments have been conducted to date, in Armenia, Belarus, Croatia, Estonia, Hungary, Kazakhstan, Kyrgyzstan, Portugal, the Republic of Moldova, Tajikistan, the former Yugoslav Republic of Macedonia and Turkey. The same approach and multidisciplinary assessment teams were used for all the country assessments, which are based on a structured guide outlined in a background paper on the role of health systems in reducing NCDs (WHO Regional Office for Europe, 2014a). While the same guide was used for all the country assessments, the recommendations can be revised to meet the requirements of each country.

The objectives of this country assessment are twofold. The first is to identify factors that limit use of the Armenian health system to its full potential, to form the basis for pragmatic, contextualized, useful policy recommendations for health system strengthening to improve NCD outcomes in Armenia. The assessment and its policy recommendations indicate the elements of a comprehensive NCD action plan, which will integrate existing actions. Secondly, as part of a regional project, the assessment will contribute to understanding and experience in the Region on common health system challenges, opportunities for NCD control and promising approaches to tackling NCDs and related issues. To meet these objectives, a multidisciplinary WHO expert team visited Armenia on 8–12 June 2015 and met with a wide range of experts and others involved in NCDs in the country.

Consultations were held in several departments of the Ministry of Health, the National Institute of Health, the State Health Agency, the National Center for Disease Control and Prevention, Yerevan State Medical University named after Mkhitar Heratsi, the American University of Armenia, medical centres and ambulatories in the Ararat and Aragatsotn regions, as well as a medical centre and emergency service in Yerevan, nursing and patient organizations and the World Bank. Presentations, small group discussions and individual interviews were used to share information, review data, identify successes and challenges and build consensus on key points in the assessment. During these visits, team members gathered first-hand impressions and compared information from documents, discussions and presentations with the reality on the ground. Initial impressions formed during the visit and a summary of the findings were presented to the Ministry of Health.

The first section of the report outlines trends in NCD outcomes in Armenia. The second section reports an assessment of the coverage of the core population-based interventions and individual services for NCDs, and the third presents health system achievements and barriers for NCD interventions and services. The fourth section concludes the report with policy recommendations.

1. Noncommunicable disease outcomes

As of January 2015, the resident population of Armenia was 3 010 600, with those over 65 years comprising 10.7% of the population and children under 16 years comprising 19.1%. Official population estimates are based on the 2011 census data; compared with the 2001 census, the overall estimated inter-census decrease in the total number of residents due to migration was about 320 000. There have been concerns in the past that population figures did not take into account the very high levels of undocumented emigration, particularly labour migration to the Russian Federation (WHO Regional Office for Europe, 2009). If so, the overestimating of population size is a source of error for mortality and morbidity indicators.

In 2014, 27 774 deaths were officially recorded in Armenia, of which 80% were among persons aged 60 years or over. Problems with completeness of mortality data and accuracy of cause-of-death certification have been noted in the past (WHO Regional Office for Europe, 2009), but improvements have been made. Implementation of an electronic system for recording deaths is currently underway. Data on death cases is collected based on medical certifications, which is in line with international requirements; each death is coded according to the *International Classification of Diseases, tenth revision* (ICD-10) (WHO, 1990). In general, all deaths in Armenia are medically certified as part of civil registration.

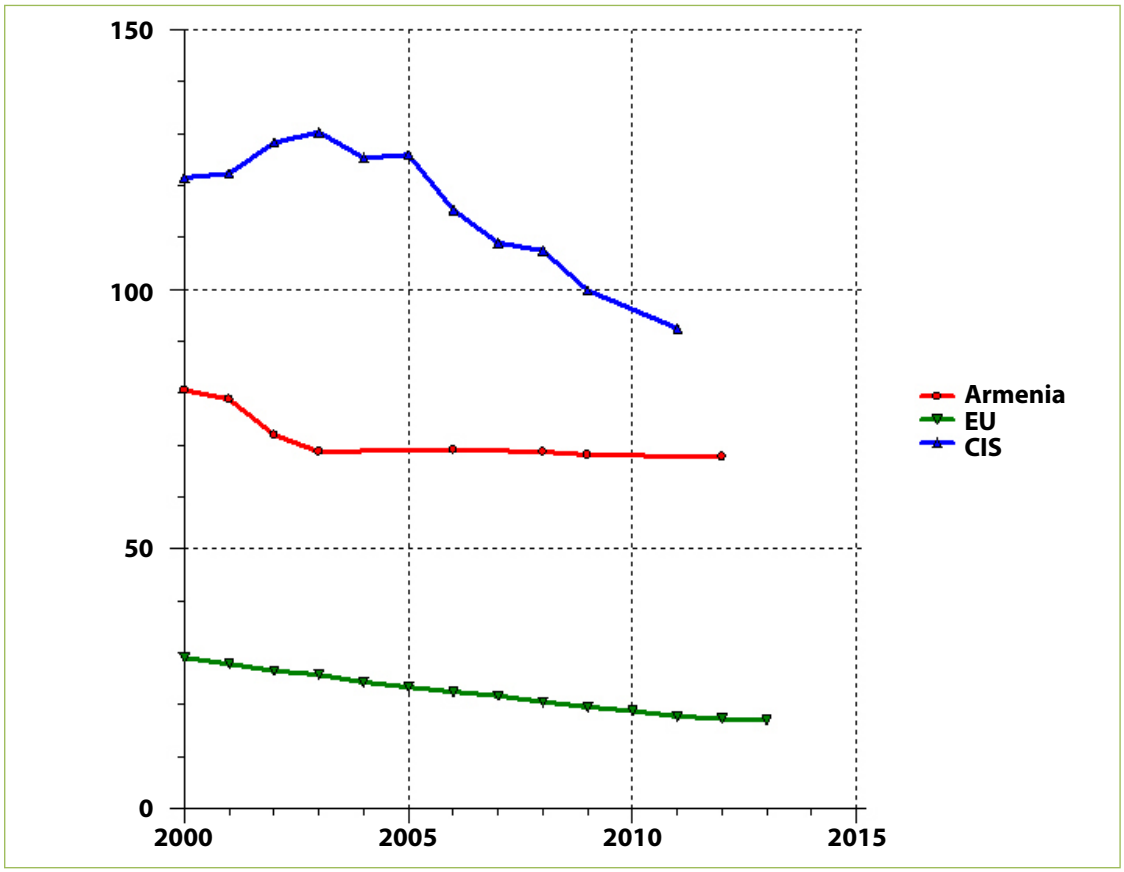
By 2024, the proportion of deaths with ill-defined codes will be reduced by 2%. According to official data, 2.6% of deaths registered in 2014 were classified as "unspecified and unknown causes of death" (according to definitions set by Chapter XVIII of ICD-10) and 1.4% of deaths were coded as "unspecified and unknown", that is, registered on the basis of court decision rather than medically certified.

National statistics showed that in 2014 average life expectancy at birth was 71.8 years for men and 78.1 years for women (National Statistical Service, 2015). However, this is likely to be an overestimate due to the fact that Armenian public agencies do not have the capacity to ensure accurate estimation of deaths of citizens –working outside the territory of the country, so this indicator is not reliable when conducting health status analysis. Life expectancy at birth in Armenia is considerably higher than the average for countries of the Commonwealth of Independent States (CIS). However, while Armenians are living longer, they do so in poor health (WHO Regional Office for Europe, 2015). Disability-adjusted life expectancy in Armenia was 63.1 years for men and just 59.1 years for women in 2007 (WHO Regional Office for Europe, 2015).

Nevertheless, Armenia's health care system is still struggling to effectively respond to the **epidemiological changes in morbidity and mortality patterns in recent years with NCDs rising in prominence**. The greatest burden of disease now comes from NCDs with circulatory system diseases, accounting for nearly 47.7% of all deaths in the country and malignancies covering 20.6% of all deaths (National Statistical Service, 2015).

Ischemic heart diseases (ICD-10 codes I20–I25), in particular myocardial infarction and angina, are the leading causes of death. Statistical data for the latest decade shows a stable ischemic heart disease mortality rates. Fig. 1 shows how ischemic heart disease mortality trends compared with the European Union (EU) and the CIS countries.

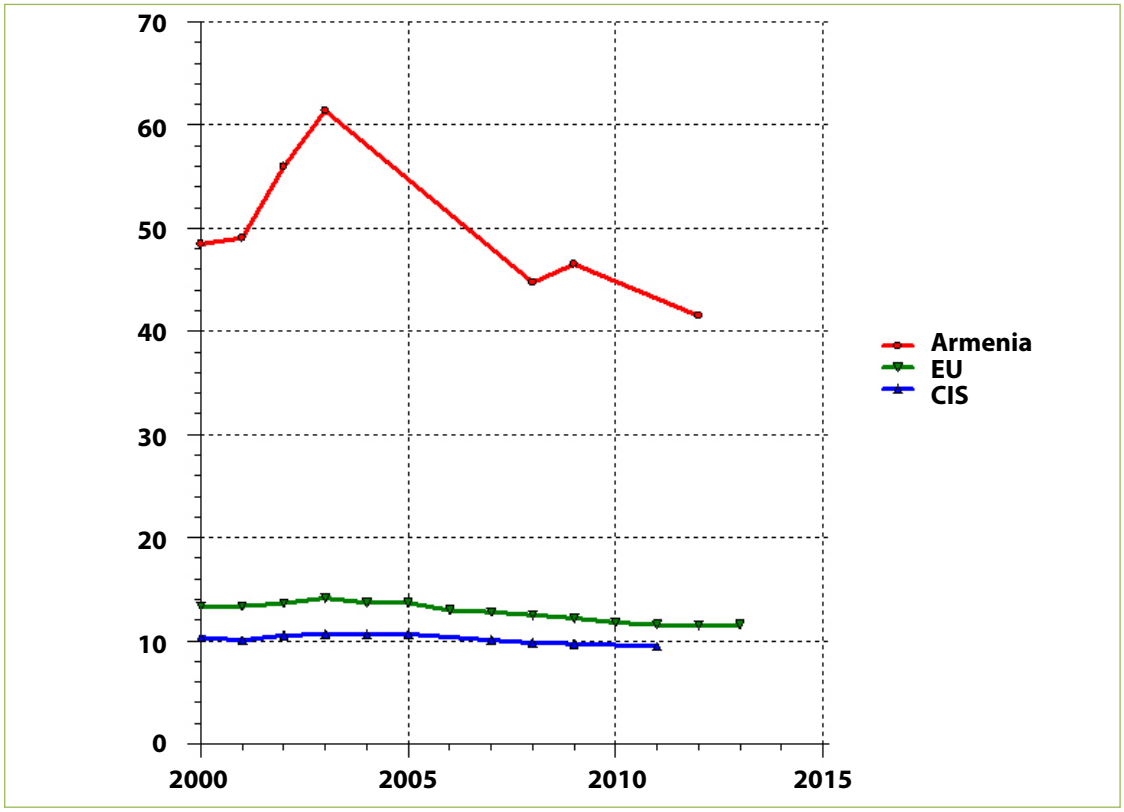
Fig. 1. Standardized death rate, ischaemic heart disease, ages 0–64 years, per 100 000 population



Source: WHO Regional Office for Europe, 2015.

Diabetes mellitus is one of the top five causes of years lived with disability. Its prevalence grew by 90% (1.9 times or by 32 347 cases); the incidence increased 1.8 times (by 3796 cases), whereas the mortality rate tripled (increased by 810 cases) (Fig. 2).

Fig. 2. Standardized death rate, diabetes mellitus, all ages, per 100 000 population



Source: WHO Regional Office for Europe, 2015.

Mortality rates from cancers are increasing although this may be in part related to the ageing population structure: as of early 2013, one tenth (10.6%) of the population was aged 65 years or above. Leading cancers for women are breast, corpus uteri, colorectal, cervix uteri and lung. Leading cancers for men are lung, prostate, bladder, stomach and colorectal (International Agency for Research on Cancer (IARC), 2010).

In terms of the number of years of life lost due to premature death in Armenia, ischemic heart disease, cerebrovascular disease, trachea, bronchus and lung cancers were the highest ranking causes in 2010.

The Global action plan for the prevention and control of NCDs 2013–2020 calls for a 25% reduction in selected outcome indicators by 2025 (WHO, 2013a). Current trends suggest that this target may be feasible for CVD targets but a challenge in the areas of cancer and diabetes. Major health gains are possible with low-cost interventions at population-based and individual levels; increased coverage of core interventions to support a reduction in tobacco and alcohol use; a reduction in salt consumption; an increase of physical activity; the treatment of risk factors for CVD, diabetes and cancer at primary care level; early detection; and better management of acute episodes, such as heart attack and stroke.

2. Coverage of core NCD interventions and services

This section explores coverage of core population-based interventions related to tobacco, alcohol and nutrition, and the individual services related to CVD, diabetes and cancer (Table 1). Core services are evidence-based, high-impact, cost-effective, affordable and feasible activities in a variety of health systems comprising population-based interventions and individual services. The core services reviewed in the country assessments are closely linked to the *Global action plan for the prevention and control of NCDs 2013–2020* (WHO, 2013a). A standard set of core interventions and services are used for all country assessments.

Each intervention and service was evaluated by the assessment team on a three-point scale: limited, moderate or extensive. The scoring criteria for population based interventions, prepared by WHO, are listed in Annex 1.

Table 1: Core population-based interventions and individual services to improve the outcomes of NCDs

Population-based interventions	Individual services
• **Range of anti-smoking interventions**[a] – Raise tobacco taxes to reduce affordability – Smoke-free environments – Warning about the dangers of tobacco and tobacco smoke – Bans on advertising, promotion and sponsorship – Quit-lines and nicotine replacement therapy	• **CVD and diabetes – first line** – Risk stratification in primary health care (PHC) – Effective detection and management of hypertension, cholesterol, and diabetes through multidrug therapy based on risk stratification – 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[b]
• **Interventions to prevent harmful alcohol use** – Raise taxes on alcohol – Restrictions or bans on advertising and promotion – Restrictions on the availability of alcohol in retail sector – Minimum purchase age regulation and enforcement – Allowed blood alcohol level for driving[b]	• **Diabetes** – Effective detection and general follow-up[b] – 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[b] – Increase intake of fruit and vegetables – Reduce marketing pressure of food and non-alcoholic beverages to children[b] – Promote awareness about diet and physical 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

[a] As outlined in the WHO Framework Convention on Tobacco Control (WHO FCTC).

[b] Indicates interventions are services added to the list of the *Global action plan for the prevention and control of NCDs203–2020* to allow a more comprehensive assessment (WHO Regional Office for Europe; 2013a).

2.1 Population-based interventions

Armenia has made some key steps towards implementing many of the core population-based interventions for NCD prevention.

The Ministry of Health of Armenia makes continuous efforts to ensure high-quality and accessible health care services are provided to the population, in line with the Tallinn Charter: Health Systems for Health and Wealth, and Health 2020. Reforms for better health of the population have been undertaken in recent years; in particular, they have been aimed at reducing the burden of NCDs, and promoting a healthy lifestyle. With the support of the Ministry of Health of Armenia, WHO and the World Bank, the Department for Health System Performance Assessment (HSPA) was established within the National Institute of Health (NIH) Health Information Analytical Center (HIAC) in 2007. The HSPA Department has been assessing Armenia health system performance since 2007, and the assessment results were published in six national reports. Studying the prevalence of NCD risk factors is one of the HSPA priorities, and for this purpose three sample surveys have been performed so far (in 2007, 2009 and 2012). The HIAC collects and analyses NCD morbidity and mortality data reported by health care facilities in Armenia. The results of this analysis are published in the annual "Health and Health Care" bulletin.

However, significant progress on population-level prevention has not been made despite three separate national strategic programmes (with their respective action plans, timelines and budgetary allocations) adopted by the Government Protocol Decree No. 11, issued 24 March 2011, in order to achieve the goals set in Government Protocol Decree No. 3 on "Approval of the Concept Note on Prevention, Early Detection and Treatment of the most Common NCDs and the Action Plan that Ensures Implementation of this Concept" to tackle the three NCDs with highest mortality rates in the country (CVD, cancers and diabetes).

The National Center for Disease Control and Prevention (NCDCP) was established in 2014 as a result of merging several State non-commercial organizations. Its main functions include, among others, implementation of comprehensive measures aimed at prevention of communicable and NCDs and poisonings; implementation and coordination of measures envisaged under the national vaccination programme; and performance of disinfection, disinsection and deratization in the foci of infectious and parasitic diseases, etc. NCD preventive health care is organized at the Ministry of Health into the Department of Health Care Policy, the Public Health Unit, the NIH, the NCDCP and the State Health Inspectorate.

The Ministry of Health recommends that Armenian citizens undergo a preventive health examination at least once a year. Currently, a preventive health examination includes a routine check-up to detect high blood pressure, diabetes and lung diseases, plus a breast examination and the pap smear test for women and a prostate gland examination for men (National Statistical Service et al., 2012). The Demographic and Health Survey in 2010 found that 25% of women and 19% of men in Armenia had visited a health facility for a routine check-up in the three years preceding the survey (National Statistical Service et al., 2012). The potential for social marketing is, therefore, great but more needs to be done to meet the needs of rural populations and the most vulnerable. Overall, the three risk factors that account for the most disease burden in Armenia include tobacco smoking, dietary risks and physical inactivity, and alcohol.

2.1.1 Tobacco

In Armenia, tobacco smoking data is collected as part of a larger HSPA survey funded by the World Bank, and information on smoking trends in youth exists through the Health Behaviour in School-aged Children survey (Currie et al., 2012) and the Global Youth Tobacco Survey.

According to the 2012 HSPA survey (NIH, 2014), the prevalence of smoking in males aged 20 years and older was 55.7% and 2.9% in females. Within the 2007–2012 period, the number of daily smokers among men aged 20 years and over did not change significantly. Further analysis by age group in males showed an increase in tobacco use when transitioning

from the age group of 15–19-year-olds to 20–29-year-olds, reaching the peak levels in the 30–39-year-old group, and decreasing gradually thereafter. It was mentioned to the team that it was unacceptable for young people to smoke at home before the age of 18. As young men begin their national service and as part of their initiation, they take up smoking. This may explain the increase between the two age groups; among youth aged 15, current tobacco smoking has a prevalence of 11% in males and 1.4% in females.

The prevalence of tobacco use also varied with wealth quintiles. The percentage of men smoking daily was higher in the lower – first, second and third – wealth quintiles. Analysis by educational status showed the prevalence of daily tobacco use was lowest among males with incomplete higher education (i.e., students). There was no difference in the prevalence of tobacco use between Yerevan and the regions, or between urban and rural areas.

A tobacco control strategy and an action plan have been developed. The Minister of Health established and appointed a multisectoral commission for tobacco control, which has a national coordinating mechanism.

Armenian tobacco control measures are in line with the WHO FCTC (a ban on smoking in public places; a ban on direct advertising, promotion and sponsorship; health warnings on packaging and labelling of tobacco products), but they are weak and need to be scaled up.

Full enforcement of current measures in tobacco control remains a challenge and the number of health inspectors to enforce the measures is insufficient.

Some individual counselling/cessation treatment may occur as part of preventive health care check-ups. Pharmaceutical products and NRT are legally available for the treatment of tobacco dependence, but the cost of these products are not covered by public funding or reimbursed.

2.1.2 Alcohol

Traditionally, Armenia is a wine producing country. Homemade alcohol is also available. According to the WHO *Global status report on alcohol and health* from 2014, the total consumption for the adult population (average for 2008–2010) was 5.3 litres of pure alcohol with a slight increase (8%) from the period 2003-2005. In addition, 85% of the population consumes spirits; 10% consume beer and 5% drink wine (WHO, 2014b). In 2010, the average prevalence of heavy alcohol consumption in Armenia was 37.9% among men and 2.3% among women. The share of habitual abusers among men aged 15 years and over is 11.2%; this figure is 0.5% for women.

Alcohol abuse by males first becomes manifest in the age group of 20–29-year-olds reaching the first peak in the 30–39-year-old group, and then the second peak in the 60–69-year-olds. The prevalence of this problem is relatively higher among men with secondary and incomplete secondary education.

While no national strategy for the prevention of harmful alcohol use and alcohol-related disorders exists, the country has a plan to develop such a strategy. To date, a number of legislative acts have been adopted. Armenian legislation sets special restrictions and regulations in regard to the sale of alcohol. The minimum age to purchase alcohol is 18 years. The legal level of blood alcohol content for drivers is 0.4g per litre. To date, the main activities of State bodies have been directed toward restricting drinking among young people. Some progress has been made in addressing alcohol in Armenia, but more can be done to fully implement cost-effective interventions.

2.1.3 Nutrition and physical activity

Intercountry comparable overweight and obesity estimates from 2008 show **that 55.5% of the adult population (aged 20 years and older) in Armenia were overweight and 24.0% were obese (WHO European Office, 2013a).** The prevalence of overweight was lower among

men (48.6%) than women (60.9%). The proportion of men and women that were obese was 14.3% and 31.7%, respectively. Adulthood obesity prevalence forecasts (2010–2030) predict that in 2020, 10% of men and 18% of women will be obese. By 2030, the model predicts that 12% of men and 16% of women will be obese.

Excess body weight becomes manifest in children and adolescents with one in ten adolescents aged 15 years (15% for boys and 6% for girls) overweight or obese (WHO Regional Office for Europe, 2013a). Further, more than 25% of 20–29-year-olds, 50% of 30–39-year-olds, 70% of 40–49-year-olds and 75% of 50–59-year-olds have excess body weight. The distribution of the excess body weight problem is almost equal between Yerevan and the regions, and between urban and rural areas.

Little action has yet been taken regarding a reduction in the marketing of food and beverages to children.

The HSPA survey in 2012 shows that the lack of physical exercise is more common in women and that the prevalence of low physical activity is relatively lower in rural areas. This indicator has a U-shaped distribution by age: it is high among young persons aged 15–19 and decreases to the lowest point in the age group of 30–39-year-olds; the prevalence of low physical activity starts growing thereafter and reaches the peak level in persons aged 70 years and over. Lack of exercise is more common in persons with the highest educational, as well as wealth status.

Ongoing surveys to better assess trends in physical activity, nutrition and obesity in adult populations are lacking as most of the data collected to date focus on the youth, and no regular ongoing comprehensive surveys on NCD risk factors exist at the national level.

Table 2 summarizes the assessment team's evaluation of the core population-based interventions for NCD control. Tobacco and alcohol interventions are the most developed, and efforts need to be stepped up to improve awareness in the area of diet and physical activity. The enforcement mechanism is also weak, which greatly reduces the impact of legislation. **Data collection and surveillance of behavioural and biological risk factors also seems weak and is dependent on external funding.**

Table 2: Score card for core population-based interventions

Interventions	Rating	Criterion for rating
Range of anti-smoking interventions		
Raise tobacco taxes	**Limited**	Tax is 25% of retail price
Smoke-free environments	**Limited**	100% smoke-free environment enforced in schools and hospitals only
Warnings of dangers of tobacco and smoke	**Moderate**	Warning labels on all tobacco products are at least 30% of package size (front and back)
Bans on advertising, promotion and sponsorship	**Limited**	Ban on national television and radio
Quit lines and nicotine replacement therapy[a]	**Limited**	There are no quit lines, NRT available at full cost for the individual
Interventions to prevent harmful alcohol use		
Raise taxes on alcohol	**Limited**	Tax is 20% of retail price. A special tax of 10% on imported alcoholic beverages
Restrictions and bans on advertising and promotion	**Limited**	Regulatory frameworks exist to regulate content and volume of alcohol marketing.
Restrictions on availability of alcohol in the retail sector	**Limited**	Regulatory frameworks on serving of alcohol in governmental and educational institutions
Minimum purchase age regulation and enforcement[a]	**Moderate**	Minimum purchase age of 18 years for all alcohol products and effective enforcement
Allowed blood alcohol level for driving[a]	**Moderate**	Blood alcohol content maximum 0.4 g/L and zero for novice and professional drivers

Table 2: Score card for core population-based interventions (continued)

Interventions	Rating	Criterion for rating
Interventions to improve diet and physical activity		
Reduce salt intake and salt content in foods	**Limited**	A greater than 10% reduction in salt intake in past 10 years
Virtually eliminate *trans*-fatty acids from the diet	**Limited**	There is no evidence that trans-fats have been significantly reduced in diets
Reduce free sugar intake[a]	**Limited**	No action has been taken
Increase intake of fruit and vegetables[a]	**Limited**	The aim to increase consumption of fruit and vegetables is in line with the WHO/FAO recommendations of at least 400 g/day and some initiatives exist
Reduce marketing pressure of food and non-alcoholic beverages to children[a]	**Limited**	Marketing of foods and beverages to children is noted as a problem but has not been translated into specific action in government-led initiatives.
Promote awareness about diet and activity[a]	**Limited**	There has been little workforce development for nutrition and physical activity; nutrition and physical activity are not priority elements in primary care

[a] Indicates criteria additional to those mentioned in the *Global action plan for the prevention and control of NCDs 2013–2020* (WHO, 2013a).
FAO: Food and Agricultural Organization of the United Nations.

2.2 Individual services

While a whole-of-government approach is critical in addressing NCDs, the role of the health care sector in health promotion and primary prevention should not be underestimated. There is clear evidence that PHC professionals can apply very effective tools for primary prevention and management of NCDs. The *Global action plan for the prevention and control of NCDs 2013–2020* has defined a set of core services and interventions to reduce NCDs both at population and individual services level. WHO, based on international evidence, further recommends use of a package of essential NCD interventions for PHC (WHO, 2010).

Armenia has three separate national strategic programmes, adopted by the Government in 2011, in place to tackle the three NCDs with the highest mortality rates (CVD, cancers and diabetes). Progress on core individual services focused on early detection, proactive disease management and secondary prevention for CVD, diabetes are summarized and rated in Tables 3 and 4. Data to score against criteria were frequently unavailable, so an assessment was made based on information and advice received. The scoring criteria for individual services, prepared by WHO, are listed in the assessment guide (WHO Regional Office for Europe, 2014a).

Table 3. Score card for individual services for CVD prevention and management

Risk stratification in PHC	**Moderate**	PHC doctors trained to calculate CVD risk. National programme exists to test CVD risk factors. Risk score not routinely documented in records for compilation.
Effective detection and management of hypertension	**Moderate**	Programme to increase detection. Ad hoc/limited review of quality of management against guidelines. Adherence not addressed.
Effective primary prevention in high-risk groups	**Moderate**	Doctors are trained, but coverage of very high-risk patients with primary prophylaxis or appropriate drugs not known.
Rapid response and secondary care after AMI and stroke	**Moderate**	It is thought likely that >75% of patients receive acetylsalicylic acid, beta blockers and statins after AMI; but this is not measured and quality of care is not routinely monitored.
Effective secondary prevention after AMI	**Moderate**	It is thought likely that >50% of those with AMI or stroke receive diagnosis and care within 6 hours of first symptoms in Yerevan, but quality and timeliness of care are not routinely monitored.

Table 4: Score card for individual services for diabetes prevention and management

Effective detection and general follow-up	**Moderate**	Register of patients with diabetes is established by individual endocrinologists. Detection rate against estimated prevalence levels is not monitored. Asymptomatic patients are selected for screening based on age alone and the coverage is not high.
Patient education on nutrition and physical activity and glucose management	**Limited**	The number of PHC visits each year by patients with diabetes is not systematically monitored against target. Patients do not receive organized nutrition/physical activity support nor is it monitored against target. Proportion of patients receiving glycated haemoglobin (A1c) last year is not known but likely to be low.
Hypertension management among diabetic patients	**Limited**	The quality of hypertension management of patients with diabetes is not monitored or known.
Preventing complications	**Limited**	Annual eye examinations are offered but uptake, quality and outcome are unknown. Urinalysis is likely, but routine foot examinations/care is not.

There are shifting patterns in disease burden with NCDs rising in prominence. By 2010, the top three causes of disability-adjusted life years in Armenia had become ischemic heart disease, cerebrovascular disease and diabetes mellitus. Hypertension has become the second leading risk factor to which burden of disease can be attributed, after dietary risks (Institute for Health Metrics and Evaluation (IHME), 2010). The HSPA surveys found that the proportion of the population with hypertension more than doubled between 2009 (15.4%) and 2012 (36.8%) and that it was more common in males (40.0%) and with age (76.4% of those over 70 years) (National Institute of Health, 2012).

The HSPA surveys do not measure blood glucose or cholesterol directly so it is difficult to get an accurate picture of trends for these. Although diagnostic codes from medical consultations are collated centrally, the 2005-onward increases seen in morbidity for many conditions are thought to be due primarily to improved access to primary care services following health system reforms (National Institute of Health, 2012). Even if this were the case though, the morbidity for diabetes has risen substantially compared with other conditions, appearing to have doubled between 1990 and 2013 for people aged 15 years or over.

Hypertension is poorly detected and poorly controlled. The 2012 HSPA survey found that half of those found to have high blood pressure during the survey had been previously unaware of the condition (National Institute of Health, 2012). Only half (52%) of adults aged 15 years or above had had their blood pressure measured by a health worker during the previous 12 months. Three quarters (75.6%) of those who had been informed they had hypertension by a health professional had received lifestyle counselling and four fifths (83.2%) had received medication. No more than half were complying with the advice, sometimes less, depending on the behaviour (least for reducing smoking). Drugs for hypertension were taken irregularly and not when the person felt "good"; similarly cholesterol-lowering drugs were taken in less than half (44.5%) of those patients for whom they were prescribed. Hypertension was found to be poorly controlled in even those who had taken medication in the previous 24 hours.

Efforts are underway to increase the detection of NCD risk factors and to reduce variation. Although the Ministry of Health has recommended that citizens have a preventive health check at least annually to detect NCD risk factors such as high blood pressure and diabetes, a 2010 survey found that only 25% of women and 19% of men had visited a health facility for such a health check in the previous three years (National Institute of Health, 2012). Rates of health checks were also variable: for example, in 2012 cholesterol level monitoring was highest in the wealthiest quintile and varied between 20.2% of adults in Yerevan to 8.7% of adults in the villages; similarly, blood glucose testing was more than twice as likely in Yerevan (29.6%) than in villages (11.8%).

Building on the health checks programme, the World Bank Disease Prevention and Control Project is using results-based financing to improve the prevention, early detection and management of selected NCDs at the PHC level through national population screening programmes for hypertension and diabetes of adults aged 35–68 years and cervical cancer for women aged

30–60 years (World Bank, 2016). The Project was launched in September 2014 and runs until December 2019. New national guidelines on the management and treatment of NCDs, and on early detection, management and prevention of cervical cancer for primary care providers were approved by a Ministerial decree issued in April 2014. These include the recommended use of a risk stratification tool (the European Society of Cardiology (ESC) SCORE tool (ESC, 2012)); although blood cholesterol is not recommended for routine measurement as part of the screening programme, it can be measured at PHC level if clinically indicated. This should allow identification of those at high risk (more than 30%) of a cardiovascular event within the next 10 years and effective use of resources targeted at those who would benefit most (WHO, 2007). The Project seems popular with professionals and the public so far. From January to April 2015, around 88 000 people aged 35–68 years have undergone hypertension screenings and around 56 000 had their blood glucose level checked within the framework of this Project. During this same period, around 7000 women aged 30–60 years participated in cervical cancer prevention screenings (pap smear). The quality management of those conditions detected through screening is not known.

Overall, hospital fatality rates seemed to decline between 2001 and 2013, but this varies by disease: no decline in diabetes was seen. Despite a decline in the hospital fatality rate for cerebrovascular disease (stroke) from 2008 to 2013, it is still not down to the 1990 level (NIH, 2015).

2.2.1 Cancer

Armenia has a national strategy for cancer prevention and control (Government of Armenia, 2011). In 2012, the International Atomic Energy Agency (IAEA) led a multiagency, multidisciplinary imPACT assessment of cancer prevention and control in Armenia leading to a series of recommendations for improvement (IAEA, 2012). As part of the four-year World Bank Project, a new radiation medicine (radiotherapy) centre is being established, the Haematology Centre named after Professor Yolyan, and the Bone Marrow Transplant Department is being established within the Haematology Centre.

A number of individual-level interventions for cancer prevention and detection are in place but with mixed success. To prevent liver cancer, universal immunization at birth against hepatitis B is offered and the results are good: hepatitis B immunization coverage by 1 year of age was 95% in 2013 (WHO, 2014a). A national programme for vaccination against human papilloma virus does not exist.

Early detection of cancers is a challenge: more than half (57%) of cancers were diagnosed in stages III and IV in 2013, as in 2003, and over one third (35%) of cervical cancer and almost two thirds (62%) of breast cancer were diagnosed at stages III and IV according to the National Oncological Centre. In 2011, the percentage of cases with stage IV breast cancers was about four to five times the typical percentage in EU countries (IAEA, 2012).

Coverage of cervical screening has been very low: a 2010 survey found that only 13% of Armenian women aged 30–49 years had ever had a pap smear despite Ministry of Health recommendations to undertake one on a regular basis and it being provided free of charge in polyclinics by specialist health professionals (National Statistical Service et al., 2012). An apparent reluctance from women to request pap smears or accept them has been noted by health professionals (IAEA, 2012).Nevertheless, there have been some improvements in coverage: the 2012 HSPA survey found an increased rate among women aged 30–60 years from 2007 (6%) to 2012 (10.2%) (National Institute of Health, 2012). A number of recommendations from previous assessments of the cervical screening programme in Armenia in 2009 and 2011 have been implemented or are being enacted as part of the Disease Prevention and Control Project.

Clinical breast examination takes place as part of the preventive health check programme. A 2010 survey found that knowledge of breast self-examination among women aged 15–49 years old was very low, with over three quarters (78%) of women stating that they are unaware of this

technique, a slight reduction since 2000 (National Statistical Service, 2013). Growing numbers of women are having mammographic screening, but this is opportunistic screening, available in private centres for a fee, without respect to age groups or other specific criteria (IAEA, 2012). The HSPA survey found in 2012 that 14.8% of women aged 30–60 years had had mammography, an increase since 2009 (3.6%); over three quarters (77.6%) of those who had had a mammogram had paid for the examination (National Institute of Health, 2012). While no population-level, organized, quality-assured, national breast screening programme is in place, as the health system would not support this yet. The imPACT report recommended instead that the focus should continue to be on downstaging breast cancer diagnoses: continuing clinical breast examination with a target to increase coverage; raising public and professional awareness of early signs and symptoms to prompt further investigation; and increasing availability of opportunistic screening in the private sector with a focus on the 50–69-year-old age group (IAEA, 2012). These have not been implemented within the Disease Prevention and Control Project.

Population-based colorectal cancer screening is not in place, nor is oral cancer screening in high-risk groups. The imPACT report did not recommend establishment of screening programmes for these conditions but suggested a rapid access programme for patients with high-risk symptoms for cancer. Timeliness of access to treatment for potential cancer patients does not seem to be routinely monitored or reviewed.

It is important that screening is linked to effective diagnosis and treatment and that screening programmes are organized and quality assured with pathways coordinated and focused on an overall outcome goal. Again, as part of the World Bank Disease Prevention and Control Project, results-based financing is being used to try to improve coverage rates, and a cervical screening target of 50% coverage of eligible women has been set. While the Project has been understandably focused on the screening procedure, it is less clear if capacity will be sufficient to treat all identified conditions particularly if coverage targets are exceeded; capacity is assumed but needs have not been modelled. While some investment in improving treatment modalities has been made in recent years (IAEA, 2012), it is not clear if this will be sufficient. Coordination, monitoring and evaluation of the cervical screening programme as a whole, from identification of eligible women to health outcomes, appears to be missing. No central system for checking that all screened patients have received their results or been followed up for treatment is in place.

Improvements are being seen in survival rates. According to national statistics, five-year survival rates for breast cancer have increased from 33% in 1997–2002 to 56% in 2008–2013. As the stage at which cancer is detected at diagnosis has not changed substantially, improvements in survival rates are attributed to better treatment quality, although better access to PHC and earlier reporting of suspicious signs and symptoms to allow prompt investigation may also contribute.

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

For many countries, it is challenging to scale up the core interventions and services outlined in section 2, despite evidence of their cost-effectiveness and significant population health impact. At the same time, inspiring experiences are emerging, providing opportunities for cross-country learning and adaptation of successful initiatives. This section reviews the health system challenges that could undermine delivery of core interventions and services and prevent progress towards the targets of the global monitoring framework (WHO, 2016a) and also describes opportunities for scaling up selected interventions and services.

Fig.3 lists 15 health system features that can pose challenges or present opportunities for improved delivery of core NCD interventions and services. Further guidance on these health system challenges and opportunities is given in the background paper (WHO Regional Office for Europe, 2014a).

Fig. 3. Fifteen health system challenges and opportunities to improve the outcomes of NCDs

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

Source: WHO Regional Office for Europe, 2014a.

Challenge 1. Political commitment to NCDs

Armenia has demonstrated political commitment and support to the NCD agenda despite politically difficult reforms needed to address some of the key risk factors such as tobacco and alcohol. In accordance with WHO recommendations, **Armenia has prepared a programme and action plan for controlling the most common NCDs for the years 2016–2020.** The programme, developed by the Ministry of Health, has been submitted to the Government for official endorsement. This programme is well aligned with regional and global mandates, including the global NCD action plan, the global monitoring framework and Health 2020 (WHO, 2013a; 2016a; WHO Regional Office for Europe, 2013b).

A legislative base is in place in Armenia reflecting political commitment to better NCD prevention and control. The WHO FCTC was ratified in 2004 and a revision of the Law on Restriction of the Realization, Consumption and Use of Tobacco is underway to address the WHO FCTC requirements and implementation guidelines. Development of a draft Government Protocol Decree on "Approving the Strategic Program on Controlling Excessive Use of Alcoholic Beverages and the Action Plan" is underway.

The ongoing self-assessment initiative of public health services and development is an important opportunity for the country to strengthen the institutional and human capacity of public health to better respond to the emerging epidemic of NCDs.

NCDs are included in the recent United Nations Development Assistance Framework, reflecting the connection between NCDs and economic growth, which is a good platform to develop a whole-of-government approach to NCDs. However, current population-based interventions on common risk factors lack a focus on social determinants of health and need to be more equity sensitive.

Challenge 2. Explicit priority-setting

Health has always been a stated priority for the Government of Armenia. Continuing the Semashko model of free health care for all from Soviet times, the 1995 constitution mandated universal entitlement of medical services funded by the State. However, the economic crisis that ensued after Armenia gained independence in 1991 made this economically infeasible, so in 1997 the Government of Armenia initiated the first explicit process to prioritize health services. Specifically, it limited the provision of fully or partially subsidized health care to primary care, maternity services, sanitary epidemiology and approximately 200 so-called socially significant diseases, including but not limited to tuberculosis, renal failure, cancer, insulin-dependent diabetes and psychosis). Emergency services were covered, albeit with co-payments for all but 24 socially vulnerable groups (e.g. people with disabilities, children, elderly people and the poor) with some reservations. These groups were also eligible for free or subsidized in-patient care and outpatient medicines. Patients with certain types of diseases (e.g. diabetes) were also eligible to receive outpatient medication free of charge (Richardson, 2013).

However, despite the State priority of health, public spending on health care in Armenia has been and remains among the lowest levels in the European Region, whether measured as a percentage of gross domestic product (GDP), of total government expenditures or of total health expenditures. From a low of 1.1% in 2000, public health expenditures as a percentage of GDP increased to 2.1% in 2007. Recovering from the economic crisis in 2008, public expenditures on health have remained at 1.9% of GDP from 2010 to 2013, which was still the third lowest in the European Region (WHO, 2013b). Public health expenditures as a share of total government spending reached its lowest level (5.3%) in 2000 and its highest level (11.3%) in 2006, declining to 6.7% in 2009. Since then public health expenditures have again begun to increase in relative terms, reaching 7.9% of public expenditures in both 2012 and 2013, a rate that was exceeded only by Azerbaijan, Georgia and Tajikistan (World Bank, 2015).

A similar pattern can also be seen in terms of public expenditures when measured as a percentage of total health expenditure, which amounted to 18.2% in 2000 but rose to 48.7% in 2007. Following the economic crisis in 2008, public spending declined, reaching 41.8% in 2012 and 41.7% in 2013. As above, this level was the fourth lowest in the European Region (World Bank, 2015). Thus, **while the Government of Armenia states that health is a priority, it allocates less public funds to it than almost all the other countries in the Region.**

In 2004, the Government of Armenia initiated a more explicit mechanism for prioritizing public expenditures. Since then a three-year, rolling medium-term expenditure framework

(MTEF) has been prepared on an annual basis. Based on an analysis of health indicators (level and trend) and the main problems faced by the health sector, the 2012–2014 MTEF identified six priorities for public spending and investment (Ministry of Finance, 2012):

- provision of PHC to the population;
- assurance of sanitary and epidemiological security of the population;
- provision of maternal and child health services;
- prevention of diseases of special social importance;
- provision of medical care of persons involved in vulnerable and separate (specific) groups of populations; and
- programmes on the prevention of infectious diseases and HIV/AIDS.

Although the list of priorities is in the MTEF 2012–2014, the expense categories used do not correspond to these priorities, which make it difficult to ascertain how the budget is actually allocated (Ministry of Finance, 2012). Table 5 shows that expenditures are budgeted according to the type of service delivered (outpatient, inpatient, procurement of pharmaceuticals, public health services and other services) and the source of funding (World Bank and other donations), which means that there is no way to specifically prioritize funding allocations to NCD programmes. Since funding for these programmes is lumped in with funding for other services in each of the different expense categories, NCD programmes end up competing for funds with other services in those categories. It is noteworthy that PHC (outpatient services) receives a relatively large share of total government expenditures (40% planned for 2015), which is consistent with the Government's stated priority of providing primary care free of charge to the entire population. Interestingly, even though hospital services are only provided to specific, mostly vulnerable groups and to patients with certain types of special social importance, they account for the largest share of public health expenditures (45%).

Table 5. Government health expenditures by service (in drams), 2011–2015

	2011		2012		2013		2014		2015	
Expenditure category	Actual	Share of public total health expenses (%)	Confirmed in budget	Share of public total health expenses (%)	Planned	Share of public total health expenses (%)	Planned	Share of public total health expenses (%)	Planned	Share of public total health expenses (%)
Outpatient services (primary care)	22543.6	37	23803.2	37	23885.5	35	24169.3	36	27155.6	40
Hospital services	26884.2	44	27080.9	42	27246.1	40	28265.0	42	30993.3	45
Centralized procurement of pharmaceuticals	3795.4	6	3687.5	6	3687.5	5	3687.5	5	3687.5	5
Public health services	2958	5	3069.4	5	3155.8	5	3293.5	5	3805.9	6
Other health-related services and programmes	1250.5	2	1219.1	2	1222.0	2	1222.5	2	1362.9	2
World Bank loan and grant programmes	3701.6	6	5207.8	8	9671.5	14	6596.8	10	1563.8	2
Government total health expenditure (excluding administration)	61133.3	-	64067.9	-	68868.4	-	67234.6	-	68569	-

Source: Ministry of Finance, 2012.

The specific budget allocations for the Ministry of Health are developed on an annual basis in response to a request from the Ministry of Finance. Each department and division develops a list of priorities that are then discussed in a meeting with the Minister of Health and the senior managers in the Ministry of Health. At this meeting, these priorities are discussed in light of the annual HSPA report, which contains information about health indicators and other performance measures. The final priorities are selected on the basis of the performance problems identified in this report. Once the Ministry of Health has agreed on a list of priorities, it is presented to the Ministry of Finance for agreement after which it is submitted for approval by Parliament. Although the budget request in theory is developed on the basis of estimated needs, the budget allocated to health never meets the total estimated needs. As a result, new so-called priority programmes frequently receive no allocations and can therefore not be implemented.

Although the MTEF 2012–2014 states that prevention, early diagnosis and effective treatment of NCDs should be considered a priority in State health policy (Ministry of Finance, 2012), the current process of priority setting has proven insufficient to ensure the funding needed to adequately prevent, diagnose, manage and treat NCDs effectively. The absence of an overall strategic plan for the health sector or a specific NCD action plan may be partly to blame for this situation. However, drafts exist of both. Given that late detection and poor management of NCDs lead to costly complications, Armenia would be well served by approving the pending plans and ensuring that sufficient resources are allocated so that they may be fully implemented.

Challenge 3. Interagency cooperation

Armenia has accumulated good examples of interagency cooperation in many areas and has made good progress in advancing multisectoral action but requires further strengthening in the area of NCDs.

Effective and equitable NCD prevention requires actions across many sectors as per the European strategy Health 2020, which clearly stresses the significance of joint efforts, partnerships and inclusion of all participants in health care and society.

There are pockets of good practice in intersectoral collaboration to build on, such as pandemic influenza preparedness. The State Food Safety and Veterinary Inspection Agency under the Ministry of Agriculture worked closely with the State Hygiene and Anti-Epidemic Inspectorate under the Ministry of Health for the control of zoonoses, and these ministries have collaborated well for a number of years (World Bank, 2010). Other examples of intersectoral mechanisms include the Drug Committee, which is under the supervision of the President, and involves the Ministry of Health, the Ministry of Justice and the police sector to address this Government priority.

For the most part, however, the existing intersectoral collaborations are still weak and require more supportive mechanisms. More recently, the healthy lifestyle project, which is an electoral government platform, is establishing an intersectoral mechanism, but it is not yet operational. **A cross-sectoral committee to address NCDs is also planned**. In this regard, the opportunity for this committee to report directly to the Prime Minister reinforces a truly whole-of-government approach to NCD and would ensure the Government is immediately informed about the situation.

The Ministry of Health has also come to an agreement with the Ministry of Education and Science to introduce health education programmes into the school curriculum. In addition, other ministries and organizations – departments of health and social security at municipal and regional levels, nongovernmental organizations (NGOs) and others – are publishing materials and promoting behaviour change. Public and private mass media also prepare, publish and broadcast roundtable discussions on healthy lifestyle issues such as smoke-free workplaces, personal behaviour, diet and nutritional habits.

As mentioned earlier, responsibility for NCD prevention and control lies with multiple players within the Ministry of Health: the Department of Health Care Policy, the Public Health Unit, the Ministry of Health NIH, the NCDCP, and the State Health Inspectorate. Given this, it is important to avoid a fragmented approach to NCD prevention and control within the health sector. Overlapping roles and responsibilities can lead to duplication whereas a coherent and consistent approach to NCD is needed.

At present, the role of civil society in addressing NCDs is limited. However, several NGOs currently operate in the health sector in Armenia. Some are broad based while others target specific populations and/or health problems. In addition to the various voluntary organizations and NGOs, several international and multilateral governmental organizations are supporting a range of programmes in the health sector. There is political commitment to expand the involvement of NGOs.

Challenge 4. Population empowerment

Many NCDs are chronic in nature, which means that citizen empowerment and the active involvement of patients in the management of their condition is essential for NCD control. This assessment indicates the need to improve and strengthen patient-centred approaches for NCD control at all (patient, provider and policy) levels. Low responsibility of patients in making decisions regarding their health and health care can lead to low compliance and unnecessary use of the system.

Patient empowerment has not been the subject of concerted reform efforts in the country. Patient rights in health and health care are recognized as a fundamental human right in strategies and other policy documents, but no specific charter of patient rights has been introduced.

Patient information on provider performance in Armenia is limited and difficult to access. The lack of an integrated quality assurance system also means that information on the quality of health services is not generally available. The Government has been much more proactive in trying to ensure patients have a clear sense of the benefits to which they are entitled. In response to severe fiscal constraints, the Armenian Government limited the benefit package to the general population (restricting it to primary care and public health services), allowing access to key outpatient and inpatient services for particularly vulnerable groups either free of charge or at a reduced rate.

The Ministry of Health distributes posters and leaflets targeting particular vulnerable groups to inform them of their entitlements and the Ministry requires such posters to be displayed at the entrance to health facilities, but facilities still charge informal fees for services that should be free of charge. Since 2000, members of the public can use a hotline service to raise concerns or make requests directly to the Minister of Health and the Ministry of Health has sought to collaborate with mass media to raise awareness.

Formally, patients have had the right to choose their health care provider since the introduction of the Law on Medical Assistance and Service of the Population in 1996; in practice, 90% of Armenians are still assigned to their local primary care provider according to residence (Armstat, 2012). However, there is variation by age and place of residence – rural residents are much more likely to be registered with a primary care physician than urban respondents.

The public is not formally represented in decision-making and policy-making bodies. According to data from the Health in Times of Transition survey, undertaken in 2010 in nine countries of the former Soviet Union, approximately 53.8% of respondents reported being rather or definitely satisfied with the health system in Armenia, which is high compared with other countries of the former Soviet Union and much improved since the previous survey in 2001, which found that just 29.5% were satisfied (Footman et al., 2013). Satisfaction with primary care services has also been found to be high (Harutyunyan et al., 2010).

Regional and local self-government plays an important role in Armenia and has good opportunities in improving the health of the population. Following the restructuring of the local government, 11 regional governments (10 regions and the city of Yerevan) have taken over responsibilities for health. Regional and local governments do not have to report to the central government; however, they should comply with national orders and policies set by the Ministry of Health, in particular those related to the control of infectious diseases, through negotiated procedures and processes. Therefore, local government activities in the health care sector remain visible to the Ministry of Health, although there are few direct monitoring and evaluation activities. Hospitals and polyclinics are increasingly autonomous.

Challenge 5. Effective model of service delivery

The public health system has been focused primarily on the control of communicable diseases under the State Health Anti-Epidemic Inspectorate. Since its reorganization into the State Health Inspectorate and NCDCP, a small unit of epidemiology of communicable and NCDs has been established within the State Health Inspectorate of the Ministry of Health, which is also responsible for NCDs.

Most preventive services and health promotion activities are integrated with primary care services. Part of the World Bank Disease Prevention and Control Project included a publicity campaign to raise public and professional awareness of NCD risk factors, prevention and management, and to encourage the public to take up the offer of health checks (Fig. 4); data on the characteristics of non-respondents could potentially allow for the more targeted design of a social marketing campaign to encourage uptake of the offer. A 2010 survey found that more than 80% of women and 50% of men had had seen or heard a health message through radio, television, newspaper or magazine in the months preceding the survey (National Statistical Service et al., 2012). Medical and nursing staff within primary care facilities also play a role in educating the public about risk factors; for example, nurses from the Oshakan Medical Ambulatory visit schools to provide health education.

Fig. 4. Posters in waiting area of the Regional Health Department, Ashtarak encourage screening health checks

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Despite efforts to strengthen primary care and reduce hospital capacity, hospital care continues to dominate the national health system (Richardson, 2013). Since 1990, there has been a rapid contraction in the number of hospital beds, but reductions were largely outside the capital city: since 2000, hospital beds per 100 000 population fell by over a third to 405 in 2012, around half the CIS average (765) (WHO Regional Office for Europe, 2015). The number of primary care (PHC) facilities also fell initially, but this trend was reversed to some extent with 33 facilities per 100 000 population by 2009, well above the CIS average (WHO Regional Office for Europe, 2015). Bed occupancy rates (%) for acute hospitals have more than doubled between 2000 (28.2%) and 2012 to 61.9% but still fall far short of the CIS average (86.4%) (WHO, Regional Office for Europe2015), and the capital city has an oversupply of beds and staff.

There have been efforts to redistribute care from Yerevan to the regions. The Health System Optimization programme has led to investment in the establishment of a multiprofile hospital in each region with upgraded equipment. This has probably contributed to increased hospitalization rates in regions from 2010 to 2013 and a reduction in utilization of Yerevan inpatient services relative to those of regions from 2012 to 2013. Satisfaction with the services delivered by hospitals (73%) has been consistently higher than for polyclinics in recent years although differences are small.

The overall Armenian health workforce has contracted since independence with high levels of outmigration of doctors and nurses. The per capita rate of doctors and nurses is relatively low overall compared with equivalent countries and the European average. The Armenia Health System Optimization Strategy expected an increase in the nurse/physician ratio, but this has not been achieved: the ratio of nurses to physicians was 1.83:1 in 2012. The number of nurses per capita has fallen substantially to far below the CIS average, and the total number of nursing graduates from public and private secondary medical educational institutions fell by 19% from 2010 to 2013 (WHO, 2014a; NIH, 2014).

While the number of physicians per capita have been fairly stable, the balance of specialists has not shifted away from hospital services or from Yerevan: in 2013, the number of physicians per 10 000 population in Yerevan was 54.7 but only 19.3 in the regions; similarly, distribution of nurses is uneven with rates per 10 000 population in Yerevan of 73.2 but only 32.4 in Armavir (NIH, 2014). The system lacks incentives and mechanisms to motivate doctors to work in remote areas and there are significant numbers of vacancies in the regions. No organized system of telemedicine support for rural practitioners exists.

Strengthening family medicine as a speciality and as an attractive career option has been a challenge. There is a programme to retrain general medical practitioners as family doctors and a longer term aim for narrow specialists working at primary care level to be moved to hospitals while family doctors take over many of their roles. The training and retraining programme for family medicine is now considered to be in line with international standards.

Although a goal of the PHC Strategy 2008–2013 was to increase the ratio of active PHC general practitioners to narrow specialists, this ratio actually decreased from 2002 to 2013, as did the ratio of active PHC nurses to all active physicians. While the number of primary care providers increased in the decade to 2013, particularly family physicians (thirteen-fold increase), there is still a shortage of family physicians. Shortages in other specialties relevant for NCDs are emergency care physicians, anaesthetists, cardiologists and neurologists, especially in the regions. This contributed, in part, to the flow of patients from the regions to health care facilities in Yerevan: 70% of the population reported seeking care at Yerevan health care facilities for NCD interventions in particular CVD, malignancies and diabetes (NIH, 2014).

Surveys in 2008 highlighted the importance to PHC providers of continuing professional education on NCD, particularly circulatory system diseases, diabetes, cancer and screening (NIH, 2014). Within the framework of the World Bank Disease Prevention and Control Project, 2750 PHC providers received training on national guidelines for the management of NCDs and early detection of cervical cancer during July–November 2014.

Hospitalization rates have risen more than outpatient visits over the last decade. Annual hospitalization rates increased more than twofold from 2000 to 2013 (12.3 per 100 population) but were still below 1990 levels (NIH, 2014). The number of PHC per capita visits also rose from 2000 to 4.0 per 100 population in 2013 – although it was still almost half the 1990 levels (NIH, 2014) and far below the CIS average (WHO, 2014a). Hospitalization rates by NCDs relative to other conditions are not available. Despite accessible PHC, free key diagnostic tests, and different benefits and regulations that facilitate the utilization of health care services, many people were not aware of these; the number of campaigns to raise awareness on entitlements has recently increased. Nevertheless, in 2013, two thirds of the population did not seek medical care when there was a perceived need, which is unchanged since 2012 and higher among vulnerable groups and urban areas; of these, more than four fifths cited financial reasons for not seeking care (NIH, 2014).

More active use could be made of disease registers: coverage, quality and outcomes of care are not routinely monitored. Although the number of patients with diabetes can be collated nationally using medical consultation records and ICD-10 codes (WHO, 1990), and estimated from insulin and other medication prescriptions, these data are not stored in relational databases; it is not presently possible to use these patient lists as active registers to check, for example, that all people with diabetes have their cardiovascular risk factors under control or have had their annual eye check-up or regular foot care. Similarly, while an individual doctor or clinic might record the number of patients with the diagnosis of diabetes mellitus, for example, they are unlikely to have an overview of how well-managed this group of patients is regarding blood glucose or blood pressure levels. Clinics do contact patients for check-ups, providing home visits if needed, but the proportion of patients receiving regular check-ups or lost to follow-up was not known.

Key diagnostic tests for NCDs are available at PHC level, such as measurement of blood pressure, blood sugar and electrocardiogram, but some other important tests such as haemoglobin A1C and blood cholesterol are less accessible. The State Health Agency collects these data. Although a 2012 study found a number of positive factors enhancing diabetes care in Armenia such as an infrastructure for care, well-trained endocrinologists, and free distribution of insulin and some anti-diabetic drugs, optimal care was impeded by a shortage or interruption of supply of anti-diabetic drugs, expensive consumables (glucometers, strips, syringes) and high prices of advanced laboratory testing and Doppler examinations reducing the effective monitoring of the disease (Martirosyan et al, 2012).

Therapeutic patient education is very limited as is the support available for carers. No organized country-wide system of schools for patients with diabetes exists, for example, where patient training or education sessions are organized; the 2012 study found that these were mainly on the initiative of providers, and only involved small groups of patients and parents (Martirosyan et al., 2012). While structured education is said to be offered to all people with diabetes, the coverage, uptake and effectiveness is not monitored and provision is considered inadequate. Yerevan has four patient education schools for people with diabetes that are located in hospital departments and dispensaries (2000 patients with diabetes on register), and there are plans to open one in each region. The Armenian Diabetes Association does not currently take an active role and there is no tradition of peer support. Similarly, while annual eye examinations are said to be offered, systematic monitoring and follow-up of those who fail to attend (estimated at 50%) is lacking (European Coalition for Diabetes, 2014). Podiatric care is not routine.

The gatekeeping function of primary care is weak. In principle, family doctors refer patients to specialists or for inpatient care; in practice, patients can directly approach specialists in hospitals to seek care. On the cardiology ward of the "Surb Grigor Lusavorich" Medical Centre, for example, patients could directly approach doctors on the wards and be seen without appointment. A table of fees is prominently displayed and patients can pay cash for treatment. The main public hospital in Yerevan does not have an appointment system for clinics; patients just bring a referral from their doctor. In a cardiology clinic in the hospital, the Chief Cardiologist estimated that about 40–50% of patients were referred from polyclinic, 30% came from the emergency department

and the rest walked in (self-referrals). Patients can also be seen relatively quickly by specialists; appointment systems do not appear to be used in hospital outpatient clinics and waiting times are generally low: the 2012 HSPA survey (National Institute of Health, 2012) found the average waiting time to see a doctor was 10 minutes in public inpatient and outpatient settings. In the emergency department of the regional medical centre, patients could walk in and be seen within a few minutes in general, and although evenings and weekends were busier, waiting times were not long.

Connections between health and social care services were not emphasized or mentioned much when visiting health care facilities. The public hospital has an obligation to treat everyone seeking care irrespective of ability to pay. The families of patients have to provide their meals (even for patients with diabetes). Patients without family can buy food from facilities within the hospital; in some hospitals, food and clothing may be provided if the patient is homeless or does not have the means to pay.

Challenge 6. Coordination across providers

The role of the family doctor as a hub for coordinating care is limited. As part of the primary care reforms, family medicine has been introduced as the integrative first point of contact for the delivery of care. While there is potential for patients to have a continuous relationship with an identified primary care worker who provides most of their care, this might be thwarted by patient choice or specialist practice (Richardson, 2013). Implementation has been difficult where the old polyclinic system remained or with a traditional focus on specialists. Patients are usually assigned to their local primary care provider according to place of residence, but enrolment rates can be low particularly in urban areas where patients may bypass PHC; in the 2012 HSPA survey (National Institute of Health, 2012), only 38% of those surveyed had registered with a primary care provider.

Hypertension can be managed by a family doctor, but diabetes mellitus needs to have diagnosis confirmed by an endocrinologist; type 1 diabetes is managed by an endocrinologist. Following an acute episode and inpatient stay, patients are discharged back to their family doctor in principle, but in practice the patients can choose to continue to see their specialist. Patients have a choice of provider so, for example, a patient may prefer to be seen in a medical centre in Yerevan rather than a regional medical centre, which potentially makes communication and coordination of care more difficult.

Multidisciplinary care between physicians, nurses, health educators etc. seems limited and more appropriate use could be made of non-physician providers (nurses, nutritionists and health educators). A 2012 United States Agency for International Development (USAID) study found low rates of follow-up for behavioural risk factors and recommended more efficient use of mid-level providers such as nurses to strengthen patient counselling, behaviour change communication, and support for patient self-management and engagement in care (Hill, Chitashvili & Trevitt, 2012).

Nurses appear to be underutilized and there is potential for further task shifting. While both doctors and nurses received training on the NCD prevention guidelines, only doctors could carry out certain tasks such as cervical screening and doctors largely provide behavioural counselling. In some situations, doctors performed tasks that nurses might do, and nurses performed administrative tasks, for example, transferring information from paper records to electronic records. A chief nurse of a cardiology unit estimated spending three hours per day on administrative work. A few diabetic specialist nurses exist (usually at least one per diabetic clinic), but therapeutic patient education is still largely run by doctors. Nevertheless, within the cardiac unit, the nurses could insert an intravenous cannula, take blood, put catheters in and take them out, and manage drug distribution; nurses would receive laboratory results and bring them to the attention of doctors.

Referral and discharge letters are used, but patient records are not electronic and do not follow patients or cross providers. Computers are not an integral part of the primary care consultation although were seen in consulting rooms in the main public hospital in Yerevan; in PHC, medical notes are recorded on paper and key information are then transferred to an electronic system. Following an acute event, on the day of discharge, in principle patients are given a short discharge letter to take to their family doctor, which includes contact data, diagnosis, tests carried out and the prescribed treatment plan. Patients may contact the specialist doctor again directly if they need advice. Patients receive medicines for the day and then have to get their own. The PHC provider does not have access to hospital records nor does the hospital specialist have access to the PHC records although within a polyclinic setting, the ambulatory clinic records might be shared.

Rehabilitation, long-term care and palliative care are not well developed or well supported in the community. Following an acute episode such as a stroke or myocardial infarction, in the large public hospital in Yerevan, rehabilitation is organized within the hospital through the department of physical therapy staffed by kinesiotherapists and physical therapists; speech therapy is also available for stroke patients. Following discharge, a stroke patient could be referred to a Red Cross centre for further speech therapy and kinesiotherapy or have resort treatment, but this would not be covered by health insurance. Rehabilitation services within municipal polyclinics are not comprehensive and are provided by traditionally trained nurses and physiotherapists.

There are shortcomings in communication and coordination between providers. A 2012 study of diabetes care in Armenia found poor communication and coordination between polyclinics, hospitals and private medical centres that provide care for more complicated cases (Martirosyan et al., 2012); they recommended the establishment of a unified diabetes registry for more effective communications and coordination between care providers. While the effectiveness of teamwork in the care of cancer patients was not specifically assessed on this occasion, the previous imPACT report (2012) found poor communication and coordination between centres sharing care of patients, for example, when referred from a hospital to the National Centre for Oncology for radiotherapy (IAEA, 2012).

The rate of loss of follow up for key NCDs, and the variation by different social and ethnic groups is not known. Patients do appear to be pursued for check-ups but whether this is targeted to ensure that those at greatest need or highest risk are particularly sought is not clear.

Challenge 7. Economies of scale and specialization

No explicit policy or plan that outlines the respective roles of primary, secondary and tertiary care in management of NCDs exists, so there is potential for overlap between roles. A health systems strengthening strategic plan is being drafted. The number of cases that hospitals treat is recorded, reported and monitored. Average length of stay in acute hospitals dropped by over a third since 2000 to 6.4 days in 2012, well below the CIS average (WHO, 2014a).

Preventive health checks may be carried out anywhere in the system. The 2012 HSPA survey found that the three most popular places to receive a preventative health check were polyclinics (33.2%), hospitals (28.3%) and diagnostic centres. The cardiology clinic at the main public hospital in Yerevan was very busy during the military drafting period when new recruits needed checks. Under the World Bank Disease Prevention and Control Project, PHC is being promoted for preventive health checks and cervical screening. This Project has also tried to concentrate cytology services to a limited number of laboratories (37) that have been upgraded and equipped as part of the Project.

There is a national cancer plan, but it does not specify which kinds of cases should be treated in which facilities (Government of Armenia, 2011). The imPACT report found in 2012 that cancer services were organized through a network of polyclinics and hospitals: each polyclinic had an

oncology room with a general oncologist who could register, refer and follow up cancer patients in addition to early detection activities; Armenia has two centres with oncology services under the Ministry of Health, the National Centre for Oncology and the Gyumri Cancer Dispensary although some medical oncology services could also be provided in public and private hospitals in Yerevan.

Hospitals do not appear to have minimum requirements to treat acute cardiovascular events although only a few centres can carry out percutaneous coronary intervention (PCI), one in Yerevan and two in the regions, which have good outcomes. Within Yerevan, traditional open heart surgery, as well as interventional cardiology and minimally invasive cardiac surgery is available at Nork-Marash Medical Center, which is one of the largest centres in the Caucasus; it performs 800 surgical operations each year with increasing numbers of foreign patients (Anon Yerevan Municipality, 2015). Patients with suspected AMI will still be taken to the largest public hospital in Yerevan ("Surb Grigor Lusavorich" Medical Center) and then need to be transferred for angiography and PCI.

Entry to expensive specialist services is relatively open, even if the chances of successful outcomes are virtually non-existent. An intensive care unit will still accept patients in the terminal stages of cancer with the patient dying after a long stay; this may relate to the culture around death and a reluctance to openly discuss prognosis; meanwhile palliative care services are underdeveloped.

In 2012, the Ministry of Emergency Situations in Armenia implemented a new 911 system. A pre-hospital emergency medical care system continues to be developed in some of the main cities of Armenia, Through a two-year grant, USAID supported the Ministry of Health to improve the quality of emergency medical services (EMS) in Armenia by increasing public awareness of EMS reforms, enhancing the capacity and skills of EMS personnel, and strengthening the monitoring of EMS performance (USAID, 2012). The Yerevan ambulance services provide quick non-hospital medical aid to the population with the help of 38 brigades of 7 substations, which are allocated in different districts and include seven small cardiac vehicles. The centralized dispatcher's service in Yerevan receives emergency calls (from phone number 103), and then passes them on to the corresponding substations; communication between the dispatching office and brigades is carried out by means of radio communication and incoming calls are recorded. Pre-hospital care can be provided (Yerevan Municipality, 2015). Performance targets or monitoring do not appear to have been instituted for time from hospital admission to PCI.

In accordance with the 2014 Ministerial decree for approving the standards for provision of emergency cardiac surgery, emergency cardiac surgery (i.e. the introduction of non-drug-coated stents) have been performed by interventional cardiology facilities in Armenia since 1 January 2015. The number of deaths from CVD fell by 421 from January to July 2015 compared with the equivalent period in 2014, although the contribution of access to stents and improved acute care is unclear. Recorded deaths from acute or repeated myocardial infarction decreased by 316 cases for the first six months of 2015 compared to the equivalent period in 2014.

Challenge 8. Incentive systems

To ensure delivery of core interventions and services, incentive systems need to be aligned across the different levels of care both inside and outside the health care system, and according to demand.

Core population-based interventions to control and prevent NCDs in Armenia are funded as part of the Ministry of Health's budget for public health services. With the sanitary-epidemiological service (SAN-EPID) responsible for both the prevention and control of infectious diseases and NCDs, funding streams for both are pooled. Since SAN-EPID has a long history of hygiene and infectious disease control, the bulk of its activities – and funds – continue to be

dedicated to those activities with the result that NCD core population services are inadequately funded. Experience in the Russian Federation suggests that assigning responsibility for prevention and control of NCDs to an organization with a long established focus on hygiene and infectious disease control services may never yield an acceptable level of NCD core population services. Armenia may wish to consider the Russian Federation's approach and establish a separate organization responsible for the control and prevention of NCDs. Doing so would enable the Government of Armenia to allocate the needed resources for core population-based NCD interventions, which could help address the growing economic burden due to NCDs.

The bulk of primary care providers' income is derived from capitation payments for patients enrolled in their practice. Capitation payments are weighted for age, with rates for children under 18 years double those for adults; rural providers located in mountainous and extremely mountainous areas are paid 7% and 14%, respectively, more than urban providers (Richardson, 2013). This type of capitation formula does not recognize that the elderly are more costly to treat and thus provides an incentive to underserve the elderly. To counter this incentive, the Ministry of Health has, however, taken steps to revise this formula and has piloted a more sophisticated, but budget-neutral capitation formula that removes the disincentive to treat older patients who cost more (Yoder & Johansen, 2010). It has also instituted an incentive scheme that allows family doctors to be paid a bonus to care for patients with NCDs rather than refer them to specialist care (Richardson, 2013).

The Ministry of Health has also recently initiated a results-based financing scheme that rewards family doctors on the basis of indicators (28 in 2015) divided into five domains:

- disease prevention (screening for early detection of arterial hypertension, obesity, diabetes mellitus, lip disorders, glaucoma and lifestyle counselling among adults);
- chronic disease management measures (e.g. the percentage of patients diagnosed with diabetes who have had their body mass index calculated and a urine test performed);
- maternal and reproductive health, including breast and cervical cancer screening;
- child and adolescent health (e.g., immunization rates); and
- tuberculosis detection.

This results-based financing scheme is an important step towards the establishment of the necessary incentive system to ensure early detection and appropriate management of NCDs in primary care. While the scheme has been well received, its impact has yet to be determined. However, regardless of its ultimate success in increasing detection rates of these diseases, it may not be sufficient to ensure better clinical outcomes in absence of the ability to even monitor outcomes. Other constraints, for example, inadequate access to quality medications, a lack of patient education programmes and insufficient allied health personnel should also be addressed.

Provider payment methods for outpatient specialist care and hospital services vary according to the category of patient. Patients who do not belong to a vulnerable group or who have certain diagnoses are not eligible for outpatient specialist care or inpatient services under the basic benefit package (BBP). As a result, they must pay for such services on a fee-for-service basis. In practice, such patients are usually required to pay the expected cost of their treatment at the point of admission. In contrast, for vulnerable groups and patients with certain diagnoses, such services are covered under the BBP. However, all but the most vulnerable groups are required to pay a co-payment for hospital services and emergency care with the exception of resuscitation (Richardson, 2013).

For BBP-covered patients, hospitals and specialist services are funded through a global budget based on an agreed number of cases. Different rates are paid according to diagnosis, disease group or type of care provided. Hospitals are paid retrospectively per eligible discharged patient or outpatient visit. As in the case of capitation rates, hospital rates are constrained by the available budgets and do not reflect production costs. While this type of payment method ensures tight fiscal control, the low rate of reimbursement not only encourages informal payments, which remains a widespread problem in Armenia (Richardson, 2013), but it also makes it difficult for

hospitals to provide an adequate quality of care. In hospitals, for example, food is not routinely provided to patients. For many NCD patients, e.g., people with diabetes, this can have a very detrimental impact on their disease. The absence of adequate funding for ancillary services like rehabilitation for patients with stroke or AMI can have dire consequences for their prognosis, as can the lack of foot clinics for patients with diabetes.

Rehabilitation outside hospital setting is extremely limited, as is institutional long-term care and home-based care services. In general these are areas that have yet to be developed in Armenia (Richardson, 2013), perhaps because of the absence of adequate funding for such services. The absence of such services places a great burden on the families of patients with NCDs and elderly, infirm persons. It also greatly reduces the quality of life of these patients and undermines their ability to stay in their own homes (United Nations Economic Commission for Europe, 2011).

Demand-side incentives are inadequate. Although primary care is universally available and health checks are offered as part of the BBP, only a minority of patients avail themselves of such services (Richardson, 2013). There are no financial incentives for patients to improve their life styles or manage their disease(s) well. Indeed, the absence of coverage for smoking cessation services, nicotine patches or alcohol treatment programme undermines patients' ability to achieve healthier lifestyles. Similarly, the limited coverage of certain tests and testing equipment for diabetes patients combined with an absence of therapeutic patient educators and other allied health professionals virtually ensures that patients will not be able to manage their NCDs well. The lack of coverage or extensive co-payments for many NCD medications also undermines patients' ability to purchase needed medications.

When considered in totality, the incentives created by the current health system undermine Armenia's ability to effectively prevent, control and manage the growing burden of NCDs. Primary prevention of NCDs is insufficient (in part) because of significant underfunding of core population-based NCDs. Secondary prevention is inadequate in part because of insufficient financial incentives. The absence of coverage for needed services combined with a lack of needed allied health professionals undermines patients' ability to manage their disease(s). High levels of complications combined with a poorly developed gatekeeping function at the primary care level create a system that is heavily weighted towards hospital care, which is both inefficient and very costly.

Challenge 9. Integration of evidence into practice

Strengthening evidence-based interventions is an important challenge for NCD control in Armenia. Responsibility for clinical guidelines and standards lies with the Unit of Medical Care and Services, Clinical Guidelines and Standards Control within the State Health Inspectorate of the Ministry of Health. There does not appear to be a structured process with public consultation for developing national clinical guidelines and pathways, and few appear to exist. Physicians usually use European or American clinician guidelines, and there did not seem to be a problem with accessing the international evidence base. Dissemination and training on these is ad hoc and organized through professional associations. **As these foreign guidelines are not approved by the Ministry of Health, they are not linked to national systems for monitoring practice.** The Regional Health Administration has a role in working with health care facilities on protocols and disseminating information.

Armenia has an essential drug list, which follows WHO guidance, but prescriptions are not regulated. Doctors can prescribe off this list; patients pay for medicines that are not prescribed by doctors in accordance with the drug list. The pharmaceutical sector is apparently very active in promoting its products and pays commissions to doctors for prescriptions.

Extensive guidelines have been approved for some core services, for example, the NCD prevention guidelines produced as part of the World Bank Disease Prevention and Control Project. On field visits, these were seen on the desks of clinicians and administrators, and clinicians were aware of their contents and appeared to be using them. Training was over two weeks for family doctors, nurses and administrators, and one week for obstetricians/gynaecologists. Training included knowledge and skills; doctors had an opportunity to learn about and practise pap smears on models in a classroom environment under supervision, so there was some standardization and quality control. Training also included counselling on lifestyle behaviours although doctors did not get an opportunity to practise this; motivational interviewing does not appear to have been part of the curriculum.

There is some on-going assessment of the appropriateness of medical practice but this might vary by facility and is limited. Monitoring the quality of clinical practice appears to rely more on intermittent hand searches of paper clinical records rather than the systematic review of routine data or dashboards of indicators. Within hospitals, chief specialists may have their own systems for checking the quality of clinical practice. In the Ashtarak Medical Center (70 hospital beds; 50–55% bed occupancy rate) in Aragatsotn region, a director aimed to review a set of hospital clinical records each day, and expected the deputy director to do the same at the polyclinic. Such reviews were against the relevant guidelines. Within the "Surb Grigor Lusavorich" Medical Center (the biggest public medical centre in Armenia), a director held daily meetings to review hospital deaths and difficult clinical cases. Such reviews included looking for possible medical errors and avoidable deaths. A director of a medical centre in Yerevan would summarize the findings of such reviews in an order if there was evidence of error.

Where reviews of records against guidelines took place, it seemed to be more aimed at checking whether activities had taken place for payment or reimbursement purposes rather than for checking quality standards. There are national standards and quality of care is under the Ministry of Health. On their behalf, the Regional Health Administration checks the quality of services and whether they are properly organized. So, for example, for the regional medical centre in Aragatsotn, the Regional Health Administration sends a team once or twice a year for up to a week to review a sizable sample (60–70%) of patient case records. In addition, the team would randomly check a few case records each quarter. It would also call patients, but this was more to confirm that consultations and activities had actually taken place on a specific date than to enquire about patient satisfaction with services provided. The Project Implementation Unit of the World Bank Disease Prevention and Control Project would also call a random sample of patients to check whether screening had taken place on the date given in the clinic submission; there is potential for such a call to include enquiries about patient satisfaction. A 2012 USAID report found only a small proportion of managers who reported using data of any kind to assess provider performance, and there was little or no use of data within clinics to track and improve NCD services; they recommended improved facility health information systems (generation, collection, analysis and use of data) for continuous quality improvement (Hill, Chitashvili & Trevitt, 2012).

If the Regional Health Administration finds that care is poor during its inspections, it informs the Ministry of Health who will investigate and follow up with patients if there has been a treatment failure. Record of poor performance by doctors and nurses remains on personnel files with the Ministry of Health. Reintroduction of licensing and a new system for continuing professional development of doctors and nurses are being established; the latter will require accredited training to take place to achieve a number of points every five years.

Structures to facilitate quality assurance did not seem to be in place and/or functioning, and quality improvement processes seem to be limited in scope. Quality committees should exist in all medical centres and report quarterly to the Ministry of Health. It was less clear whether these were actually operational (some of those interviewed said they were not) and, if such minutes were submitted, whether these were reviewed and action taken. A USAID project had

instituted such committees as part of a continuous quality monitoring project (USAID, 2012); this project ended a few years ago and it seems that practices may not have been mainstreamed or sustained since. Quality outcomes such as amputations or blindness for patients with diabetes are not monitored.

If avoidable deaths or events resulting in patient harm were identified, the consequences for individual medical practitioners could be severe. An example was shared where neglect of clinical duties led to prosecution and imprisonment. Maternal deaths would be automatically referred to the coroner. Although there were moves to shift the apportionment of blame away from individuals towards teams, there was no evidence that a systems approach was used for investigation and prevention. The culture of blame and punishment suggested potential lost opportunity for learning from critical incidents.

Challenge 10. Distribution and mix of human resources

For effective response to NCDs, countries need to have adequate and trained human resources. The Ministry of Health and its Human Resources Department understood the importance of this issue and were interested in accessing the methodology and building capacity for assessing needs, and planning and monitoring health human resources. The HIAC (30 specialists), the Demographic Department (10 specialists) and the HSPA Service (6 specialists) of the NIH provide the Ministry of Health with analytical information about population health needs, but does not have complete and detailed human resources information. However, in 2015, the NIH began the process of mapping regions, including its staff numbers. A new statistical report form for human resources was also created for medical facilities. Physicians and nurses are the primary respondents for this reporting form. A registry of doctors and nurses is being established on the basis of this form, which could also be used to monitor the migration of health specialists.

According to HIAC data, in 2014, there were 42 physicians (of all specialties including dentists) per 10 000 population and 61.1 nurses per 10 000 population; the numbers and ratios for both physicians and nurses have decreased since 2011. The Health System Optimization Concept Paper estimated that the physician/nurse ratio would grow, but it has remained constant (0.72) from 2010 to 2014. In 2015, just over half (52.7%) of all physicians (all specialties) were employed in PHC facilities. The number of physicians directly involved in patient care varies significantly across the country: as per 2014 data, the number was 54.9 per 10 000 population in Yerevan whereas in the regions, it did not exceed 19.6 per 10 000 population (Lori region).

The Armenian Medical Institute, the Yerevan State Medical University and six private medical institutes train physicians in Armenia. Yet the State medical facilities have 300 vacancies, mainly in rural areas and for some key specialties (primary care physicians, endocrinologists). Students who received education under the State order must work three years in areas that have been assigned to them.

The Ministry of Health approves plans proposing the number and the specialties of students, as well as the curricula for the State Medical Institute and 22 medical colleges; the Ministry of Education and Science approves plans for the Yerevan State Medical University, resulting in a lack of coordination between the 2 systems.

There is no baccalaureate degree but there are master's degrees in public health, promotion of health and management in health. NCD is not addressed in the diploma and post-graduate curricula. The other allied health professional workforce required for NCD is lacking e.g. nutritionists, podiatrists, etc. It may be useful to consider training specialists in the field of public health and health managers without obligatory medical education. Future public health specialists should have a better understanding of their place in the health system and their prospects for employment.

During the World Bank Disease Prevention and Control Project (2012), 1700 primary care specialists and family physicians were trained in prevention of NCD and patient education skills. NIH offers postgraduate, short training courses (mandatory for all managers and physicians to take periodically) to managers of health facilities and health authorities in population-based aspects of NCDs, the social determinants of NCD health inequities and gender responsiveness. During the visit, NIH representatives supported the necessity of including similar themes for the State curricula for medical institutes, all postgraduate courses and nursing education.

Challenge 11. Access to high-quality medicines

While primary care services are provided free of charge to all citizens, coverage for outpatient medicines is limited to socially vulnerable groups and patients with certain socially significant diseases, such as tuberculosis, HIV/AIDS, diabetes and cancer. Among these groups, only children aged 0–7 years and certain vulnerable groups are eligible for free medications. However, only 43% of respondents to a 2011 survey reported actually receiving such benefits, with 37% receiving medicines for free and the remainder partially subsidized. Moreover, only 45% of households with persons eligible for free or subsidized medicines actually availed themselves of this benefit (Economic Development and Research Center, 2011). In another survey, Kazaryan et al. (2011) report that only 23% of all medicines – mainly diabetes and epilepsy medications – were used by patients with diseases eligible to receive medication free of charge.

Coverage of essential drugs for older people with long-term conditions is chronically underfunded because of a rigid budgeting system. Primary care facilities receive an allocation for essential NCD drugs for elderly patients that is only half that for drugs for children and youth even though they have much lower needs. Furthermore, because facilities receive global budgets for both drugs and diagnostic tests based on prices that are determined by the budget available to the Ministry of Health, facilities often run out medications covered under the BBP. Consequently, according to a study in 2011, more than 90% of all medicines for the treatment of both acute and chronically ill patients are purchased out of pocket (Kazaryan et al., 2011). On an annual basis, non-poor households spent an average of 1521 dram on medicines, while the poor and the extremely poor, spent only 510 dram and 190 dram, respectively (Armstat, 2011). Medicines (along with inpatient expenditures) accounted for the largest share of household out-of-pocket expenditures, with households spending approximately 4% of all household expenditures on drugs (Richardson, 2013).

High out-of-pocket expenditures for medicines contribute to poor health outcomes among patients with NCDs. Kazaryan et al. (2011) reported that almost 5% of all chronically ill patients receive no medicine, while Roberts et al. (2012) reported that 79% of patients diagnosed with hypertension do not take their medication daily, thereby undermining the effectiveness of the treatment. Given that hypertension is an important risk factor for cardiovascular and circulatory diseases and the second most important risk factor for premature mortality and morbidity (measured by disability-adjusted life years) in Armenia (IHME, 2010), the limited coverage for NCD drugs, like anti-hypertensives, has a deleterious impact on the health of the Armenian people.

The impact of the limited coverage for NCD drugs is exacerbated by high prices and the imposition of a 20% value added tax with the results that chronic diseases result in catastrophic health expenditures for many households (Tonoyan & Muradyan, 2012). Indeed, some of the NCD medicines cost more on a monthly basis than the income received by pensioners (WHO, 2009). The high prices of pharmaceuticals are the likely result of an absence of any legal or regulatory provisions to contain their prices. Moreover, the Ministry of Health does not monitor retail prices (Richardson, 2013). On the positive, a 2010 survey of the four largest pharmaceutical vendors found that 77% of the essential medicines that these vendors had in stock were

generics were approximately 1500 Armenian dram (or approximately US$ 4.1) cheaper than the corresponding brand name drug. The high availability of generic drugs in Armenia is in part the result of the presence of 17 local producers that account for the production of approximately 13% of all drugs consumed (Beglaryan, Hakobyan & Perikhanyan, 2012).

In addition to financial barriers, access to pharmaceuticals is constrained by the lack of physical availability of certain medicines. The lack of oral morphine for outpatient pain management is a particular problem caused by an overly restrictive legislative framework for the governance of the distribution of opioids for medical purposes. The problem is so acute that many of the 8000 terminally ill cancer patients, who die each year, are left to die in excruciating pain (Human Rights Watch, 2015). Access to medicines is also a problem for patients living in rural areas that are characterized by a dearth of pharmacies. Almost one third of respondents in a household budget survey reported that the closest pharmacy was more than 10 km away.

Evidence suggests that the effectiveness and quality of medications for NCDs is a concern. Although Armenia has an essential medicines list consistent with recommendations by WHO, the list has not been updated since 2007 (Richardson, 2013). As a result, only two or three first-line medications for many NCDs are available (i.e., registered) in Armenia, while more recent second-line drugs are not. Furthermore, many of the NCD medications on the list are outdated and should be replaced by more modern and effective ones, according to physicians responding to the 2011 survey results reported by the Economic Development and Research Center (EDRC) (2011). Results indicate that the vast majority of patients who participated in the survey were dissatisfied with the effectiveness of the drugs they received free of charge or with a discount. Furthermore, 12% of patients had received drugs past their expiration dates (EDRC, 2011). The Scientific Centre of Drug and Medical Technology Expertise (SCDMTE) under the Ministry of Health is responsible for the regulation and licensing of pharmaceuticals; it has good capacity and a high-quality laboratory. Seven of 18 samples taken for testing of postmarked surveillance by SCDMTE, however, failed to meet quality standards (Richardson, 2013).

Challenge 12. Effective management

Despite a number of comprehensive reforms in the health sector, there is still a need for better performance assessment through improved systems and procedures, as well as expanding leadership and managerial skills.

Strengthening health systems management in collaboration with authorities at all levels is critical to improve health care and public health.

Directors of the State medical institutions are subordinated and appointed by regional authorities through a procedure of open competition. The selection committee includes a representative of the Ministry of Health. Appointment is made on the basis of an evaluation of the candidates' experience and achievements. Managers of health services are mainly physicians who received postgraduate education on the organization, management and economy of health care and public health services, and began a career path in management (more often at the level of manager of subdivisions in medical institutions).

As a rule, the director of a medical institution is supported by assistants for both administrative and clinical matters. The responsibility of assistants on clinical work include organization and improvement of medical processes, and the performance of clinical guidelines and patient pathways, which are regulated by orders and methodological instructions of the Ministry of Health (internal quality control). But strict procedures of control and improvement are not established, and much depends on the so-called accepted practice in medical facilities. The State Health Inspectorate of the Ministry of Health, created in 2015, is authorized to measure the quality of health care, and the performance of approved clinical protocols and other State acts on health services. It can be defined in the future as an external quality control, but human resources of the Inspectorate are insufficient for wide-scale control.

The State Health Agency monitors the volume of services provided. Specialists of local branches of the Agency in regions receive reports on the volumes of the medical care provided (in electronic and paper formats) and carry out regular audits of medical institutions. The Agency pays (or withholds pay) for the care provided according to the audits' results.

The work of the directors of medical institutions is evaluated by indicators (in annual and quarterly reports), including indicators of screenings, NCD diseases and death rates, but the results do not influence their salary. Inadequate care can lead to dismissal of the director (only after a commission's decision). They are, however, eligible to receive a small bonus (1–2% of salary) if they are successful in raising revenues from services that are provided for a fee (i.e., those that are not included in the BBP).

The HIAC collects and processes reports of medical institutions. The departments of Health Care and Development, Out-patient and Hospital Care and Human Resources in the Ministry of Health use the results of the NIH analytical work. It is possible to extract and analyse NCD information from the medical institution reports, and it has been used, in particular, for development of a NCD national strategy and action plans.

Challenge 13. Adequate information solutions

The elements and structure of a health information system continue to develop in Armenia, but this process has not been completed. The system generates large quantities of data, but these are not used to their full potential. Different components of the NCD control cycle include:

- evaluating the current situation (health of population, burden of NCDs, health system performance, performance of public health functions, finances, human resources for NCD control);
- taking strategic decisions;
- planning programmes and resources;
- implementing health system programmes and functions; and
- monitoring and evaluation.

All of these components need appropriate and reliable information. Armenia tries to use a systematic approach for health management and has participated in the process of assessment of health system results since 2005, when a HIAC was created at the NIH with joint support of the Ministry of Health of Armenia, the World Bank and WHO. The National Health Information Analytic Center of the NIH collects and provides basic information for analysis. Assessment reports inform the reform process and can provide evidence-based information for political and strategic decisions. But there are some gaps and opportunities to complete a comprehensive health information system for better NCD control.

Information on performance of all levels of the health system is critical for a NCD response. NCD outcome data is collected by the Demography Department of the National Statistical Service using death certifications, which include socioeconomic variables. From 2016, electronic death certifications will be included in the national register. This will help to improve the analysis of premature NCD mortality and burden of NCD coding, including the choice of the main cause-of-death codes (still coded by physicians who need ICD-10 in Russian and a computer system that provides these codes). Armenia is considering participation in the WHO STEPwise approach to surveillance (STEPS) to collect, analyse and disseminate data on NCD risk factors, health service utilization and outcomes (WHO, 2016b). The demographic and health survey is implemented by the National Statistical Service with USAID support once every 5 years with an emphasis on birth-related indicators. The integrated living conditions survey – performed annually with World Bank support – provides information by region, sex and cause of death. **But these assessments do not provide data that can be disaggregated by key equity parameters**, which would be possible through more close cooperation between the NIH, the National Statistical Service and the State Health Inspectorate, and on the basis of modern information technology.

Nevertheless, each of these three groups (risk factors, health service utilization and outcomes) are routinely analysed separately at all levels and publicly reported through the HSPA and funded by the World Bank. Publicly available data, including web-based applications exist. Calculating the burden of diseases is considered as a priority in the future.

In the near future, unified electronic personal health records can help with continuity of health care and health promotion. Currently, most PHC personnel who manage chronic conditions have personal computers, but with different software. They continue using hard copies of medical records and nurse's invitation for visits, which is not efficient. However, Ambulance Services, in their follow-up visits to chronic patients, use electronic records to register and inform PHC.

Modern information solutions with unified electronic personal health records – exchanging personal (encrypted) information between facilities and levels, and between patients and medical staff – is a very feasible step for Armenia to take, which can improve quality of care significantly and involve patients in managing their own care.

Some quality indicators for screening programmes are used mainly as a financial incentive for primary care physicians. Statistical form F.002 was created and used for payment purposes, but can potentially be used for quality control and population outcomes.

In 2015, the State Health Inspectorate was created and assumed a lot of control functions (revising the State law). Its leaders have a very progressive approach – not only for control, but for monitoring and feedback. They publish the plan of inspection visits on the internet (regular inspections and visits in response to complaints), hold seminars for leaders, perform analytical reviews on the results of monitoring (use criteria of achievement of the objectives), develop the checklists for protocols and influence the programme for retraining inspectors (together with the Ministry of International Economic Integration and Reforms). They created a working group for inspections, which include intersectoral representation from the Strategy Department of the Ministry of Health and other sectors. Success indicators include the number of complaints investigated and resolved.

The National Health Information Analytic Center of the NIH collects reports from the Center for Disease Control, which includes information about resources and budgets from the Statistical Department of the Ministry of Finance and the Ministry of International Economic Integration and Reforms. These examples are at the national level, but no continuous quality improvement mechanisms and, accordingly, no supporting information system exists at the facility level. However, **facility-level information about costs, quality and output can provide a basis for evaluating their performance, by connecting the accounting system with their performance and the health outcomes of the covered population.** There is currently interest in acquiring analytical, modelling software.

The Statistical Information Dissemination and Public Relations Division of the National Statistical Service organizes press releases and press conferences, and works closely with the Ministry of Labour and Social Affairs in a joint working group. They publish quarterly statistical books and make presentations at the level of deputy and ministers.

Challenge 14. Managing change

The Government of Armenia has demonstrated commitment to preventing and controlling NCDs. There is consensus about the importance of preventing NCDs and about the need for new solutions among politicians and health professionals.

In Armenia, strengthening intersectoral cooperation is one of the most important areas for managing change. In all areas, overcoming obstacles requires management of change and leadership skills.

In addition, there is still a need to reinforce intrasectoral cooperation in the field of NCDs. Given the multiple players within the field of NCD prevention and control, this will require a clear

delineation of roles and responsibilities between the different units, departments and institutions of the Ministry of Health with regard to NCDs, and for reinforcement of cooperation within the health sector.

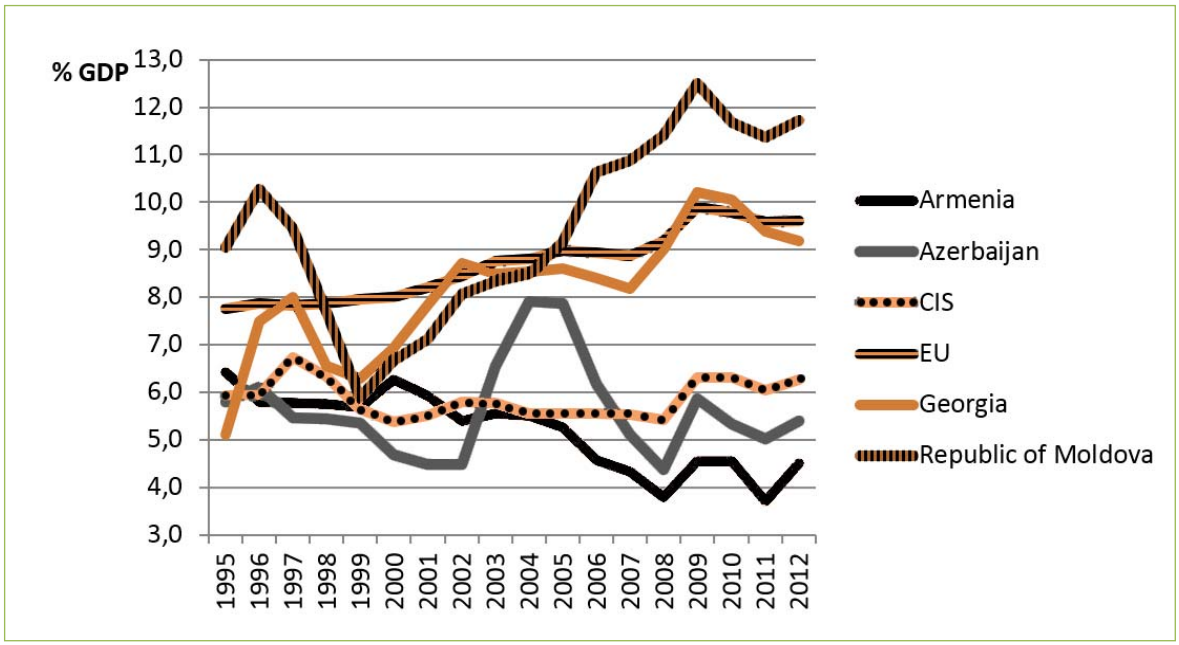
Strengthening public health and intrasectoral and intersectoral cooperation are critical for NCD control.

Engagement of health professionals and representatives of the general public in policy development could be strengthened and extended. There is a lack of participatory structures and nongovernmental stakeholders for designing and implementing policies.

Challenge 15. Ensuring access to care and financial protection

For most of the time since independence in 1991, Armenia has faced very difficult economic conditions that have contributed to very low levels of health spending. Armenia spent 4.5% of GDP on health care in 2012, which was the lowest level in the Caucasus (Fig. 5). Indeed, with the exception of Monaco (4.4%), only Kazakhstan (4.2%) and Turkmenistan (2.0%) had lower levels of spending in the European Region that year (WHO Regional Office for Europe, 2015).

Fig. 5. Trends in total health expenditures as a share of GDP in Armenia and selected countries 1995–2012



Source: WHO Regional Office for Europe, 2015.

In absolute terms, Armenia's total health expenditures per capita have also been among the lowest in the European Region. Using estimated purchasing power parity (PPP) per capita spending in US dollars in 2012, only Uzbekistan (PPP US$ 220), Turkmenistan (PPP US$ 209), Kyrgyzstan (PPP US$ 175) and Tajikistan (PPP US$ 129) had lower levels of spending than Armenia (PPP US$ 209) (WHO Regional Office for Europe, 2015).

The low levels of health care spending have resulted in outdated and run-down health care facilities, a lack of equipment, and insufficient availability of medicines and supplies that have limited both the quality and quantity of health services provided. With 3.4 ambulatory

visits per year (in 2011), Armenia's level of outpatient utilization was among the lowest in the European Region (Richardson, 2013). Furthermore, as discussed elsewhere, the low level of government spending on health care has resulted in high rates of out-of-pocket payments as a percentage of total health expenditure. With high rates of poverty, many households risk facing catastrophic household health expenditures. In 2010, health expenditures accounted for 14.2% of total household expenditures, with 4% spent on pharmaceuticals (Richardson, 2013).

While the non-poor pay more in absolute terms for health services than do the poor and extremely poor, the burden is greatest on those groups. Even the 18% of patients who are eligible for the BBP incur considerable out-of-pocket payments in order to access health services, in part due to high levels of informal payments. In 2010, out-of-pocket payments for BBP beneficiaries amounted to 172 dram for a visit to a family doctor, and 3418 dram for a hospitalization. The high out-of-pocket payments for both the poor and non-poor make health services contribute to many Armenians foregoing seeking health care or purchasing needed NCD medicines (Richardson, 2013). Furthermore, 44.5% of respondent to a household health expenditure survey reported having foregone a visit to a doctor and gone straight to a pharmacy, when in need of medical care (Tonoyan & Muradyan, 2012).

4. Policy recommendations

This section focuses on a number of recommendations based on the findings from the visit and discussions at the final workshop with key stakeholders. The policy recommendations are grouped around four main themes:

1. strengthening coordination and governance mechanism for NCDs
2. scaling up cost-effective population based-interventions
3. improving quality of care and service delivery
4. generating more resources for tackling NCDs

4.1 Strengthening coordination and governance mechanism for NCD

Armenia has sectoral segmentation in the public administration despite some examples of intersectoral cooperation between government agencies, particularly in the field of drug control. There is a need for an intersectoral platform at both national and regional levels to ensure intersectoral NCD planning and action towards more effective NCD action. Multisectoral action for NCD is also more likely to occur when holding multiple ministries accountable for clear targets, which should be aligned with the NCD global monitoring framework and clear mechanisms for budgeting (WHO, 2016a).

Below are a few recommendations to strengthen governance mechanisms for NCDs.

- Establish a multisectoral mechanism chaired at the highest level of authority;
  - Build on the existing healthy lifestyle intersectoral committee.
  - Create **a technical working group with interdisciplinary experts** to support the committee.
  - Improve coordination within the Ministry of Health.
  - Expand the role and participation of NGOs in NCD prevention and control.
- Set clear targets and indicators for NCDs consistent with the global monitoring framework backed up by proper resources.
- Make an explicit connection between strategic objectives and appropriate resource allocation in the intersectoral NCD prevention and control action plan currently in development.
- Strengthen and expand public health human resources and competencies to address the intersectoral agenda of NCDs including strategic management, documenting NCD impact on the economy, and the health impact assessment of policies in other sectors.

4.2 Scaling up cost-effective population-based interventions

Population-based interventions are grouped around three main areas: tobacco control, harmful use of alcohol, and diet and physical activity. During the country assessment, the coverage of core population-based interventions was reviewed. Core interventions are critical to achieve good NCD outcomes. Core interventions are evidence-based, high impact, cost effective, affordable and feasible to implement.

The ratification of the WHO FCTC by Armenia in 2004 has set the stage for strengthening tobacco control. Revision of the Law on Restriction of the Realization, Consumption and Usage of Tobacco in the current draft of the governmental programme on the prevention and control of NCDs 2016–2020 in Armenia is aligned with regional and global mandates, including the global

NCD action plan, the global monitoring framework and Health 2020 (WHO, 2013a; 2016a; WHO Regional Office for Europe, 2013b). The tobacco control laws should be amended in accordance with the WHO FCTC requirements and implementation guidelines

However, national legislative action could be enhanced in the area of alcohol and nutrition. The high burden of obesity requires a dedicated effort to encourage healthy eating such as measures to reduce salt intake and marketing of unhealthy foods and beverages. There is no comprehensive ongoing NCD survey including behavioural and biological risk factors, as well as health system measures to provide a baseline for NCD actions. The current surveys are greatly dependent on external funding and need to be institutionalized.

These findings make clear that there is a scope for improvement. By scaling up NCD interventions, unnecessary premature deaths can be avoided. This, in turn, can reap economic benefits, allowing people to lead healthy lives and to actively participate in the workforce.

Below are some action steps to scale up cost-effective population-based interventions.

- Review the Law on Restriction of the Realization, Consumption and Usage of Tobacco in order to strengthen protection against the harmful effects of tobacco use and tobacco smoke, which includes social, environmental and other consequences.
- Implement core population-based interventions through the new **governmental programme on the prevention and control of NCDs in Armenia 2016–2020**, and application of whole-of-government approaches to control the use of tobacco and alcohol. Adopt the proposed new tobacco control law, which would be a major step forward in addition to the programme on NCDs.
- **Accelerate** and step up efforts and **enforcement modalities** to address alcohol and tobacco use.
- **Step up action on obesity, poor nutrition and physical inactivity as important risk factors** for NCDs, such as plans to reduce salt intake along with measures to reduce marketing of unhealthy food and beverages to children.
- Establish and institutionalize at the Ministry of Health level comprehensive NCD surveillance including both biological and behavioural **risks factors**, as well as health system measures to assess the impact of NCD policies and interventions in line with the NCD global monitoring framework.

4.3 Improving quality of care and service delivery to address NCDs

The political commitment to PHC is challenged by difficulties in implementation. While several positive steps have been taken, the overall vision for the first level of care is not very clear; the role and content of services provided by PHC providers should be defined, as well as a better definition of this role vis-a-vis other providers and adjustments to the regulatory framework, education, skill development and incentive systems in support of this vision.

A number of features of the organization of general practitioner practices create a good platform for the detection and management of NCDs. However, patient care is still fragmented as different practitioners may be involved in their care without formal and systematized communication. Better links could be made between general practitioner practices and health houses and secondary care. Nurses can be used more extensively in the health system. Prevention and promotion activities such as counselling services on diet, nutrition and smoking cessation could be moved from physicians to nurses.

Despite a number of comprehensive reforms in the health sector, better performance assessment through improved systems and procedures, as well as expanded leadership and managerial skills

are still needed. It would be also important for private medical organizations to receive State financing only after accreditation.

Below are some action steps to improve quality of care and services to address NCDs.

Five recommendations are made for **human resources for health**.

- Improve remuneration of doctors and nurses to reduce brain drain.
- Establish education programmes for other needed health professionals (nurse educators, dieticians, podiatrists, health educators).
- Enhance capacities of nurses in NCD prevention and control through expanding, facilitating and rewarding continuing education.
- Develop the role of nurses, and shift tasks from doctors to other staff.
- Include NCDs and public health in diploma and post-diploma curricula for health managers, physicians and nurses.

There are several recommendations for **process/structure/outcomes**.

- Develop, disseminate and/or monitor national NCD clinical guidelines involving professional groups and patients approved by the Ministry of Health.
- Develop and offer therapeutic patient education, and monitor its uptake and quality.
- Use incentives, positive rewards and peer-to-peer learning to foster a culture of continuous quality improvement focusing on outcomes.
- Use disease registers and a focus on disease outcomes as tools to improve quality.
- Assign a coordinator of cervical screening programmes to cover the whole pathway from identification of eligible population to disease outcomes.
- Develop an integrated chronic care model across services.
- Develop healthy lifestyles support/services, for example, nurses and health educators trained to give advice and specialist tobacco cessation services.
- Develop an accreditation system for medical institutions and systems of continuous quality improvement, connecting incentives of medical staff and administration of medical institutions with indicators of qualitative work, including health promotion and NCD prevention, as well as with health indicators of the population covered.

4.4 Generating more resources for tackling NCDs

Increasing health care spending requires raising more funds to be spent on health services. One way is to increase the public allocation of funds to health (i.e., increase the global budget for health), but history shows that this has been very difficult in Armenia. **As a result, earmarked revenues are likely to be needed.** This may include so-called sin taxes (on tobacco, alcohol, salt, sugar, fats, etc.), which would both generate more financial resources and reduce consumption of these products, which will have a positive impact on health. The only down side is that the poor will be disproportionately impacted, as they have higher rates of unhealthy lifestyles (consumption of these products). On the other hand, the health impact with be greater. One caveat: the total amount of resources raised this way will be relatively limited.

A better way would be to gradually move to a unified social insurance system that would cover everyone with a uniform benefit package. While some might argue that this is not the best solution, in Armenia's case, the evidence is clear that general revenue taxation ends up resulting in insufficient allocations for health. In such a system, the government would pay the premium for the poor and thus ensure comparable coverage for them. Another way to generate more resources for health is to improve the efficiency of current health expenditures. Improving technical and allocative efficiency will free up additional resources.

There is little evidence to suggest that mandating an annual health check-up for all age groups will yield better health outcomes. It may be useful to explore the possibility of targeted screening programmes.

The following are some recommendations in the area of health financing.

Three recommendations are made to **generate more resources for health**.

- Increase the global, public budget for health.
- Establish earmarked so-called sin taxes for health expenditures.
- Gradually establish a unified social health insurance programme (with premiums from both employees and employers).

There are several recommendations to provide **better efficiency**.

- Better targeting of existing BBP (beyond PHC).
- Cover only "best buys" and include all evidence-based services for NCD patients (WHO & World Economic Forum, 2011).
- Reduce duplication of services at PHC and hospital levels.
- Establish a gatekeeping function (or impose user fees for services in hospitals).

Two key recommendations are made to **improve equity**.

- Unify the basic benefit package across covered groups.
- Establish a uniform BBP for all with coverage of:
  - all diagnostic tests needed for evidence-based management of NCD patients (e.g. HbA1c for diabetics);
  - essential NCD medicines and evidence-based testing equipment/supplies for all NCD patients;
  - smoking cessation programmes/medicines and other evidence-based programmes to improve lifestyles; and
  - outpatient rehabilitation services.

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Annex 1. Criteria for scoring coverage of population-based interventions

Tables A2.1–A2.3 show the criteria for scoring coverage of population-based interventions for tobacco, alcohol, and diet and nutrition.

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

Coverage	Limited	Moderate	Extensive
Range of antismoking interventions (WHO FCTC)	**Prevalence among adults > 30%**	**Prevalence among adults 18–20%**	**Prevalence among adults < 18%**
Raise tobacco taxes	Tax is < 25% of retail price.	Tax is 25–75% of retail price	Tax is > 75% of retail price
Smoke-free environments	100% smoke-free environment enforced in schools and hospitals only	100% smoke-free environment enforced in hospitals, schools, universities, public transport and workplaces	100% smoke-free environment enforced in all public places, including hospitality sector
Warnings of dangers of tobacco and smoking	Warning labels required on tobacco products, size not specified	Warning labels on all tobacco products covering ≥ 30% of package size (front and back)	Warning labels > 50% of package size (front and back), with pictures (standardized packaging)
Bans on advertising, promotion, sponsorship	No bans, or bans on national television, radio and print	Ban on direct and indirect advertising and promotion	Ban on all advertisement and promotion, including at points of sale, with effective enforcement
Quit-lines and NRT[a]	No quit lines or government-funded cessation services, but NRT allowed and available for full pay	Quit lines, government-funded cessation services are available (possibly for payment). NRT are available for full pay	Toll-free quit lines, cessation services and NRT ae available and affordable (covered at least partially)

[a] Indicates criteria additional to those mentioned in the *Global action plan for the prevention and control of noncommunicable diseases 2013–2020* (WHO, 2013).

Source: WHO Regional Office for Europe (2014).

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

Coverage	Limited	Moderate	Extensive
Raise alcohol taxes	Alcohol taxes follow price index	Alcohol taxes follow price index; special taxes on products attractive to young people	Alcohol taxes follow price index and related to alcohol content; special taxes on products attractive to young people
Restrictions or bans on advertising and promotion	Regulatory frameworks regulate the content and volume of alcohol marketing	Regulatory frameworks regulate the content and volume of alcohol marketing, including direct and indirect marketing and sponsorship	Full ban on alcohol marketing of any kind
Restrictions on availability of alcohol in retail sector	Regulatory frameworks on serving alcohol in governmental and educational institutions	Regulatory frameworks on serving alcohol in governmental institutions, and ban on serving alcohol in educational institutions	All governmental and educational institutions free of alcohol
Minimum purchase age regulation and enforcement[a]	Minimum purchase age of 18 years for all alcohol products	Minimum age of 18 years for all alcohol products and effective enforcement	Minimum age of 18 years for all alcohol products and effective enforcement; loss of licence to sell alcohol if found breaking the law
Allowed blood alcohol content for driving	Blood alcohol content maximum of 0.5 g/L	Blood alcohol content maximum of 0.5 g/L and zero for novice and professional drivers	Blood alcohol content maximum of 0.2 g/L and zero for novice and professional drivers

[a] Indicates criteria additional to those mentioned in the *Global action plan for the prevention and control of noncommunicable diseases 2013–2020* (WHO, 2013).

Source: WHO Regional Office for Europe (2014).

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

Coverage	Limited	Moderate	Extensive
Interventions to improve diet and physical activity	Prevalence of overweight and obesity in children and adults (pre-obesity and obesity) is ≥ 30%	Prevalence of overweight and obesity in children and adults (pre-obesity and obesity) is 20–30%	Prevalence of overweight and obesity in children and adults (pre-obesity and obesity) is < 20%
Reduce salt intake and salt content in foods	< 10% reduction in salt intake in past 10 years	About 10% reduction in salt intake in past 10 years	> 10% reduction in salt intake in past 10 years
Virtually eliminate *trans*-fatty acids from the diet	There is no evidence that *trans*-fats have been significantly reduced in the diet	*Trans*-fats reduced in some food categories and industry operators but not overall	*Trans*-fats eliminated from the food chain through government legislation and/or self-regulation
Reduce free sugar[b] intake[a]	The aim to reduce the intake of free sugars[b] is mentioned in policy documents, but no action has been taken	The reduction of intake of free sugars[b] by 5% is mentioned and partially achieved in food categories	Reduction of intake of free sugars[b] by 5% monitored with a focus on sugar-sweetened beverages
Increase intake of fruit and vegetables[a]	The aim to increase consumption of fruit and vegetables is mentioned, but no monitoring data have been collected to support it	The aim to increase consumption of fruit and vegetables is in line with the WHO/FAO recommendations of ≥ 400 g/day, and some initiatives exist	The aim to increase consumption of fruit and vegetables is in line with the WHO/FAO recommendations of ≥ 400 g/day, with population initiatives and incentives to increase availability, affordability and accessibility
Reduce marketing pressure of food and non-alcoholic beverages to children[a]	Marketing of foods and beverages to children is noted as a problem but has not been translated into specific action in government-led initiatives	WHO recommendations on marketing have been acknowledged. and steps have been taken in self-regulatory approach to reduce marketing pressure on children	WHO recommendations on marketing and the implementation framework for marketing followed consistently, including mechanism for monitoring
Promote awareness about diet and activity	There has been no workforce development for nutrition and physical activity; nutrition and physical activity are not prioritiy elements in primary care	Some workforce development for nutrition and physical activity; nutrition and physical activity are starting to be considered priority elements in primary care	Workforce development for nutrition and physical activity exists; nutrition and physical activity are priority elements in primary care

[a] Indicates criteria additional to those mentioned in the *Global action plan for the prevention and control of noncommunicable diseases 2013–2020* (WHO, 2013).

[b] Free sugars are monosaccharides (such as glucose, fructose) and disaccharides (such as sucrose).

Source: WHO Regional Office for Europe (2014).

References

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The WHO Regional Office for Europe

The World Health Organization (WHO) is a specialized agency of the United Nations created in 1948 with the primary responsibility for international health matters and public health. The WHO Regional Office for Europe is one of six regional offices throughout the world, each with its own programme geared to the particular health conditions of the countries it serves.

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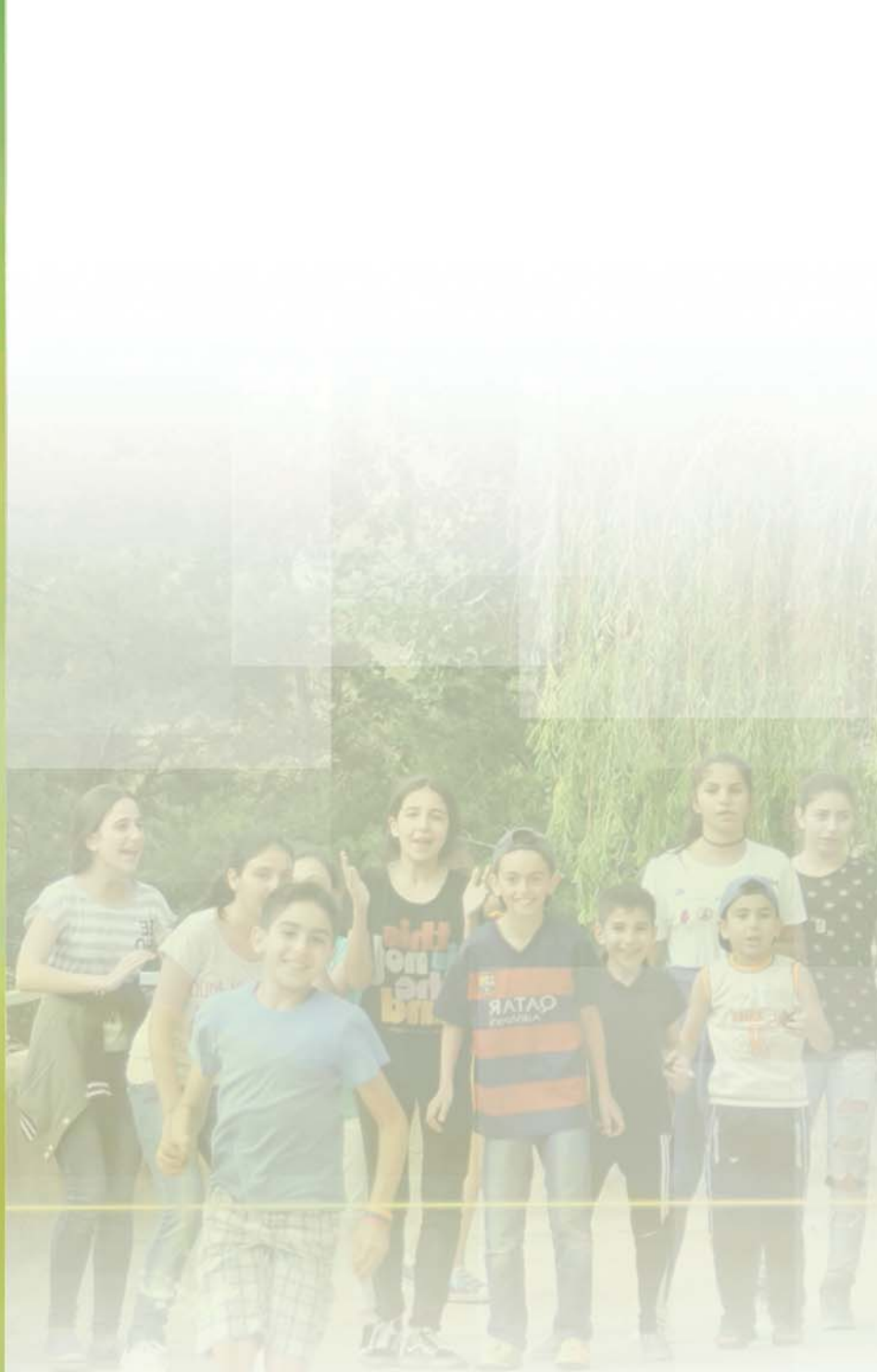

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