

Better noncommunicable disease outcomes: challenges and opportunities for health systems

Country assessment

KAZAKHSTAN



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**World Health
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REGIONAL OFFICE FOR **Europe**

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Abstract

Kazakhstan has one of the highest rates of premature mortality due to noncommunicable diseases (NCDs) in the WHO European Region: the rate in 2012 was 648.31 per 100 000 population aged 30–69 years. This has significant socioeconomic consequences for the development of the country and calls for immediate strengthening of the health system to respond to the growing burden of NCDs. Despite significant progress and political commitment in Kazakhstan, the outcomes of NCDs could still be improved. This report reviews the challenges and opportunities of the health system in Kazakhstan for scaling up core services for the prevention, early diagnosis and management of NCDs. The report also provides examples of good practice in the care of stroke patients and online health information and registries. Policy recommendations are made for further action, based on the assessment.

Keywords

CHRONIC DISEASE - PREVENTION AND CONTROL
DELIVERY OF HEALTH CARE
UNIVERSAL COVERAGE
HEALTH PROMOTION
PRIMARY HEALTH CARE
SOCIAL DETERMINANTS OF HEALTH
PROGRAM EVALUATION
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Book design and cover design: Christophe Lanoux, Paris, France

Contents

Acknowledgements.....	4
Acronyms and abbreviations	5
List of figures.....	6
List of tables.....	7
1. Introduction and rationale	8
2. Noncommunicable disease outcomes.....	9
2.1 Mortality outcomes.....	9
2.2. Gender and NCDs	11
3. Coverage of core NCD interventions and services	13
3.1 Population interventions.....	14
3.1.1 Tobacco	14
3.1.2 Alcohol.....	15
3.1.3 Nutrition and physical activity	15
3.2 Individual services	17
3.2.1 Cardiovascular diseases.....	17
3.2.2 Diabetes	21
3.2.3 Cancer prevention and screening.....	23
4. Health system challenges and opportunities to scale up core NCD interventions and services	24
Challenge 1. Political commitment to NCDs.....	24
Challenge 2. Creating explicit processes for setting priorities and limits	25
Challenge 3. Strengthening interagency cooperation.....	25
Challenge 4. Population empowerment	26
Challenge 5. Establishing effective models of service delivery	27
Challenge 6. Improving coordination across providers	31
Challenge 7. Taking advantage of economies of scale and specialization	32
Challenge 8. Creating the right incentive system	33
Challenge 9. Integrating evidence into practice	34
Challenge 10. Addressing human resource challenges	36
Challenge 11. Improving access to quality medicines for NCDs	38
Challenge 12. Effective management	39
Challenge 13. Creating adequate information solutions	40
Challenge 14. Managing change.....	41
Challenge 15. Ensuring access to care and reducing financial burden	43
5. Innovations and good practice	46
5.1 Telemedicine: an opportunity to improve the access of stroke patients to expert care	46
5.2 Algorithms and protocols for stroke care.....	46
5.3 Health information systems	49
6. Policy recommendations	50
7. Postscript	54
References	56
Annex 1. Data sources and methods.....	60
Annex 2. Criteria for scoring tobacco-, alcohol- and nutrition-related interventions	61
Annex 3. Criteria for scoring coverage of individual services	64

Acknowledgements

The authors express their sincere gratitude to the Government officials of the Republic of Kazakhstan.

This assessment and report would not have been possible without the open-hearted support and welcome of all the interviewees, who took the time to participate and share their views, ideas, concerns and visions with the authors.

Thanks are also extended to Juan Garcia Dominguez for ensuring that the reports of the series are published to a high standard and to Christophe Lanoux for typesetting and laying out the report.

The country assessment was produced under the overall guidance of Dr Hans Kluge, Director of the Division of Health Systems and Public Health, and Dr Gauden Galea, Director of the Division of Noncommunicable Diseases and Promoting Health through the Life-course, in the WHO Regional Office for Europe.

Preparation of this report was coordinated by the WHO Regional Office for Europe and the WHO Country Office in Kazakhstan through the biennial collaborative agreement covering 2016/2017 between the Ministry of Health of Kazakhstan and WHO. The report was financed through a voluntary contribution of the Ministry of Health of the Russian Federation.



Acronyms and abbreviations

AMI	acute myocardial infarction
CIS	Commonwealth of Independent States
CVD	cardiovascular disease
EU	European Union
KZT	Kazakh <i>tenge</i>
MHSD	Ministry of Health and Social Development
NCD	noncommunicable disease
PCP	primary care provider
PHC	primary health care



List of figures

Fig. 1. Trends in life expectancy at birth for males and females in Kazakhstan	9
Fig. 2. Trends in age-standardized overall rates of premature mortality from four major NCDs among people aged 30–69 years in Europe and in Kazakhstan	9
Fig. 3. Trends in age-standardized death rates from circulatory diseases in people aged 0–64 years in Kazakhstan	10
Fig. 4. Stroke – a catastrophe that can be avoided: risk factors for stroke, early signs and need for timely action	12
Fig. 5. Overview of screening programmes displayed in public areas of polyclinics	18
Fig. 6. Desktop aide-memoire for clinician showing tests required for people by year of birth	18
Fig. 7. Number of thrombolyses performed per year in Kazakhstan	20
Fig. 8. Chronic disease room in polyclinic in Astana: computer screen has overview of patients and tests rated red–amber–green	22
Fig. 9. Common health system features for NCD control	24
Fig. 10. Hospitalizations for selected NCDs in Kazakhstan, 2013	28
Fig. 11. Time trends of hospital discharges in Kazakhstan for selected conditions, per 100 000 population, 1990–2013	29
Fig. 12. Example of sign indicating pathway for patients arriving at the emergency room	30
Fig. 13. Rehabilitation facilities in the Demeu PHC centre, Astana	31
Fig. 14. Proactive clinical protocol displayed on wall, visible to both patients and professionals	35
Fig. 15. Simulation centre in Aktau: training room and equipment	37
Fig. 16. Goal, objectives and implementation steps of the Densauyk national health sector development programme 2016–2019	42
Fig. 17. Regional variation in hospitalization for hypertension, Kazakhstan, 2014	43
Fig. 18. Regional variation in hospitalization for angina pectoris, adult population (≥ 18 years), Kazakhstan, 2014	44
Fig. 19. Out-of-pocket expenditure as percentage of gross domestic product, Kazakhstan, 2000–2013	45
Fig. 20. Algorithm for emergency personnel in hyper-acute phase of stroke management in an emergency setting	47
Fig. 21. Algorithm of full stroke care pathway for patients admitted to Hospital No. 4 in Almaty	48
Fig. 22. Part of online health and vital statistics registry	49



List of tables

Table 1. Age-standardized incidence and mortality per 100 000 person years and disability-adjusted life years lost due to ischaemic stroke and haemorrhagic stroke in 1990 and 2010 in Kazakhstan.....	10
Table 2. Core population and individual services for NCDs	13/14
Table 3. Core population interventions in Kazakhstan	16/17
Table 4. Summary of assessment of individual-level interventions: CVDs.....	18
Table 5. Summary of assessment of individual-level interventions: diabetes	21
Table A2.1. Tobacco control: summary of core service coverage	61
Table A2.2. Interventions to prevent harmful use of alcohol: summary of core service coverage.....	62
Table A2.3. Diet and nutrition: summary of core service coverage	63



1. Introduction and rationale

Noncommunicable diseases (NCDs) are the leading cause of death, disease and disability in the WHO European Region. The four major NCDs (cardiovascular disease (CVD), cancer, chronic obstructive pulmonary disease 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, increasing the 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, 2013a).

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

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 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. Eleven assessments have been conducted to date, in Armenia, Belarus, Croatia, Estonia, the former Yugoslav Republic of Macedonia, Hungary, Kyrgyzstan, Portugal, the Republic of Moldova, Tajikistan and Turkey. The same approach and the same multidisciplinary assessment team 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, 2014). While the same guide was used for all the country assessments, the recommendations are tailored to the context of each country.

The objectives of this country assessment are twofold. The first is to identify factors that limit use of the Kazakhstan health system to its full potential and to make useful policy recommendations for strengthening the health system to improve NCD outcomes. The assessment emphasizes the impact of gender in health services and particularly in stroke care. The assessment and its policy recommendations indicate the elements of a comprehensive NCD action plan, which will include existing actions. Secondly, as part of a regional project, the assessment will contribute to understanding regional experience with 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 Kazakhstan on 16–25 April 2016 and met a wide range of stakeholders and experts involved in the prevention and control of NCDs.

Section 2 of the report outlines trends in NCD outcomes in Kazakhstan. Section 3 contains an assessment of the coverage of core population-based interventions and individual services for NCDs, and section 4 presents achievements by the health system and barriers to accessing NCD interventions and services. Section 5 gives examples of good practices in Kazakhstan, and section 6 concludes the report with policy recommendations.

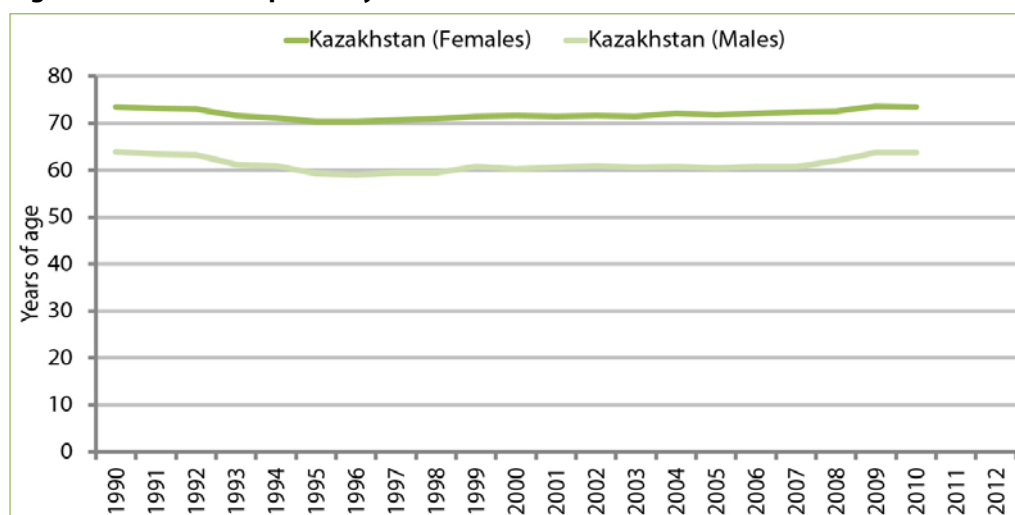


2. Noncommunicable disease outcomes

2.1 Mortality outcomes

Life expectancy from birth for people of each sex was 69.74 years in 2012, recovering from a drop to 64.4 years in 1995. Life expectancy in Kazakhstan is almost 13 years less than that in countries of the European Union before 2004 (81.67 years). There is also a considerable gap between men and women (9.51 years in 2012) in Kazakhstan, which has shown little change over time (Fig. 1). There are apparently substantial differences in life expectancy across the country, with lower indicators in the north and east of the country than the country average (MHSD, 2016).

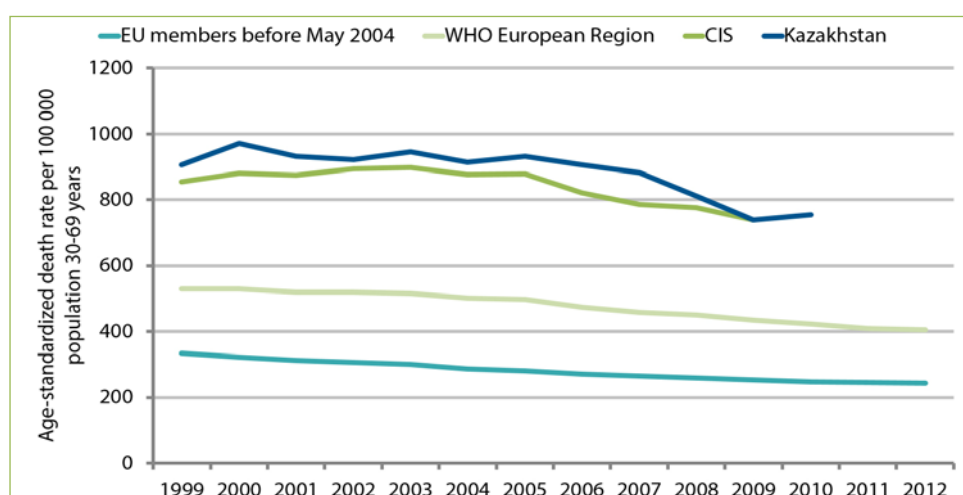
Fig. 1. Trends in life expectancy at birth for males and females in Kazakhstan



Source: WHO European Health for all database (WHO Regional Office for Europe, 2016a).

European and international goals have been set for reducing premature mortality due to four major NCDs (CVD, cancer, diabetes mellitus and chronic respiratory disease) by 2020 (WHO Regional Office for Europe, 2013b), by 2025 (WHO, 2013) and by 2030 (United Nations, 2016). Kazakhstan has one of the highest rates of premature mortality in the WHO European Region, at 648.31 per 100 000 population aged 30–69 years in 2012. Nevertheless, as in the rest of the WHO European Region, there is an overall downward trend (Fig. 2) (WHO Regional Office for Europe, 2016a). If the trend in premature mortality from the four major NCDs since 1995 continues, Kazakhstan would appear to be on track to achieving the global target of a 25% reduction in premature mortality from NCDs by 2025.

Fig. 2. Trends in age-standardized overall rates of premature mortality from four major NCDs among people aged 30–69 years in Europe and in Kazakhstan



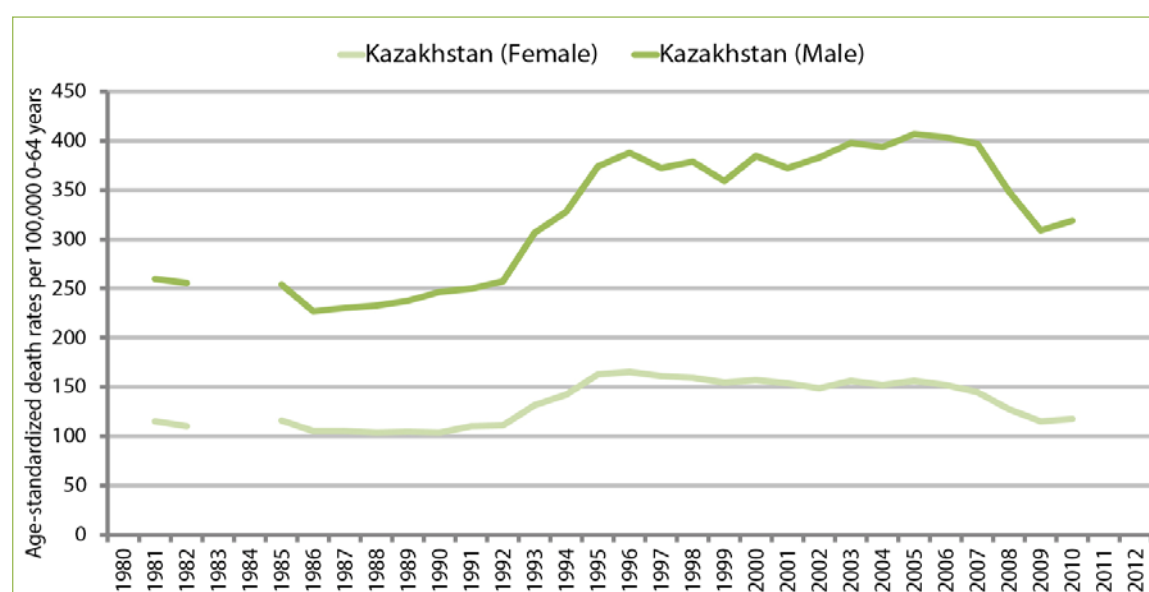
EU, European Union; CIS, Commonwealth of Independent States

Source: WHO European Health for all database (WHO Regional Office for Europe, 2016a).

The main causes of years of life lost due to premature death in Kazakhstan in 2013 were ischaemic heart disease, cerebrovascular disease and self-harm (Institute for Health Metrics and Evaluation, 2015). Dietary risks, high systolic blood pressure and high body mass index were the highest ranked risk factors for disease burden, measured as disability-adjusted life years, in Kazakhstan in 2013. Diabetes rose in ranking from eighth highest in 1990 to fourth highest in 2013 as the cause of years of life lived with disability.

Substantial differences in mortality rates from CVD have been identified across the country and between males and females (Fig. 3). Apart from the cities of Almaty and Astana, the mortality rates are highest in the north-east of the country and lowest in the south-west, even though the income level is higher in the north-east. A similar pattern was found for self-reported alcohol consumption and alcohol sales, suggesting that higher mortality from CVD may be related to the prevalence of drinking among ethnic Russians, who live predominantly in the country's north-east (Davletov et al., 2015).

Fig. 3. Trends in age-standardized death rates from circulatory diseases in people aged 0–64 years in Kazakhstan



The overall rate of morbidity due to cerebral stroke in Kazakhstan is 3.7 per 1000 person-years, with 52% due to acute stroke. The mortality rate from stroke is 1.08 per 1000 person-years, which represents 26% of mortality in Kazakhstan. Stroke is also the first cause of long-term disability in the country, disabling sequelae affecting 104.6 individuals per 100 000 population (Zhusupova et al., 2013).

Data on stroke incidence and mortality in Kazakhstan from international sources (Krishnamurthi et al., 2013) indicate that the age-standardized incidence of stroke and disability-adjusted life years increased between 1990 and 2010 (Table 1). Although the reliability of the estimates is uncertain, they provide evidence for action to reduce the burden of stroke.

Table 1. Age-standardized incidence and mortality per 100 000 person years and disability-adjusted life years lost due to ischaemic stroke and haemorrhagic stroke in 1990 and 2010 in Kazakhstan

Indicator	1990	2010
Ischaemic stroke		
Incidence	199.93 (131.73–298.62)	220.44 (144.78–318.03)
Mortality	85.20 (78.91–94.42)	86.97 (73.13–97.59)
Disability-adjusted life years lost	1244.44 (1167.03–1373.69)	1339.38 (1102.21–1517.24)
Haemorrhagic stroke		
Incidence	115.73 (72.91–177.52)	121.82 (79.00–181.33)
Mortality	91.80 (84.11–103.07)	86.24 (72.10–99.73)
Disability-adjusted life years lost	1739.40 (1604.38–1988.89)	1745.57 (1458.58–1982.28)

Source: Modified from Krishnamurthi et al. (2013)

The cancers with the highest incidence and mortality rates are lung, stomach and colorectal cancers for men and breast, cervix uteri and colorectal cancers for women (International Agency for Research on Cancer, 2015).

2.2 Gender and NCDs

The outcomes of, risks for and trends in NCDs differ consistently between men and women in Kazakhstan, as in the rest of the European Region. There is growing international evidence that this gap is due to the influence of gender norms and values on the risk factors for NCDs and to the gender bias that may affect the response of health services.

Although many data were collected and analyses made of challenges throughout the assessment, we present here only the highlights. We were unable to conduct a thorough analysis of the effect of gender and the links with determinants such as income, education, occupation and place of residence; however, we identified some evidence and gaps that may guide policy and action.

In health, gender is identified with reproductive and maternal health, and gender analysis is not clearly understood as a means of improving access to care and reducing the impact of NCDs. In Kazakhstan, the high-level political commitment to gender equality has not been fully adopted by the health sector. The National Commission on Women's Affairs, Family and Demographic Policy is an advisory body to the President of the Republic and is responsible for implementing and monitoring the Gender Equality Strategy 2006–2016 (Government of Kazakhstan, 2005). The health priorities set in the strategy were for reproductive health, although there was acknowledgment of premature mortality among men due to CVDs. The strategy also identifies weak health-seeking behaviour among men and the low priority of men's health in health services. The priority for women's health was reproductive health, with acknowledgment that insufficient access to services was a barrier.

The Committee on Statistics subsequently improved the collection of disaggregated data, as reflected in the publication *Women and men in Kazakhstan 2010–2014* (Smailov, 2015). Nevertheless, epidemiological data on stroke, such as the mortality and incidence rates of sex-specific cases, remain scarce. Most of the analyses in the report focus on reproductive health, perpetuating this false perception of a gender analysis of health.

Population-based interventions could benefit from a gender approach. Although data on alcohol and tobacco consumption, physical activity and diet are not collected systematically by sex and age, some of the available data could be used to design health promotion messages that target men's use of alcohol and tobacco and also to understand and counteract the increasing use observed among adolescent girls.

Some campaigns have been conducted to raise awareness about stroke, but they have not all targeted specific populations or taken gender into account. Fig. 4 shows a good example of comprehensive information about the gender-specific risk factors for stroke. Stroke is presented as an avoidable disease, as hypertension, diabetes, dyslipidaemia, smoking, inactivity and an unhealthy lifestyle are presented as possible causes of catastrophic stroke. It includes a warning for women that they should have regular check-ups if they use oral contraceptives, which may cause stroke if associated with other risk factors.

Fig. 4. Stroke – a catastrophe that can be avoided: risk factors for stroke, early signs and need for timely action



A gender and socioeconomic analysis of access to individual services could improve service delivery. Data disaggregated by sex are not collected and used consistently, particularly with regard to access to and use of services; even when such data are collected, analysis to understand differences in access by gender is lacking in some services. Although there are no systematic sex-disaggregated data on use of screening programmes, providers' perception that men are less likely to attend than women appears to be due to assumptions such as *"Men do not take responsibility for their health"* and *"Men are more stressed"*.

Service design does not take into account differences in men's and women's needs and may perpetuate gender stereotypes. Recognition of gender differences in health-seeking behaviour could influence where, when, how and by whom services are delivered. Most of the primary care services visited were designed to respond to maternal and child health needs, which may affect men's participation in screening programmes and the perception of the risk for stroke among women. The *"health schools"* in polyclinics are open only during working hours, which may also affect men's attendance.

Gender segregation of the health workforce may perpetuate gender stereotypes. Women represent more than 70% of the workforce in the health sector, which is considered to be one of the worst paid sectors, with education (Asian Development Bank, 2013). Informal care is also provided mainly by women, while men are better represented among surgeons in stroke centres. Gender segregation and the feminization of the workforce may have implications for the coverage of rural and isolated areas, where traditional norms and values may act as barriers to women's mobility.

Protocols, guidelines and health workforce competence in stroke prevention and management do not reflect important recognized differences in symptoms, responses to treatment and the perception of risk determined by biological differences and bias in research (Santalucia et al., 2013). Health providers did, however, acknowledge the value of gender analysis when they were presented with the evidence and the rationale.



3. Coverage of core NCD interventions and services

According to WHO (2013), up to 80% of cases of heart disease, stroke and type 2 diabetes and more than one third of cancers could be prevented by eliminating shared risk factors, which are mainly tobacco use, an unhealthy diet, physical inactivity and the harmful use of alcohol. In this section, we explore the coverage of core population interventions (with respect to tobacco, alcohol and nutrition) and individual services (CVD, diabetes and cancer) that are closely linked to improving NCD outcomes. Core services are based on evidence, have a high impact and are cost-effective, affordable and feasible in a variety of health systems. The core services reviewed in the country assessments are closely linked to the *Global action plan for the prevention and control of noncommunicable diseases 2013–2020* (WHO, 2013) and the *Action plan for the implementation of the European strategy for the prevention and control of noncommunicable diseases 2012–2016* (WHO Regional Office for Europe, 2012). The standard core interventions and services addressed in all the country assessments are summarized in Table 2. The assessment teams scored each service on a three-point scale (limited, moderate or extensive) on the basis of criteria developed by WHO, as summarized in the “Assessment guide” (WHO Regional Office for Europe, 2014).

Table 2. Core population and individual services for NCDs

Population interventions	Individual services
<p>Wide range of anti-smoking interventions</p> <ul style="list-style-type: none"> – tobacco taxes to reduce affordability – smoke-free environments – warnings about the dangers of tobacco and tobacco smoke – bans on advertising, promotion and sponsorship – quit-lines and nicotine replacement therapy 	<p>CVD and diabetes – first line</p> <ul style="list-style-type: none"> – risk stratification in primary health care (PHC), including hypertension, cholesterol, diabetes and other CVD risk factors – effective detection and management of hypertension, cholesterol and diabetes multidrug therapy based on risk stratification – effective prevention in high-risk groups and secondary prevention after AMI and stroke including acetylsalicylic acid <p>CVD and diabetes – second line</p> <ul style="list-style-type: none"> – response and secondary care interventions after AMI and stroke*
<p>Interventions to prevent harmful alcohol use</p> <ul style="list-style-type: none"> – pricing policies on alcohol, including taxes – restrictions or bans on advertising and promotion – restrictions on the availability of alcohol in the retail sector – minimum purchase age regulation and enforcement – allowed blood alcohol level for driving* 	<p>Diabetes</p> <ul style="list-style-type: none"> – effective detection and general follow-up* – patient education and intensive glucose management – hypertension management for diabetes patients – prevention of complications (e.g. eye and foot examinations)

Table 2. Core population and individual services for NCDs (continued)

Population interventions	Individual services
<p>Interventions to improve diet and physical activity</p> <ul style="list-style-type: none"> – Reduce salt intake and salt content. – Replace <i>trans</i>-fats with unsaturated fat. – Implement public awareness programmes on diet and physical activity. – Reduce free sugar intake.* – Increase intake of fruit and vegetables. – Reduce marketing pressure of food and non-alcoholic beverages to children.* – Promote awareness about diet and physical activity. 	<p>Cancer – first line</p> <ul style="list-style-type: none"> – prevention of liver cancer by vaccination against hepatitis B – screening for cervical cancer and treatment of precancerous lesions <p>Cancer – second line</p> <ul style="list-style-type: none"> – vaccination against human papillomavirus 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 years with timely treatment – oral cancer screening in high-risk groups, with timely treatment

* Indicates interventions and services added to the list of the Global Action Plan on NCDs to allow a more comprehensive assessment.

3.1 Population interventions

We assessed the coverage of core population interventions and services for improving NCD outcomes. **The unrealized potential of population-based interventions is one of the greatest opportunities for scaling up prevention and control of NCDs in Kazakhstan.**

In the past, the Sanitary–Epidemiological Service played a key role in population health in Kazakhstan. After jurisdiction of the Service was transferred to the Ministry of National Economy, its role in broad public health was reduced, and it addressed mainly communicable diseases. Further work is required to coordinate its work with that of the Ministry of Health and Social Development (MHSD).

Most population interventions in Kazakhstan have addressed tobacco and alcohol, and less attention has been paid to diet and physical activity. While Kazakhstan has made some progress in tobacco and alcohol control in the past few decades, especially by regulating the terms of sales and use, implementation and enforcement of these regulations remain a significant challenge. Further action is needed, especially in the areas of diet and physical activity. Furthermore, a comprehensive national surveillance system for NCD risk factors is required. The proposed Government plan on NCDs outlines the main policy directions for scaling-up population interventions to address the main risk factors.

3.1.1 Tobacco

Tobacco consumption remains an important health issue in Kazakhstan. According to the global report on tobacco control in 2015 (WHO, 2015a), the prevalence of smoking by adults in Kazakhstan was 46% in men and 4.5% in women, with an average of 22.4%. According to the *Global youth tobacco survey* in 2014 (WHO, 2015a), the prevalence of tobacco use was 3.9% among boys and 2.3% among girls aged 13–15 years. This is similar to the trend in several other countries of the WHO European Region, where tobacco use among girls has been increasing over the past few years.

Kazakhstan ratified the WHO Framework Convention on Tobacco Control in 2007. It has a national regulatory base for tobacco control, but the recommended measures of the WHO Monitor, Protect, Offer, Warn, Enforce, Raise (“MPOWER”) tool for tobacco control are not fully in place. The tobacco excise tax in Kazakhstan is 2.5 times lower than that in the Russian Federation and 10 times lower than that in the European Region, whereas the guidelines for Article 6 on price and tax measures of the WHO Framework Convention on Tobacco Control recommend that the tax constitute 70% of the retail price of cigarettes. From January 2014, the excise tax on filtered cigarettes was raised to 3000 KZT per 1000 pieces (40%), and it is planned to continue the gradual increase annually. The revenue from tobacco excise increased from 46 billion KZT in 2013 to 79 billion KZT in 2014, while the annual sales of cigarettes dropped from 30 to 27 billion pieces.

Overall, interventions for tobacco control have had some effect. Advertising restrictions are in place; warning labels with pictorials constitute 40% of the package area; and smoking is partly prohibited in public places, while enforcing smoke-free environments requires further strengthening. Services to support smoking cessation are not adequately supported in PHC.

3.1.2 Alcohol

Alcohol consumption in Kazakhstan is a significant public health problem, which has been increasing in recent years. In 2010, the average consumption of pure alcohol per person in Kazakhstan was 10.3 L, men consuming 15.7 L and women 5.5 L. According to the *Global status report on alcohol and health* (WHO, 2010), average consumption in Kazakhstan was similar to that in Europe, although the rates were higher in developed countries such as France. The rate does not, however, account for the large proportions of people who do not consume alcohol in the country (almost 51% of men and 70% of women). The estimated alcohol consumption by those who consume alcohol is therefore the highest in the European Region, for both men (32 L/year) and women (18 L/year). The alcohol consumption by people aged ≥ 15 years constitutes spirits (65%), followed by beer (32%) and wine (3%). Since 2008, the sale of spirits has decreased, with increased use of beer and wine. The prices of spirits are rising, although they remain lower than those in other countries in the European Region.

Kazakhstan had a national alcohol policy in 1997, which has not been updated since. The Government has taken steps to ban advertising and to reduce access to sale of alcohol, but enforcement remains a challenge. Kazakhstan has also increased the excise duty on alcohol. In 2014, the excise tax on vodka was doubled, and the revenue grew from 13 to 22 billion KZT. In 2011, the excise duty on beer was increased by 70%, and the revenue grew from 7 billion KZT in 2010 to 12 billion KZT in 2011. The increases in alcohol excise duties have not, however, been systematic or steady.

3.1.3 Nutrition and physical activity

Data on the nutrition and physical activity of adults and young people are not routinely collected in Kazakhstan. While the effectiveness of core population interventions can be measured as trends in specified indicators, the overall surveillance system in this field is limited. No data on nutrition and physical activity are available in the Health Behaviour in School-aged Children Survey or the Child Obesity Surveillance Initiative (WHO Regional Office for Europe, 2016b). According to a study of the global burden of disease in 2015 (Institute for Health Metrics and Evaluation, 2015), dietary risks were the leading causes of disability-adjusted life years lost in Kazakhstan.

The availability of fruit and vegetables was estimated to be 587 g per capita per day in 2009 (FAOSTAT, 2011), which is less than the > 600 g/day recommended by WHO/FAO. The daily consumption of vegetables increased from 200 g in 2008 to 241 g in 2011 (Agency of the Republic of Kazakhstan on Statistics, 2012), while the average consumption in Europe was 318 g (Nichols et al., 2012). The daily fruit consumption in 2008 was much lower in Kazakhstan (93 g) than in Europe (285 g), although it increased to 195 g by 2011.

In Kazakhstan, an increasing proportion of the population is overweight and obese, but implementation of core interventions to address nutrition and physical activity has been limited. According to the estimates of the WHO Global Observatory (WHO, 2016) of overweight and obesity in 2014, **60.5% of men and 57.1% of women were overweight (body mass index > 25 kg/m²), and 21.6% of men and 25% of women were obese (WHO, 2015b).** In 1999, 12.6% of women were obese and 19.9% were overweight, while in 2012 these figures were 27.6% and 30.6%, respectively, indicating a rising prevalence of excess weight (Academy of Preventive Medicine and Macro International, 1999; Kazakh Academy of Nutrition, 2014). The forecast for obesity in adulthood (2010–2030) indicates that 45% of men and 29% of women will be obese in 2020 and 74% of men and 36% of women in 2030.

Nutrition policies for schools have been prepared, **but no action has yet been taken to reduce the marketing of food and beverages to children.** Nationally representative data for 2010 (FAOSTAT, 2011) show that the prevalence of exclusive breastfeeding for infants under 6 months of age was 31.8% in Kazakhstan. No information is available on trends in salt consumption, and there are no specific policies to reduce salt intake.

According to the Global Observatory (WHO, 2016), **31.0% of the population aged ≥ 15 years are insufficiently active (men, 30.9%; women, 31.2%).** A national study showed that the proportion of people who did regular physical activity increased from 23% in 2007 to 35.5% in 2012, and the proportion of those who exercised for at least 30 min/day increased to 68% (Batkatova, 2015).

Interventions with regard to tobacco and alcohol have been developed, but their enforcement is weak, greatly reducing the impact of legislation. Strategies to improve diets and physical activity are relatively weak, and more cost-effective interventions are required, such as regulating the salt, *trans*-fat and sugar contents of processed food, regulating the marketing of unhealthy foods to children and increasing the promotion of physical activity. Data collection and surveillance of behavioural and biological risk factors also appear to be weak and depend on external funding. **Table 3 summarizes the evaluation of the assessment team of the core population interventions for NCD control.**

Table 3. Core population interventions in Kazakhstan

Intervention	Rating	Criterion for rating
Anti-smoking interventions		
Raising tobacco taxes	Moderate	Tax is 40% of retail price.
Smoke-free environments	Moderate	Public places, including hospitals, workplaces, schools and public transport, are 100% smoke-free, but enforcement remains a challenge.
Warnings of dangers of tobacco and smoke	Moderate	Warning labels appear on all products, covering at least 40% of package with pictorials.
Bans on advertising, promotion and sponsorship	Moderate	Ban on national television and radio
Quit lines and nicotine replacement therapy ^a	Moderate	Some quit lines and Government-funded cessation services are available. Nicotine replacement therapy is available for full out-of-pocket payment.
Interventions to prevent harmful alcohol use		
Raising taxes on alcohol	Moderate	Price follows price index and is related to alcohol content. No special taxes on products attractive to young people
Restrictions and bans on advertising and promotion	Moderate	Regulatory frameworks exist to regulate content and volume of alcohol marketing, but enforcement remains a challenge.
Restrictions on availability of alcohol in the retail sector	Moderate	Regulatory frameworks exist on serving alcohol in Government and educational institutions, but enforcement remains a challenge.
Regulation and enforcement of minimum purchase age*	Extensive	Minimum age of 21 years for purchase of all alcohol products and effective enforcement
Regulation of blood alcohol level for driving*	Moderate	Zero tolerance, but enforcement is a challenge.

Table 3. Core population interventions in Kazakhstan (continued)

Intervention	Rating	Criterion for rating
Interventions to improve diet and physical activity		
Reducing salt intake and salt content of foods	Limited	No national monitoring system on salt and no policies in place
Virtually eliminating <i>trans</i> -fatty acids from the diet	Limited	No evidence that <i>trans</i> -fats have been significantly reduced in the diet
Reducing free sugar intake*	Limited	No action has been taken.
Increasing intake of fruit and vegetables*	Moderate	Aim to increase consumption of fruit and vegetables in line with the WHO/FAO recommendations of ≥ 400 g/day, and some initiatives exist.
Reducing marketing of food and non-alcoholic beverages to children*	Limited	Marketing of foods and beverages to children is noted as a problem. Sweetened beverages are banned in schools.
Promoting awareness about diet and activity*	Moderate	Campaigns exist. Workforce development for nutrition and physical activity exists, but measures still not fully integrated into primary care

*Criteria additional to those in the *Global action plan for the prevention and control of noncommunicable diseases 2013–2020* (WHO, 2013)

3.2 Individual services

In this section, we assess individual services for delivering core NCD interventions and for achieving the relevant global NCD targets, in particular that at least 50% of eligible people receive therapy and counselling (including glycaemia control) to prevent heart attacks and strokes and that a 25% relative reduction in the prevalence of raised blood pressure is achieved or the prevalence of raised blood pressure is contained. These aims would be supported by action to achieve an additional global target, such as 80% availability of the affordable basic technologies and essential medicines, including generics, required to treat major NCDs in both public and private facilities. The core interventions are selected from the list of very or moderately cost-effective interventions identified by WHO in the global NCD action plan (WHO, 2013).

The services include early detection, proactive disease management and secondary prevention for CVD and diabetes and selected interventions for cancer. Effective delivery of most of these services requires people-centred PHC, with well-organized links to population outreach activities in acute and chronic care settings. Implementation of these interventions in Kazakhstan by 2016 was monitored in the “NCD progress monitoring system” (WHO, 2015b), in which Kazakhstan scored “partially achieved” for the global target for “drug therapy/counselling for high-risk persons”.

The prevalence of behavioural risk factors for NCDs is reported in section 3.1. The prevalence of biological risk factors for NCDs is not covered in a representative national survey with a WHO quality-assured tool such as STEPS; however, the figures may be estimated or based on unrepresentative samples (WHO, 2015b). The prevalence of other risk factors is reported below.

3.2.1 Cardiovascular disease

The assessment of implementation of individual-level interventions is shown in Table 4.

Table 4. Summary of assessment of individual-level interventions: CVDs

Risk stratification in primary care	Moderate	Incomplete documentation of risk factors or no systematic method
Effective detection and management of hypertension	Limited-moderate	Proportion of cases of high blood pressure identified in PHC is unknown but likely to be low (< 30%); evidence-based hypertensive drugs are prescribed, and some effort is made to increase patient adherence, but this is not systematic.
Effective primary prevention in high-risk groups	Moderate	Prescribers appear to be aware of indications for primary prevention with a multidrug regimen, but coverage of high-risk patients is unknown and patient adherence is likely to be low-moderate.
Effective secondary prevention after AMI	Limited-moderate	Proportion of patients with known coronary heart disease receiving secondary prevention is unknown and is likely to be only moderate at best (based on study rather than routine data).
Rapid response and secondary care after AMI and stroke	Moderate	Not possible to assess routinely the proportion of patients with AMI or stroke who receive a diagnosis and care within 6 h of first symptoms, but clinicians aware and some support in place.

Risk stratification in primary care

There are 11 national screening programmes, and adults are invited to participate according to their age and the frequency and testing required for the condition being screened. Figs 5 and 6 show examples of material displayed for patients and professionals in polyclinics.

Fig. 5. Overview of screening programmes displayed in public areas of polyclinics

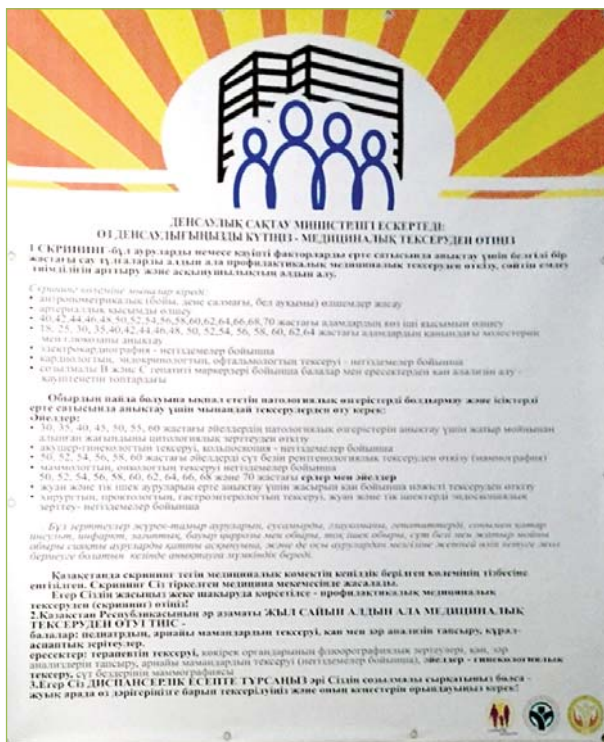


Fig. 6. Desktop aide-memoire for clinician showing tests required for people by year of birth

	На 2016год															
	1976	1974	1972	1970	1968	1966	1964	1962	1960	1958	1956	1954	1952			
Болезнь системы кровообращения (сахарный диабет, артериальная гипертензия)																
Глаукома	1976	1974	1972	1970	1968	1966	1964	1962	1960	1958	1956	1954	1952	1950	1948	1946
Рак молочной железы						1966	1964	1962	1960	1958	1956					
Рак шейки матки	1986	1981	1976	1971	1961	1966					1956					
Рак предстательной железы						1966		1962		1958		1954		1950		
Колоректальный рак						1966	1964	1962	1960	1958	1956	1954	1952	1950	1948	1946
Рак пищевода и желудка						1966	1964	1962	1960	1958	1956					

Adults over the age of 40 years are offered screening every two years for CVD risk factors and diabetes, including blood pressure, body mass index, lipids and blood sugar, the last being measured by finger-prick in the clinic. Total CVD risk is calculated, but the risk scoring method is apparently not the international standard method, and risk scores do not appear to be used to stratify risk or define further disease management. CVD risk is documented in the records of the screening programme, but these are not integrated with primary care records. The proportion of patients with one or more main CVD risk factors or a 10-year CVD risk of $\geq 30\%$ are not available (see also Challenge 5).

Effective detection and management of hypertension

In general, there has been low coverage and low detection of hypertension through the cardiovascular screening programmes so far and male/female differences are not known. The WHO age-standardized estimates of the prevalence of raised blood pressure in Kazakhstan in 2014 are 30.4% for men and 24.2% for women (WHO, 2016). The proportions of CVD cases detected by screening in 2015 varied by region, ranging from only 3.3% in Akmola to 14.2% in East Kazakhstan (Davletov, presentation at a WHO workshop, Astana, 17 April 2016).

Clinical practice guidelines and protocols are available, and evidence-based antihypertensive drugs can be prescribed and reimbursed. The overall quality of the management and blood pressure control of patients with hypertension is not known, although it may be possible to ascertain this routinely. Patients who are identified as having hypertension, diabetes or another chronic disease should be offered follow-up in chronic disease clinics. One survey showed that up to 73% of patients with hypertension had irregular treatment (less than daily), and treatment was more likely for men and younger people (Roberts, 2012). In a study in Astana during 2012–2013, 77% of hypertensive patients aged 50–75 years took anti-hypertensive medications, and only one third (34%) had their blood pressure controlled, with fewer men than women being treated (Supiyev et al., 2015). There are no systematic efforts to increase patient adherence (WHO, 2015b).

District nurses in polyclinics receive special training to run patient clubs or schools.

Polyclinics also have health promotion specialists. The approach and uptake of “health schools” for various diseases may be limited, as scheduling during daytime hours may make it difficult for working-age people to participate. These shortcomings have been noted elsewhere (WHO Regional Office for Europe, 2015).

Effective primary prevention in high-risk groups

High-risk patients are not systematically identified and targeted through polyclinic patient registers, nor is the extent of coverage of very high-risk patients with primary prophylaxis or appropriate drugs known. Lifestyle counselling is not integral to the clinical pathway, as the responsibility lies elsewhere (National Centre for Healthy Lifestyles); therefore, opportunities may be missed.

Effective secondary prevention after AMI or stroke

When a patient is discharged from hospital after treatment for AMI or stroke, a management plan is sent with the patient from the hospital to the PHC centre, with chronic care lists and clinics for follow-up. Clinical practice guidelines and protocols are available, and evidence-based medicines can be prescribed and reimbursed; however, statins are not provided free of charge for any category of patient, even those with diabetes.

The proportion of patients receiving acetylsalicylic acid, beta blockers and statins after AMI and stroke and the quality of care are not routinely monitored. The authors of the EUROASPIRE IV study (Kotseva et al., 2016) reviewed control of risk factors in people with established coronary heart disease or at high risk for CVD across Europe and found that only a third (32%) of high-risk patients in Almaty were taking their prescribed medication half of the time. Only 50% of high-risk patients achieved their blood pressure control goal, and only 33% of those taking lipid-lowering

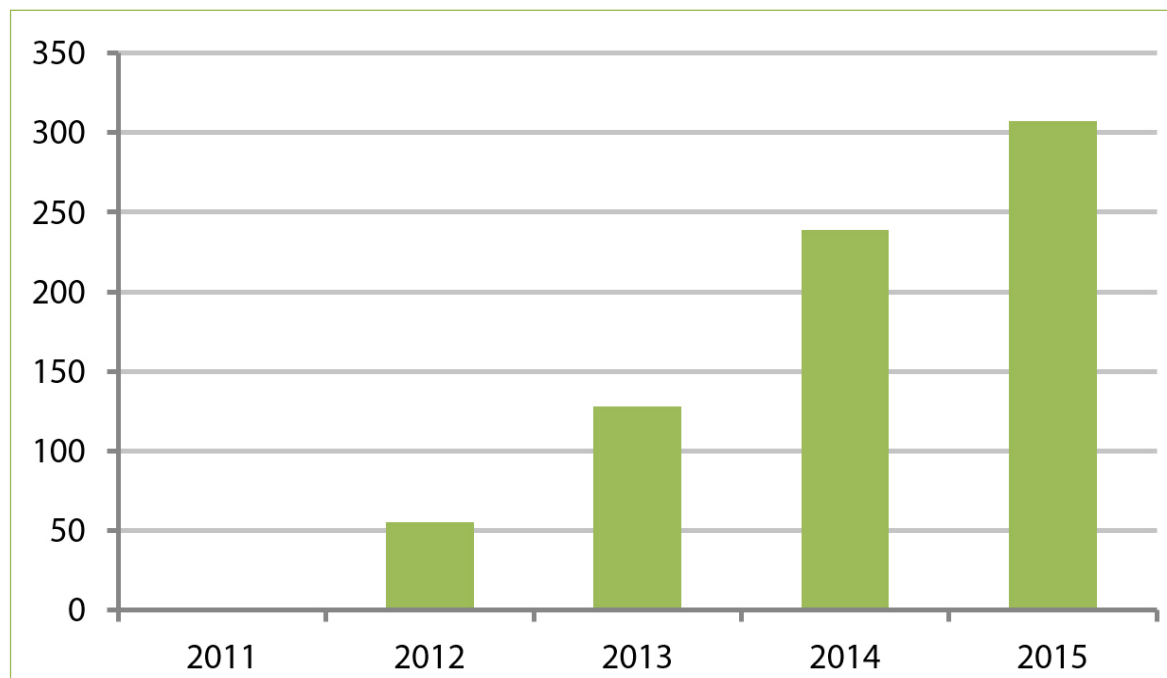
medication achieved their goal for low-density lipoprotein cholesterol. New oral anticoagulants for preventing ischaemic stroke in patients with non-valvular atrial fibrillation are available in the country but are not reimbursed. As these drugs have a better safety profile than warfarin (Ruff et al., 2014) and in one case (dabigatran 150 bid) greater efficacy in reducing the risk for stroke (Paikin et al., 2011; Clemens et al., 2014), free provision to target populations might be considered.

Rapid response and secondary care after AMI and stroke

Clinical protocols and algorithms are available for acute management. Clinicians are aware of the importance of timeliness and strive to meet the algorithm standards, but this is not routinely monitored. One study found improved care of patients with acute coronary syndrome after adoption of the State Cardiac Care Development Programme, in which catheterization laboratories with cardio-surgery support were opened in all 16 administrative centres and specialists were trained (Abseitova et al., 2015). The number of percutaneous interventions for acute coronary syndrome increased five times (from 1812 to 9081) during the period 2010–2014, and mortality from AMI in hospital virtually halved. Coverage of percutaneous coronary intervention for patients with ST-elevation myocardial infarction was 41%, and that of fibrinolytic therapy was 36%. The authors concluded that, although the targets had not been reached, further changes would be brought about by improving emergency services, developing percutaneous coronary intervention “accounts” and creating an acute coronary syndrome register.

Thrombolysis for acute ischaemic stroke is a cost-saving therapy from a social perspective (Jung et al., 2010; Berkowitz et al., 2014), with favourable clinical and economic outcomes. Thrombolysis was introduced in Kazakhstan in 2011, and by 2015 307 stroke patients had received systemic thrombolysis (Fig. 7). Mechanical thrombectomy procedures are available in some centres; however, the availability of these procedures depends on the presence of trained operators, and they are not available round the clock.

Fig. 7. Number of thrombolyses performed per year in Kazakhstan



Comprehensive stroke care pathways, including rehabilitation and long-term care, are not in place. In general, care is not outcome-focused, and scales are not used to inform clinical management, monitor patient progress, direct clinical pathways or predict outcomes and use of resources.

3.2.2 Diabetes

The assessment of implementation of individual-level interventions for diabetes is summarized in Table 5.

Table 5. Summary of assessment of individual-level interventions: diabetes

Effective detection and general follow-up	Limited–moderate	PHC practices keep lists of patients with chronic diseases. Screening of the general population (rather than high-risk groups) via blood sugar: coverage not high, quality of follow-up unknown, and detection rate as compared with estimated prevalence unknown.
Patient education on nutrition, physical activity and glucose management	Moderate	Nurses offer chronic disease checks twice yearly, with specific checks to prevent complications, but uptake and follow-up are not systematically monitored. General counselling on nutrition and physical activity is available. Proportion of patients receiving glycated haemoglobin in past year not known but likely to be low; patients might have to pay for tests.
Hypertension management	Limited	Quality of hypertension management of patients with diabetes not monitored or known.
Preventing complications	Limited–moderate	Proportion of people registered with diabetes who have had a foot examination, eye examination (fundoscopy) and urine protein analysis not known, although these are offered.

Effective detection and general follow-up

A national register of patients with diabetes has been kept since 2002, but it is not fully reliable, as endocrinologists may not have time to enter all data. At 1 January 2016, the total number of patients with registered diabetes in Kazakhstan was 272 629 (males, 34.7%; females, 65.3%); patients aged 50–70 years accounted for 38.6% of all cases (Zhubandykova, presentation at a WHO workshop, Astana, 17 April 2016). The total is about one third of the number estimated by the International Diabetes Federation (2015) (717 500; uncertainty range, 486 200–1362 300 for the age group 20–79 years).

The WHO age-standardized estimated prevalence of raised blood sugar (fasting blood glucose ≥ 7 mmol/L or on medication) in 2014 was 12.4% for men and 11.4% for women aged ≥ 18 years (WHO, 2015b). A cross-sectional study of adults aged 50–75 years in Astana and Akmola village found an overall prevalence of diabetes of 12.5%, which was almost two times higher among urban residents (16.3%) than in the rural population (8.6%). The rate of detection in the screening programme as compared with the estimated prevalence is not known or monitored.

There has been a national screening programme for early diagnosis of diabetes since 2011, in which people aged 20–80 years come for blood glucose screening at the primary health centre in which they are registered. Thus, asymptomatic individuals in the general population are invited rather than the high-risk group. Coverage is not high, and the quality of follow-up unknown. In 2015, a total of 1 511 198 people were screened, and 9714 were found to have diabetes (0.65% of the screened population). These individuals then underwent a full diagnostic process (tests for glucose tolerance, glycated haemoglobin and fasting and post-prandial blood glucose measurements for 7 days), and 9462 (97.4% of screened positive) were confirmed as having diabetes. At regional level, the highest prevalence of newly diagnosed diabetes cases was in the Kyzylorda region (2.1% of the population of the region) and the lowest was in Akmolinsk region (0.3%) (Zhubandykova, 2016).

Patient education on nutrition, physical activity and glucose management

In 2012, a policy to shift care of type 2 diabetes to general practitioners was developed, and the number of visits to endocrinologists decreased. Insulin-dependent diabetic patients should be under the care of endocrinologists in order to receive prescriptions for insulin and should attend at least once a month. The requirement to renew prescriptions monthly is considered a difficulty for elderly and disabled patients, who must present personally to the health facility.

Polyclinics have nurse-led chronic disease clinics, in which checks are offered twice yearly plus specific checks to prevent complications. Patients must attend the visits in order to obtain free medication. Nurses in chronic disease clinics in general can prescribe some medications, send for

tests, refer for screening and make some management decisions. In these clinics, the nurse knows which tests are outstanding for individual patients and can arrange them opportunistically if necessary. Fig. 8 shows a chronic disease room in a polyclinic, with an overview of patients and test results rated red–amber–green.

Fig. 8. Chronic disease room in polyclinic in Astana: computer screen has overview of patients and tests rated red–amber–green



In principle, general counselling on nutrition and physical activity is available at these clinics and at “health schools” for patients with diabetes. In practice, health schools are not found everywhere: 400 schools are needed, but only 180 exist. They may not be scheduled or, if they are, the quality may be poor (lectures rather than interactive sessions) or people don’t attend. In general, therapeutic patient education is under-developed. The Foundation for Diabetes Education (sponsored by pharmaceutical companies) has devised a programme of 10 lessons lasting 45 min each in accordance with international standards.

Annual “diabetes camps” are offered for limited numbers of children aged 7–14 years during the summer (one camp per region per year, rotating), but families are not involved. A sanatorium in Almaty admits patients with type 1 diabetes from 16 regions for 30 days once a year for patient education.

Universal services for diabetes treatment listed in the guaranteed State benefit package are provided, while other elements of diabetes care are partially provided. More than 80% of the cost of medication is covered (insulin, 100%; insulin delivery systems, 100%; pumps, 80%; oral hypoglycaemic agents, 30%), but systems for self-control are limited (10 packs of test strips per person per year). Children ≤ 18 years have access to insulin pumps free of charge but must start to buy supplies from the age of 18 years, when some switch to injections, which are free.

The proportion of patients who were tested for glycated haemoglobin within the past year is not known but is likely to be low, particularly as patients may have to pay for the test. A selective review of diabetes control in several PHC centres in Almaty found that 83.6% of patients with diabetes were poorly controlled (decompensated), and 92.3% did not achieve glycated haemoglobin targets (Davletov, presentation at a WHO workshop, Astana, 17 April 2016). The cross-sectional study of adults aged 50–75 years in Astana and Akmola village found that 72.3% of people with diabetes were aware of their condition, and 65.6% were on treatment; however, only 27.7% had controlled fasting plasma glucose. Treatment was poorer in the rural setting and among men (Supiyev et al., 2016).

Management of hypertension in diabetes patients

The quality of hypertension management of patients with diabetes has not been monitored. Statins are not reimbursed, even for people with diabetes. The EUROASPIRE IV study (Kotseva et al., 2016) found that 16% of people with coronary heart disease or at high-risk for CVD in Kazakhstan had self-reported diabetes; of these, none were achieving a fasting plasma glucose of ≤ 6.0 mmol/L, and only 28% were achieving a glycated haemoglobin level of $\leq 6.5\%$.

Prevention of complications

Foot examinations, eye examinations (fundoscopy) and urine protein analysis were reported to be offered routinely to patients with diabetes, but there has been no overview of uptake or the quality of follow-up, and the website of the Diabetes Association (www.dark-diabet.kz/home) suggests variation in access by region. **There are no foot clinics, and checks of patients' feet by a nurse or general practitioner in order to identify gangrene, infection or compromised arterial perfusion are not generally performed.** The number of endocrinologists and other specialists for controlling complications (retinopathy, foot care, nephropathy) varies by region, mainly because of low salaries.

Eye examinations are carried out by ophthalmologists. Patients with diabetes referred to specialists (neurologists, ophthalmologists) may have to pay for diagnostic procedures and examinations, and recommended or prescribed procedures may require co-payment. There are "quotas" or planned numbers of patients who can undergo certain diagnostic procedures in a health facility; when the number is reached, all other patients requiring the procedure must wait, usually until the following year, or pay. A project for disease management implemented in seven PHC organizations in two pilot regions (Government of Kazakhstan, 2016a) claimed a 65% improvement in the availability of diagnostics, including for glycated haemoglobin and low-density lipoproteins, fundus and foot examinations and use of statins for the 470 patients with diabetes, as well as 100% coverage by self-management training. This project is to be rolled out nationwide over the next few years (see also Challenge 5).

Complications are recorded in the diabetes register, but the numbers may be inaccurate and may not capture all cases. In 2015, 6.36% of all diabetic cases registered had retinopathy, 1.43% had cataract, 2.04% nephropathy, 0.87% diabetic foot and 0.51% myocardial infarction, but these figures are likely to be underestimates (Zhubandykova, presentation at a WHO workshop, Astana, 17 April 2016). Patients with diabetes who die of CVD are not recorded as having had diabetes.

3.2.3 Cancer prevention and screening

Cancer prevention and screening will be assessed during a future mission. Several of the 11 national programmes include screening for cancers of the stomach, oesophagus and prostate in the general population, although the methods are not recommended as evidence-based by WHO.



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

In this section, health system features that influence the control of NCDs are reviewed. Fig. 9 summarizes the common features.

Fig. 9. Common health system features for NCD control

Political commitment to NCDs	Explicit priority-setting approaches	Interagency cooperation	Population empowerment
Effective model of service delivery	Coordination 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 (2014).

Challenge 1. Political commitment to NCDs

Overall, there is political commitment to improving health in Kazakhstan. Health is explicitly mentioned as one of the seven long-term priorities in the national development strategy, “Kazakhstan 2030”. Within this priority is development of a healthy lifestyle, which includes cessation of smoking, consumption of less alcohol, increased physical activity and an appropriate diet. Recently, the President, N.N. Nazarbayev, in his message “Kazakhstan path – 2050: united goal, united interests, united future”, defined health as the key factor in development of the State (Government of Kazakhstan, 2016b). In addition, he described health care development as a responsibility to be shared by the State, the employer and the employee.

The national health care development programme, Salamatty Kazakhstan 2011–2015, had one overall objective: to “improve the health of the people of Kazakhstan in order to ensure the country’s stable sociodemographic development”, with a focus on improving cross-sector and interagency cooperation. It was the impetus for strengthening primary care for the prevention, early detection and control of NCDs and for establishing national screening programmes. Salamatty Kazakhstan also provided for a sectoral programme for physical training and sport. Kazakhstan’s new programme for the health system for 2016–2019, entitled Densaulyk, emphasizes the strengthening of public health services and achievement of the goals of Health 2020. Strengthening the role of primary care in the prevention and early detection of diseases is one of the priorities of the Presidential initiative “100 steps for achieving five institutional reforms” in Strategy Kazakhstan – 2050 (Government of Kazakhstan, 2016b).

Kazakhstan has shown political commitment in adopting core population interventions for the prevention and control of NCDs, but overall progress is slow, mainly because of weak enforcement and control by the competent authorities. As mentioned in section 3.1, the WHO Framework Convention on Tobacco Control was ratified by Kazakhstan in 2007, and moderate control measures for both tobacco and alcohol are in place.

Kazakhstan has a new programme on the prevention and control of NCDs for 2016–2020 (Government of Kazakhstan, 2016b), which will provide a solid basis for further activities on NCDs and indicates political commitment towards NCD. NCDs are acknowledged as a major threat to the socioeconomic well-being of the population of Kazakhstan. The programme is well aligned with regional and global mandates, such as the global NCD action plan, the global monitoring framework and Health 2020 but, at the time of the mission, was pending approval.

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

NCDs are also included in the recent United Nations Development Assistance Framework, further highlighting the connection between NCDs and economic growth; this provides a good platform for a whole-of-government approach to NCDs.

Challenge 2. Creating explicit processes for setting priorities and limits

Health has long been a stated priority of the Government of Kazakhstan. Expenditure on health constitutes of 4.36% of the gross domestic product, as compared with an average of 8.21% in the WHO European Region (WHO Regional Office for Europe, 2016a). During implementation of the *Salamatty Kazakhstan* programme, public spending on health increased 1.5 times, from 555 billion KZT in 2010 to 860 billion KZT in 2014. Although this is a significant increase, expenditure on health still amounts to only 10.9% of total Government expenditure, which is below the 12% recommended by WHO for countries in the European Region. It is noteworthy that 62% of resources allocated for guaranteed free medical care is dedicated to inpatients, 34% to PHC and 3% to ambulance services, whereas in other countries of the Organisation for Economic Co-operation and Development the proportions are 34%, 61% and 5%, respectively.

The specific budget allocations for the MHSD are made annually. The existing system of sectoral monitoring, analysis and strategic planning is to be modernized, and a system of annual strategic analytical research will be introduced to ensure high-quality analysis of the *Densaulyk* programme. As part of modernization, indicators of achievement of targets and tasks and of productivity, realization of activities and distribution of responsibilities will be established to form a new basis for annual decision-making at State level.

The gender equality strategy will encourage gender-specific budgeting, perhaps also for MHSD allocations. This could include, for example, assessment of gender-oriented allocations, the main costs of services for women and men separately and analysis of strategies for achieving equal opportunities in State services.

Challenge 3. Strengthening interagency cooperation

Effective, equitable NCD prevention requires actions in many sectors, as described in the WHO European Health Policy Framework Health 2020 (WHO Regional Office for Europe, 2013b), which stresses the significance of joint efforts and partnerships and inclusion of all participants in government and society.

Currently, there is neither a comprehensive national NCD strategy nor an approved national NCD action plan to facilitate cross-sectoral engagement, policy coherence and joint accountability of different sectors. Nevertheless, intersectoral cooperation has been identified as a priority in *Densaulyk* 2016–2019, and an interministerial council on health has been set up, which reports to the Vice-Prime Minister. Moreover, the overall goal of *Densaulyk* 2016–2019 is to improve health in order to ensure sustainable social and economic development. This represents important political recognition of the interdependence of health and development and is a good basis for advancing achievement of the Sustainable Development Goals and specific goals on health and well-being in Kazakhstan by 2030. The Sustainable Development Goals could be used strategically to move forward intersectoral governance for NCDs.

Some key legislation for reducing consumption of alcohol and tobacco has been passed, with the effective participation of other ministries. In addition, intersectoral councils for health have been established at regional level. Kazakhstan has good examples of interagency cooperation in many areas and has made progress in advancing multi-sectoral action, but this requires further strengthening in the area of NCDs.

Discussions are under way to test a “healthy cities” initiative in Kazakhstan, which will offer an opportunity to test intersectoral mechanisms at subnational level.

Despite the progress made in intersectoral collaboration, clearer support and accountability mechanisms are required. **Establishment of a cross-sectoral committee for NCDs that** reports directly to the Vice-Prime Minister would represent a truly whole-of-government approach to NCDs and would ensure that the Government is well informed about the situation. The MHSD has also come to an agreement with the Ministry of Education to introduce health education into the school curriculum.

The responsibility for NCD prevention and control at national level lies with multiple players, including the MHSD, the healthy lifestyle centre in Almaty, the Nutrition Academy, the sanitary epidemiological services within the Ministry of National Economy and the Cardiology Institute. Overlapping roles and responsibilities appear to lead to duplication of activities, and a coherent, consistent approach to NCDs is needed.

Challenge 4. Population empowerment

The role of civil society in NCDs is expanding, and there is political commitment to strengthening the involvement of nongovernmental organizations. Several such organizations currently operate in the health sector in Kazakhstan; some are broadly based, while others target specific populations or health problems. Domestic organizations are generally less active than international ones and have little influence on health policy. In addition to various voluntary organizations, several international and multilateral governmental organizations support a range of programmes in the health sector.

The public is not formally represented in decision-making and policy-making bodies. In Kazakhstan, there is a patient organization for diabetes but not for stroke. A stroke patients’ association would be desirable to improve the population’s awareness of early signs of stroke, stroke prevention and stroke care and to increase patients’ responsibility for their health. Patients’ right to health and health services is recognized as a fundamental human right in strategies and policy documents, but no specific charter of patient rights has been drawn up.

Regional and local self-governments play an important role in Kazakhstan, which presents a clear opportunity for improving the health of the population. In the latest patient satisfaction surveys, conducted in 2010, over half (53.8%) of the respondents reported that they were rather or definitely satisfied with the health system, which is a significant improvement over the results of a similar study conducted in 2001, when only 29.5% were satisfied (Footman et al., 2013).

Governors hold regular meetings with the population to discuss topics of interest, such as social services and health. Often, complaints are made about health providers, usually leading to disciplinary measures. During a WHO assessment, health providers reported that such measures often tended to demotivate providers (WHO Regional Office for Europe, 2015).

The health literacy of the population is relatively poor. The National Centre for Problems of Healthy Lifestyle Development is responsible for improving the population's health literacy and promoting healthy lifestyles. It has branches in all *oblasts* and provides materials for health promotion and disease prevention, which are distributed to the population during health promotion campaigns conducted at PHC level. The expanding Government-run Internet portals with high-quality information on health-related issues provide good opportunities for population outreach. Public and private mass media also prepare, publish and broadcast round-table discussions on healthy lifestyle issues, such as smoke-free workplaces, individual behaviour modification, diet and nutritional habits. Other ministries and organizations publish material and promote behaviour change, including departments of health and social security at municipal and regional levels.

Studies indicate that patient-centred approaches to NCD management and control at patient, provider and policy levels should be improved and strengthened. Patients show little responsibility for making decisions about their health and health care, which leads to poor compliance, inability to self-manage their disease and unnecessary use of the system. Non-adherence to treatment by patients with NCDs is an important cause of preventable hospitalization and a generally high incidence of acute events (WHO Regional Office for Europe, 2015). Many patients do not understand the importance of regularly taking prescribed medicines and changing their lifestyle, while primary care physicians (PCPs)¹ often do not have the time to address these issues during regular visits. For example, patients with ischaemic heart disease have to visit a PCP monthly in order to refill their prescription, which in practice results in breaks or discontinuation of the drug regimen. Furthermore, the population has a certain reluctance to trust clinical opinion and advice given by PCPs, especially in urban areas (WHO Regional Office for Europe, 2011). This results in poor adherence to their advice and more patient requests for specialist consultations and self-medication. Disease-specific patient schools are unevenly distributed in the regions, and there is no clear guidance or standards for patient education.

A gender approach to population empowerment would benefit both men and women. Strengthening women's empowerment and participation was acknowledged as important in several gender assessments in Kazakhstan and by the Kazakhstan Gender Equality Strategy (Government of Kazakhstan, 2005). Several civil society organizations, such as the Association of Women with Disabilities, have had good experience with empowerment. Empowering men as patients and carers would improve their health-seeking behaviour and influence the design of services.

Challenge 5. Establishing effective models of service delivery

Services delivered in primary care

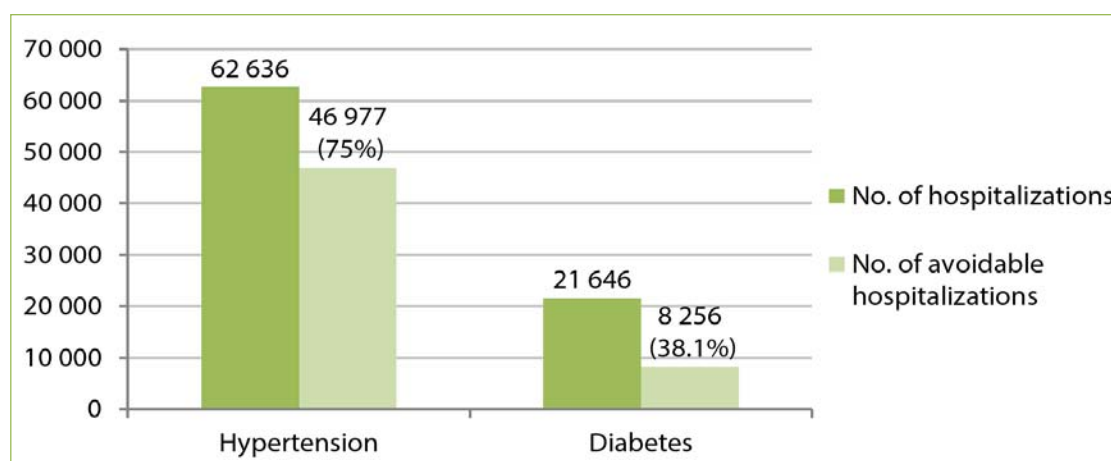
Primary care is delivered through the network of polyclinics and feldsher-midwifery points with assigned populations in catchment areas. In an average polyclinic, family doctors serve a mixed population of 2000 people, a therapist serves 2200 adults and a paediatrician serves 900 children. PCPs act as gatekeepers for referral to specialists and hospitalization. Polyclinics are open from 08:00 to 20:00 on weekdays, and after-hours services are available once a week and once a month on weekends, usually on Saturdays. Most consultations in primary care are walk-in visits, as there

¹ In Kazakhstan, PCPs are family doctors, therapists, internists and paediatricians. A reform is under way to retrain all therapists and paediatricians as family doctors.

is no appointment system. Home visits for both acute and non-acute cases are the responsibility of PCPs and can account for up to 4 h per working day. In a recent study, surveyed PCPs estimated that approximately 50% of all home visits to adults were unnecessary (WHO Regional Office for Europe, 2015). Telephone consultations are possible in some primary care facilities, but the uptake by individuals and practitioners is limited.

All patients with chronic NCDs are required to undergo check-ups by a specialist, irrespective of the clinical criteria for an extensive check-up. Currently, specialist consultations are required for confirmation of diagnoses, including of prevalent conditions such as hypertension, heart disease, congestive heart failure and diabetes mellitus. According to the current clinical guidelines and protocols, oral anti-hyperglycaemic drugs, insulin and inhaled corticosteroids should be prescribed by specialists, even for patients with no complications. For example, only endocrinologists are permitted to prescribe insulin to patients with diabetes mellitus. Similarly, only psychiatrists can prescribe psychotropic drugs. **This creates over-reliance on specialist care and weakens the competence of PCPs to deliver services to NCD patients.** Although medications and diagnostic tests are free of charge in hospitals, they are not always free in ambulatory care, creating an undesirable incentive for people to seek care in inpatient facilities (WHO Regional Office for Europe, 2015). NCDs account for a large proportion of preventable hospitalizations in Kazakhstan. For instance, 75% of the over 62 000 hospitalizations for hypertensive heart disease in 2014 were considered preventable (Fig. 10).

Fig.10. Hospitalizations for selected NCDs in Kazakhstan, 2013



Source: Adapted from WHO Regional Office for Europe (2015)

Kazakhstan has several programmes for early detection and management of NCDs in primary care. As partly described in section 3.2, the 11 **national screening programmes** include programmes for CVD risk factors, diabetes and several types of cancer. Healthy populations of a certain age are invited personally for screening biennially by post and phone calls. A special ambulatory screening form is filled in during screening, which differs from the ambulatory patient record. The screening form is merged into the ambulatory record if a pathological condition is detected during screening. One of the polyclinics visited in Astana reported that only about 30% of the invited population attended. Screening is done in designated rooms in polyclinics and is organized and delivered as an independent service; therefore, the role of PCPs is marginal, resulting in additional fragmentation in the provision of services. Identification of shared NCD risk factors in screened patients is followed by short interventions in “preventive rooms” in polyclinics. It was not clear, however, whether nurses who deliver such interventions have sufficient skills to provide effective services; probing questions on their familiarity with commonly known methods for behavioural change communication and widely accepted tools such as the 5A method and the AUDIT tool revealed areas for significant improvement. The screening programmes for target populations are complemented by annual State-regulated check-ups for certain occupations.

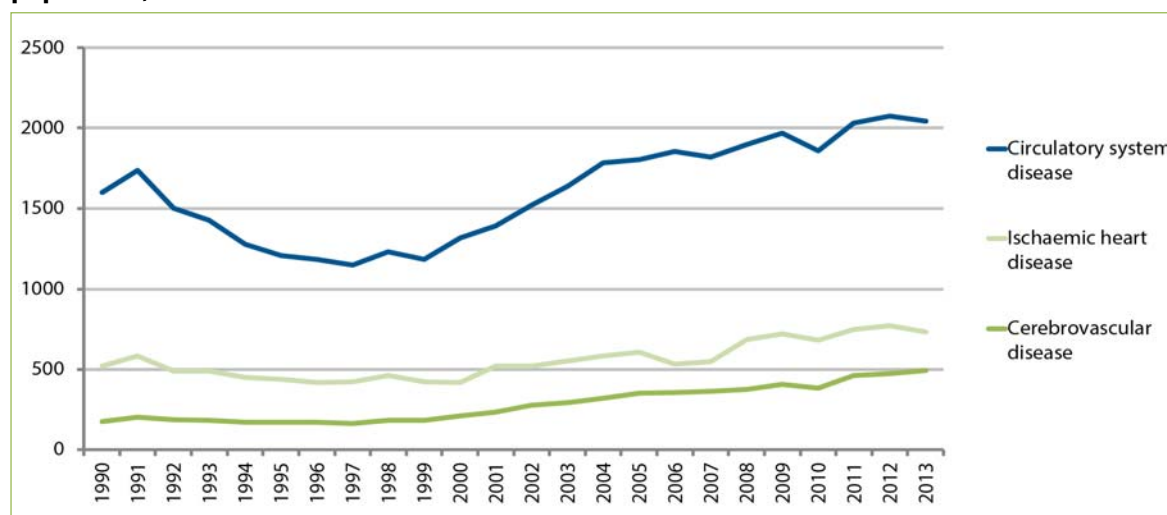
In Kazakhstan, disease management programmes were pilot-tested in two regions, Pavlodar and North Kazakhstan, in 2015. The programmes addressed three priority conditions: hypertension, diabetes and congestive heart failure. The rationale for the introduction of disease management programmes is a multidisciplinary approach to the management of highly prevalent chronic conditions, the intensity of the patient–provider follow-up and the promotion of patient self-management, eventually increasing the efficiency of the services delivered. Multidisciplinary teams consist of a general practitioner², nurse(s), relevant specialists such as cardiologists and endocrinologists, and a social worker. The training programme for multidisciplinary teams was prepared by Canadian consultants, who trained national trainers for the pilot programmes in multidisciplinary teams to encourage team work. The training sessions consisted of four main modules: introduction, tools and instruments, patient self-management and registries; follow-up training and sessions were added to answer providers’ questions and get their feedback. The process indicators monitored during pilot-testing of the programmes were: blood pressure < 40/90, number of patients given an electrocardiogram and number of patients whose blood glucose was measured. There were no outcome indicators, as an effect was not anticipated immediately after the intervention. With continuation and extension of disease management programmes, however, the outcome indicators to be collected and measured include reductions in the number of hospitalizations and the number of complications.

Disease management programmes were planned in an additional five regions during 2016: Astana, Almaty, West Kazakhstan, Karaganda and Kostanai. The assessment team found that patient-centred counselling and a multidisciplinary approach to treatment of NCDs improved the care of patients with chronic disease. The programmes are, however, implemented vertically and are not integrated into primary care, thus missing connections with screening, prevention and disease management interventions in the same facilities. In particular, there appeared to be bias in the selection of patients enrolled in programmes, which could overestimate the size of the effect of programmes in improving patient outcomes as compared with conventional care. The programmes do not account for co- and multi-morbidities, and each NCD is treated separately, especially in the absence of consolidated clinical guidelines for multi-morbid patients. While patient engagement and enabling patient self-care were seen as important components for implementation of the programmes, in practice these were limited to referral to disease-specific “patient schools” available at the facility.

Acute care and hospital services

With the increasing prevalence of NCDs in Kazakhstan, there has been a steady increase in the number of hospitalizations for diseases of the circulatory system (Fig. 11).

Fig. 11. Time trends of hospital discharges in Kazakhstan for selected conditions, per 100 000 population, 1990–2013



Source: WHO Health for All Database (WHO Regional Office for Europe, 2016a)

² Only PCPs who had (re)trained in general practice were included in the disease management programmes.

Acute care for selected NCDs is provided through a network of general and specialized hospitals and departments for cardiological care and stroke care. As part of the previous *Salamatty* Kazakhstan national health programme, these facilities were equipped with state-of-the-art equipment, allowing provision of highly specialized care. This has improved the quality and outcomes of services delivered, especially for AMI.

Much work has been done recently to improve the efficiency of patient triaging in hospitals. For instance, the regional hospital visited in Aktau had clearly identified pathways for sorting patients with AMI according to whether ST elevation was present on the electrocardiogram (Fig. 12). A similar system of triage exists for stroke patients. The emergency departments in hospitals have observation wards where patients with unclear symptoms can stay for up to 24 h.

Fig. 12. Example of sign indicating pathway for patients arriving at the emergency room



Regional hospitals provide state-of-the-art interventions for patients with AMI and stroke, such as thrombolysis and endovascular surgery, although these interventions may not be available 24 h/day. A shortage of competent human resources and budgetary limits limit the provision of high-technology interventions (see also Challenge 14).

In 2008, the MHS D implemented the State programme for cardiology and cardiosurgery development, including opening 48 stroke centres. During the *Salamatty* Kazakhstan 2011–2015 programme, 36 stroke centres were established in Kazakhstan. The Neurological Care Act of the MHS D in 2015 envisages establishment of a total of 64 stroke centres around the country by 2020. According to the Neurological Care Standard (MHS D, 2015a), one stroke centre with 30 dedicated beds, of which 6 are designated for intensive care, should be available per 250 000 people.

In July 2016, the National Centre for Neurosurgery became the national coordination centre for stroke care. During the first semester of 2016, the Steering Council of the MHS D approved a new model of integrated stroke care, which comprises three levels of service delivery (see Challenge 7) and establishment of stroke units across the country. Each stroke unit has a multidisciplinary team, including nursing staff specialized in stroke management and a dedicated ward for stroke patients. Of the various types of stroke unit, that described by the Neurological Care Standard appears to refer to acute units that accept patients with acute conditions, and which may be equipped as intensive, sub-intensive or non-intensive wards and discharge patients early to rehabilitation facilities (residential or outpatient) or long-term care (Stroke Unit Trialists' Collaboration, 2013).

Currently, there are 1063 beds in stroke units across Kazakhstan, including 181 beds in intensive care, and 170 full-time neurologists. Annex 2 of the Neurological Care Standard (MHS D, 2015a) recommends a neurologist-to-patients ratio of 1:2.5. Both health personnel and technical equipment are planned to be adjusted to the Neurological Care Standard within the next 4 years.

The majority of the hospitals visited had units for early rehabilitation; however, the equipment and services in these facilities did not comply with standards for post-stroke and post-AMI rehabilitation. Regulations on the provision of rehabilitation services for patients with chronic

diseases state that rehabilitation should be available during the acute phase of the disease, in early neuro-rehabilitation and in outpatient settings (Fig. 13), through so-called “dispensary follow up”. In stroke centres, rehabilitation begins immediately in the form of physiotherapy and in some cases speech therapy. After the acute phase, patients are referred to outpatient departments or, if they cannot go home, to the few long-term care facilities. In some stroke centres (e.g. that in Astana), there is a paid in-hospital rehabilitation service. The *Salamatty* Kazakhstan 2011–2015 programme envisaged improving rehabilitation and long-term care, including by the creation of a network of rehabilitation facilities and day hospitals, the introduction of training standards for medical staff, increasing human resources capacity and introducing high-technology rehabilitation. To date, facilities, medical education, appropriate clinical pathways, accreditation, indicators and monitoring of quality are not, or are only partially, in place. The particular importance of improving the quality and coverage of rehabilitative services is to avert the disabling effects of stroke and ensure the subsequent return of post-stroke patients to the active workforce.

Fig. 13. Rehabilitation facilities in the Demeu PHC centre, Astana



Challenge 6. Improving coordination across providers

The types of health services to be delivered in primary, secondary and tertiary care are well defined in clinical practice guidelines, with clear referral criteria (WHO Regional Office for Europe, 2015). Specialist consultations and inpatient services delivered within the State-guaranteed benefit package require referral by PCPs for integration of care among levels and settings. Self-referral to hospital is possible with full payment of service fees. According to a recent survey, only 1–3% of patients self-refer (WHO Regional Office for Europe, 2015). Referrals from PCPs to specialists and for diagnostic procedures and hospitalization are well organized by an electronic system that allows general practitioners to send requests to the respective facilities. Adherence to hospitalization criteria is strictly monitored by internal and external audit teams (Ministry of Health, 2014).

Discharge records are handed to patients, who are expected to take them to their PCP. In practice, follow-up after hospitalization remains a challenge. A recent study conducted in Mangystau *oblast* found delays, first in obtaining a discharge record from a hospital (up to 10 days after discharge) and lack of active post-discharge follow-up in primary care (WHO Regional Office for Europe, 2015). An electronic system allows recording of hospital admissions and discharges, but PCPs cannot access this information. In the absence of follow-up, many patients do not adhere to treatment recommendations and are therefore at high risk for readmission to hospital.

Recent reforms have led to the creation of specific “chronic disease” rooms in polyclinics, to improve the coordination of care by delegating routine services such as patient counselling, patient follow-up and filling in of prescription forms to nurses (see also section 3.2 and Challenge 5). This has decreased the workload of PCPs, although the services provided by nurses require close monitoring by family doctors, and the filled prescription forms must be checked.

Social workers have been part of the primary care team since 2014. They provide social services to vulnerable populations and social rehabilitation for people with disabilities. Despite the attempts to integrate both health and social services into primary care, this has translated in practice into co-location of these services in polyclinics. In one of the general hospitals visited, with a highly specialized stroke unit, the short-term and social rehabilitation unit was co-located on the hospital premises. Similarly, tuberculosis services have been co-located to primary care facilities.

Challenge 7. Taking advantage of economies of scale and specialization

Investment in and development of highly specialized care for acute NCDs, especially for acute coronary syndrome, AMI and stroke, has been the focus of health reforms in the past decade. Such centres have allowed economies of scale in terms of use of high-technology equipment and highly specialized human resources.

The recent establishment of a new model of integrated stroke care benefits from specialization of service delivery; it consists of three levels. At level I, regional hospitals deliver intensive care around the clock, with laboratory services and part-time neurological and early neuro-rehabilitation services. At level II is a multidisciplinary hospital with computerized tomography (12 h/day), echo-Doppler sonography and neurosurgical services. Neurosurgical capacity of this level includes systemic thrombolysis, haematoma evacuation, decompressive craniotomy and ventricular drainage, as well as early neurorehabilitation services. Level III refers to a multidisciplinary hospital with computerized tomography, magnetic resonance imagery, echo-Doppler sonography, angiography, vascular surgery and neurosurgical procedures 24 h/day. This level of stroke care allows provision of systemic thrombolysis, endovascular procedures such as local thrombolysis and mechanical thrombectomy, as well as early neurorehabilitation.

Several challenges were identified in the current organization of specialized care. First, despite significant investment in stroke centres, they do not function as a network, whereas a common network would allow exchange of information, innovations in treatment and quality improvement on a larger scale. Secondly, the current budgetary allocation for provision of high-technology care such as endovascular treatment does not correspond to the higher demand for such services. Lastly, maintenance of the hospital equipment poses challenges for the provision of highly specialized care and achieving full economies of scale.

The Republican Centre for Healthcare Development, in partnership with the International Society for Quality in Healthcare plans to prepare accreditation standards for facilities that provide services for stroke, AMI and cancer. Ambulance services belong to hospitals, and services are delivered by land and air transport. Such structural and territorial integration predisposes to better delivery of acute services as patients are transferred from ambulance to hospital. Furthermore, the ambulance service allows the presence of a physician on board each car, which could theoretically allow more accurate patient triage, recognition of early signs of stroke and taking a clinical history. Maintenance of land transport by ambulance services is financed from the allocated budgetary lines of hospitals, while maintenance of air transport is covered by the Ministry of Emergency Situations.

Challenge 8. Creating the right incentive systems

Kazakhstan recognizes the importance of health promotion. Health promotion has long been acknowledged as important for the country's social and economic development,³ and public funds have been allocated to such activities. There are two health promotion centres – the National Centre for Healthy Lifestyle Development and the National Centre for Healthy Nutrition, with 14 *oblast*-level, two city-level and 136 district centres for healthy lifestyles. In addition, 204 centres for health promotion, 96 anti-smoking centres, 76 youth health centres and 3791 health schools were founded within the *Salamatty* Kazakhstan (World Bank, 2014).

Funding for the centres comes from the State budget, while funding for regional and local health promotion centres is from regional and local budgets. Before 2014, funding for these centres derived from earmarked transfers from the Republican budget to *oblast* budgets. **Although *oblast* spending on promotion of healthy lifestyles more than doubled between 2012 and 2014**, i.e. from 1.05 billion KZT to 2.33 billion KZT, **this represents only a small proportion of total public spending on health** (0.26% in 2014) (MHSD, 2016). While it is too early to determine the implications of the change in funding for regional and local health promotion centres, it might limit the amount that can be raised for these critical activities and might exacerbate any inequities in access to population-based NCD interventions.

Although the introduction of comprehensive, universal primary care has been a priority for the Government, and major investments have been made, much remains to be done.

The World Bank-financed Health Sector Technology Transfer and Institutional Reform Project supported a number of activities and reforms to strengthen PHC in Kazakhstan, beginning with the establishment in 2009 of the Unified National Health System. Nevertheless, progress in ensuring comprehensive universal care has been slow and difficult, due partly to an insufficient number of general practitioners and partly to an imbalance in the distribution of staff, with large deficits in the numbers of doctors and nurses in villages and surpluses in cities and hospitals (World Bank, 2014). The *Densaulyk* 2016–2019 programme therefore prioritizes continued development of primary care and integration of services at all levels to achieve true patient-centred care (MHSD, 2015b).

Initiatives to strengthen PHC and promote more efficient use of resources by a combination of provider payment methods are not an adequate incentive for the delivery of core NCD services. The Government has taken steps to become a strategic purchaser of health services, including separating financing from provision of services and setting up a national committee for the purchase of health services. It now purchases not only hospital services but also the PHC services that are part of the State-guaranteed benefit package, although purchasing treatment for “socially significant diseases” remains the responsibility of *oblast* health authorities. Provider payment for primary care has undergone a significant change and is currently paid at a risk-adjusted capitation rate with partial fund holding for consultations and diagnostic services for a list of patients, combined with incentive payments for a set of quality indicators. If fully achieved, this will increase the average monthly salary of medical workers by up to 30% (MHSD, 2015b). Two of the indicators reward early diagnosis (e.g. of malignant tumours in stages 1 and 2) and good management of NCDs (hospital admission of patients with complications of CVD), while the remainder focus on preventable maternal and infant mortality in primary care settings and timely diagnosis of tuberculosis. Kazakhstan has been a champion of using financial rewards to expand the tasks of primary care workers and thus reduce hospitalizations for conditions that can be treated in primary care. This is nevertheless a good time to review whether this mechanism is sufficient to stimulate further strengthening of primary health care services.

³ The *Salamatty* Kazakhstan development plan 2010–2015 included the objective of promoting the health of the Kazakh people (World Bank, 2014). Similarly, the *Densaulyk* programme of health care development 2016–2019 has as its goal “health promotion to secure sustainable socioeconomic development of the country”.

Despite progress in reducing unnecessary hospitalization, the system remains hospital- and specialist-focused. The reasons are multiple, including budget allocation mechanisms that create strong incentives for maintaining a large number of hospital beds and corresponding hospital-based staff. Hospitals are now paid on the basis of “diagnostic related groups”, which has eliminated regional differences in tariffs. While the system implemented in Kazakhstan was modelled after international systems, it has certain unique characteristics. For example, if a death that occurred in hospital is considered preventable, the hospital receives no payment for the case. Furthermore, penalties are imposed for complications considered to be the result of negligence. The diagnostic related group system used in Kazakhstan also monitors the length of stay of each patient to detect possible errors in diagnosis or early discharge. The system therefore requires continuous updating of the evidence base for the treatment of each diagnosis but limits the autonomy of hospitals to use new, more efficient ways to treat patients, which is the main driver of improved outcomes with such systems. Increasing the autonomy of providers and decreasing central regulations could improve the effectiveness of the diagnostic group system used in Kazakhstan to achieve the intended goals of efficiency and quality.

The Government recognizes the importance of patient education and counselling about NCD risk factors and health behaviour change, but there is no direct financial incentive for providers to do so. The *Densaulyk* programme envisions use of “disease management” approaches for major NCDs, a shift to patient-centred practices and integration of care along patient pathways; however, there is no financial mechanism to encourage linkage of health services delivery with outreach and social care for NCD patients, particularly those with disabilities. As discussed above, the only financial incentives are bonus payments related to reductions in inappropriate hospitalizations for ambulatory care, which are unlikely to improve patient education and counselling. The Government has increased its investment in disease-specific “patient schools”, e.g. for patients with diabetes, but attendance at these schools is limited, particularly by men, and there is no demand-side incentive for patients to attend them. There is also no financial mechanism to support peer education or support groups of patients with certain conditions (e.g. cancer survivors), which has been shown by international experience to be effective in improving outcomes.

Challenge 9. Integrating evidence into practice

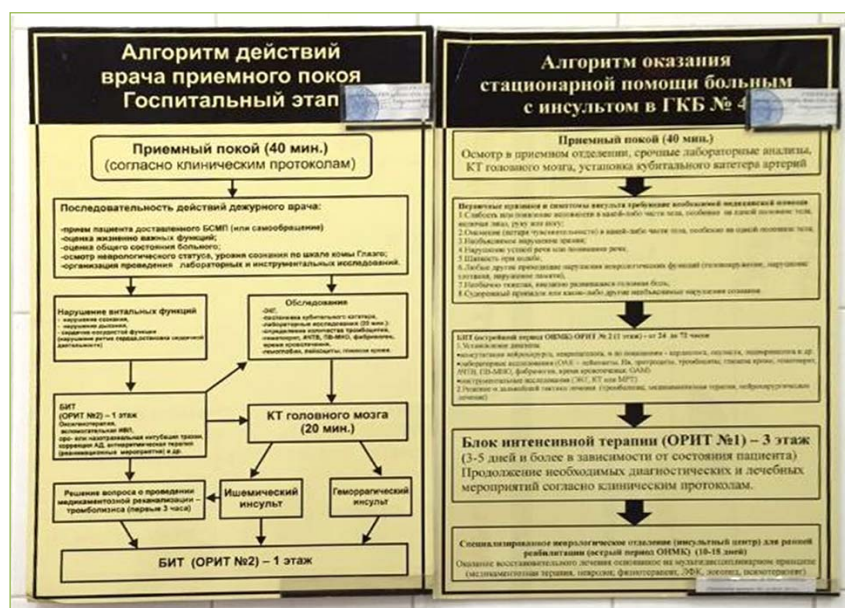
In Kazakhstan, there is a structured process for preparing clinical guidelines and protocols based on the best international evidence. A department for developing clinical guidelines and protocols in the centre for health care standardization at the Republican Centre for Health Development (2016) is responsible for coordinating and providing systematic and methodological support for the development, adaptation and implementation of clinical guidelines and protocols, in cooperation with Government and nongovernmental organizations. Around 500 clinical guidelines and protocols have been prepared for various conditions.

A large-scale project to build capacity and to adapt international clinical guidelines and protocols involved a twinning partnership between the Canadian Society for International Health and the MHSD (McGowan et al., 2016). It involved a multi-step adaptation process, consistent with international practices and standards, to ensure transparency, good reporting and quality. The barriers identified included priority-setting, obtaining permission to use and translate guidelines into Russian and organization of implementation. The project provided recommendations on improving the teaching of evidence-based medicine in medical universities (Canadian Society for International Health, 2013). The World Bank (2014) reported that 235 professionals were trained in the development, adaptation and revision of clinical guidelines and protocols between 2009 and June 2013, and 42 clinical guidelines and 128 protocols were prepared according to evidence-based medicine principles and approved by the MHSD. Training in translation of the guidelines and protocols into practice was conducted, with cascade training of 2990 people; and 3515 people attended training events.

According to the NCD Progress Monitor (WHO, 2015b), Kazakhstan has scored “fully achieved” for “guidelines for the management of the major NCDs”. **Guidelines and protocols are generally available for the core services listed in section 3.2. Those reviewed for this report were found to be evidence-based, comprehensive and detailed but rarely included the strength of the evidence for the recommendations. Furthermore, they do not take into account gender aspects of cerebrovascular disease.** Differences in outcomes due to shortcomings in perceptions of the risk, detection and treatment of CVDs have been recognized by medical associations such as the Standing Committee of European Doctors, which adopted a policy on sex and gender in medicine in April 2016 (Standing Committee of European Doctors, 2016).

Each clinical guideline specifies the diagnostic categories that will apply, according to the tenth revision of the International Classification of Diseases (<http://who.int/classifications/icd10/>); specialized users (e.g. cardiologists, neurologists), and the date from which the category applies. **These are available in both Kazakh and Russian on websites, CD-ROMS and pocket guides and are summarized in algorithms adapted to local organizations; they are prominently displayed in clinical settings where both doctors and patients can see them.** For example, clinical guideline No. 8 on ischaemic stroke, approved by the Expert Commission Group on 11 April 2011, applies from 11 April 2012. A revised version was approved in 2013. Fig. 14 presents two algorithms for acute cerebrovascular events: on the left, the algorithm describes hyper-acute phase actions and timing for diagnosing stroke in emergency settings (acute cerebrovascular event: algorithm for emergency room physician); on the right, the algorithm illustrates a care pathway for patients with stroke admitted to hospital #4.

Fig. 14. Proactive clinical protocol displayed on wall, visible to both patients and professionals



The stroke protocol that we reviewed does not prioritize actions according to the grade of evidence. In some cases, the prescription of certain drugs was not strongly evidence based, for example in the **case of neuroprotection**. According to this protocol, there would be two phases: early and late neuroprotection. During the early phase, the protocol recommends use of magnesium sulfate, which has been shown to be safe in various studies but not to improve disability outcomes at 90 days. Nimodipine is also recommended for ischaemic stroke; however, a clinical trial (Horn et al., 2001) of use of nimodipine within 6 h of stroke onset was ended prematurely because of lack of benefit. Many drugs proposed for use in secondary neuroprotection, such as citicoline, did not show efficacy in clinical phase-III trials (Clark et al., 1998) with various dosing schedules. Other drugs considered to be neuroprotective agents – cerebrolysin (Heiss et al., 2012), piracetam (De Deyn et al., 1997) and actovegin (Korczyński et al., 2015) – have no proven effect on clinical outcomes of stroke patients. The cost of neuroprotective strategies based on poor evidence for stroke patients could be avoided, saving resources for more efficacious drugs such as new oral anticoagulants, which are currently paid for by patients.

Professional associations and national centres of expertise participate in expert groups to adapt international clinical guidelines and protocols. For example, the National Cardiological Society of Kazakhstan participates in an expert group to adapt the guidelines of the European Society of Cardiology. Cardiologists in Kazakhstan hold an annual congress, at which newly adopted clinical guidelines and protocols are announced. They are also posted on their website, and training is delivered face-to-face or electronically. Patient organizations such as the National Diabetes Association also distribute clinical guidelines and protocols and ensure that doctors and patients are aware of them. We found no beneficial collaboration for stroke and cerebrovascular disease, as there is no stroke patient association.

Processes with internal and external quality improvement and control components monitor adherence to clinical guidelines and protocols (WHO Regional Office for Europe, 2015). The aim of quality and performance indicators is to control rather than support and motivate providers. If lack of compliance is found in an internal audit, supportive supervision is provided, which may include audits of medical records and/or further training.

Micro- and macro-simulation clinical programmes are available, and an acute stroke simulation algorithm was planned to be functional by September 2016, which should facilitate use of evidence-based medicine in clinical practice. In 2010, the Scientific and Educational Centre of Evidence-based Medicine was established in Astana Medical University, with funding from a World Bank-financed project. The project also included a survey of the effectiveness of teaching evidence-based medicine among the 323 participants, which showed that failure to attend continuing education and various difficulties in accessing reliable sources of information are barriers to effective use of evidence-based medicine in education and practice.

Challenge 10. Addressing human resource challenges

An effective health system response to NCDs requires a sufficient number of health providers with adequate knowledge and skills in the management of NCDs. The distribution of physicians in Kazakhstan is unbalanced, with a higher concentration in urban areas (583 per 100 000 population in 2009) than in rural areas (141 per 100 000). Shortages are particularly prevalent in northern Kazakhstan, in Kostanay and Mangystau *oblasts*. The distribution of the health workforce is also unbalanced between levels of care. According to a Government decree issued in 2012, 55% of the health workforce should be employed in PHC; however, this figure was 51.3% in 2014. The shortage of PCPs remains a significant limitation to strengthening PHC in Kazakhstan. In 2014, there were 7806 general practitioners, representing about 4.5 PCPs per 100 000 inhabitants, below the target of 5.9 per 100 000. Despite the introduction of the family physician specialty in outpatient care in the early 2000s, only about one third of the necessary family physician posts were occupied in PHC facilities in 2013. In 2014, the PHC workforce comprised 2318 family physicians (30%), 2866 internists or therapists (37%) and 2622 paediatricians (33%) (WHO Regional Office for Europe, 2015).

Kazakhstan has attempted to attract more PCPs to rural areas by providing, for example, a higher salary (more than 25% higher than the average salary in Kazakhstan), financial support for moving and soft credits for housing (WHO Regional Office for Europe, 2015). The governors of *oblasts* and the Ministry have signed an agreement for the employment of medical school graduates. Despite these measures and the relatively large number of general practitioners, the geographical distribution of the health workforce is uneven. The limited availability of public and private transport in underpopulated rural areas combined with a low density of PHC services increase the number of hospitalizations. In addition, many health professionals in rural areas are close to retirement age, which may further decrease the workforce. According to data from the Ministry, roughly 18% of physicians and 30% of nurses worked in rural areas in 2013.

In order to address this situation and achieve effective management of human resources in health, the Ministry approved a comprehensive programme for human resource development for 2013–2016, including establishment of a national observatory. The observatory, established within the Republican Centre for Healthcare Development in April 2014, is responsible for keeping track of human resources, analysing data and planning comprehensive human resource plans. With the support of the World Bank and WHO, analyses were conducted to determine the shortage of professionals in the regions, by specialty and socially significant disease (diseases of the circulatory system, mental health disorders and cancer) as the basis for proposals on human resources for health. It is proposed to reinforce outpatient clinics with specialists in occupational health, social work and mental health care.

Specialties such as “public health” and “health care management” have been introduced into the health system, whereas these specialties are currently taught only in medical schools with obligatory clinical disciplines. Most professionals in public health now work at the Republican Centre for Healthy Life Styles and its branches in *oblasts*. The MHSD has defined tasks to rebuild public health services in Kazakhstan, which include defining a clear service structure, the responsibilities of public health specialists and training capacity.

Provider knowledge and skills should be aligned with population health needs, such as the delivery of clinical interventions against risk factors and management of NCD patients with co- and multi-morbidities. Medical curricula on NCD-specific competence and skills are insufficiently aligned, resulting in reactive approaches to the prevention and management of NCDs. The MHSD has introduced new provider profiles specific to NCDs, such as physicians and nurses who provide services to encourage healthy lifestyles and nurse practitioners who triage patients with chronic diseases. The specialists are responsible for conducting annual check-ups, but their work is formal, with no clear job description and insufficient time allocated for their tasks. **PCPs and primary care nurses require further training in NCD prevention and management, which should be reinforced at the regulatory and legislative level.** Revision of educational standards requires closer cooperation with the Ministry of Education.

During the past few years, Kazakhstan has significantly reformed its higher education system, including continuing professional education, although continuing medical education is not yet fully in place. Other forms of post-graduate education in the medical field may play a key role in integrating evidence into practice. This is the case of medical simulation: Kazakhstan has been a leader in developing clinical simulation centres for medical education, having established the first simulation facility in the Commonwealth of Independent States in 2008. Since then, many simulation centres have been established in medical universities and the main hospitals (Fig. 15). Health facilities have financial resources for retraining their staff in skills related to current NCD needs.

Fig. 15. Simulation centre in Aktau: training room and equipment



Additional opportunities for postgraduate education are the telemedicine and knowledge evaluation centres in each *oblast*, which can be used for distance learning and as simulation centres. It will be important to introduce NCD-related courses for family physicians and nurses and for multidisciplinary teams during annual training.

Kazakhstan has six State-run and two private medical schools, an institute of higher nursing education (baccalaureat) and 56 nursing schools, consistent with the requirement for human resources for the health system. The imbalances are, however, recognized, and redistribution is planned between rural and urban areas, primary care and inpatient care and area physicians and tertiary care doctors. **Mandatory work by regional distribution after graduation from a medical school has been introduced; however, there is no clearly defined mechanism to enforce this regulation, control of implementation is poor, and incentives for working in the countryside are insufficient.**

The Department of Medical Science and Education Development of the Republican Centre for Healthcare Development has compiled a health professionals register for better planning of training, re-training, specialization and distribution of human resources. At present, there are two physician personnel databases, and the Ministry of Education has a database of medical school graduates; however, these are neither compatible nor interconnected.

Challenge 11. Improving access to quality medicines for NCDs

The Government has made major progress in assuring the safety, efficiency, economy, quality and affordability of pharmaceuticals. One of the six thematic directions of the *Salamatty* Kazakhstan programme for 2011–2015 sought to improve the availability and quality of drugs for the population (World Bank, 2014). The World Bank-financed project on health technology transfer and institutional reform thus included support for reforms in pharmaceutical procurement, pricing, monitoring, information provision, benefit package design and quality control.

The achievements of *Salamatty* Kazakhstan included development of a new national pharmaceutical policy to (i) ensure better access to evidence-based essential medicines, (ii) extend financial coverage for these medicines and (iii) develop the local pharmaceutical sector. The policy led to establishment of a national drug formulary according to international standards. As a result, more than 400 evidence-based, cost-effective drugs are now available in the drug formulary, while 86 medicines have been eliminated because of lack of proven efficacy.

The new national pharmaceutical policy also revised the coverage of drugs, so that, in addition to 100% coverage of inpatient medicines, the State-guaranteed benefit package now includes 100% outpatient drug coverage for 48 socially significant diseases, including cancer, diabetes and CVDs; outpatient drugs for other diseases are not covered. Moreover, because diagnostic related group payments do not cover 100% of hospital costs, medicines are not always available in hospitals, even though the group payments are supposed to cover all the necessary medicines.

The availability of drugs in rural PHC settings is also a challenge, despite significant efforts to improve access by the creation of pharmacies in PHC facilities in more than 3000 villages and of mobile pharmacies to provide access to medicines for populations in remote villages. During certain times of the year, however, weather conditions render some locations inaccessible.

Studies of the availability and pricing of generic drugs in both private and public pharmacies indicate that generic drugs are more readily available in private (76%) than in public pharmacies (60%). They also indicate that the standard treatment for certain diseases is unaffordable for people with low wages. One month of treatment for a hypertensive patient with hypercholesterolaemia, for example, cost 2.8–13.5 days of salary. Furthermore, although

a new procurement mechanism resulted in price reductions that saved an estimated 20–25% of public expenditure on pharmaceuticals, private pharmacies charged on average 20% higher prices for the most popular generic and original drugs than for lower-priced generics. In general, the availability and the prices of drugs were lower in rural than in urban areas, except for the top-selling generics, which were more expensive in rural areas.

A survey of stakeholders found that counterfeit and substandard drugs were not a significant issue in Kazakhstan because of the widespread availability of cheaper generic drugs (MHSD, 2015b). This finding is in contrast to the widespread belief among doctors, who advise patients to use brand name rather than cheap generics because they perceive them to be of poor quality. The resulting preference for brand names leads to unnecessary increases in the cost of medicines, which disproportionately affects the poor and patients with NCDs.

Other activities in this area include the introduction of international standards of good manufacturing practice in large and medium-sized pharmaceutical factories. Four domestic production sites have already achieved compliance with the standard; the goal is for 100% compliance by 2018. Long-term contractual agreements with domestic manufacturers increased the share of drugs produced in Kazakhstan to 33%.

Despite the progress made, Kazakhstan continues to face challenges related to pharmaceuticals, such as:

- insufficient spending on pharmaceuticals in outpatient settings, including PHC, which encourages excessive hospitalization (MHSD, 2015b);
- inadequate access to medicines in rural areas;
- prevailing preference for and use of higher-priced brand-name or more popular generic pharmaceuticals;
- underdevelopment of the national formulary system, which could reduce the availability of medications for which there is inadequate evidence of efficacy;
- lack of a link between evidence-based clinical protocols and the medicines included in the State-guaranteed benefit package; and
- limited price regulation of pharmaceutical products, which currently covers only 3% of registered products.

The Government is keenly aware of these challenges, and interventions have been designed to address them in the *Densaulyk* 2016–2019 programme.

Challenge 12. Effective management

The Centre for Healthcare Management was established in 2011 within the framework of institutional reform of health management supported by the World Bank project. Its main function is to prepare health facility managers at various levels, including staff of the MHSD, in management, economics and international cooperation, with awarding of a degree in public health. The objectives of the Centre also include curricula on management at all levels of postgraduate education. Currently, head physicians and other high-level managers are obliged to attend training in health care organization management.

There is no clear difference in the competence required of “health care managers”, “public health professionals” and “health care organization specialists”. Consensus has been reached on teaching management skills to young health professionals, but graduates cannot take a managerial position immediately after graduation and often take positions in organizational method units, statistics units or even outside the profession. The curricula should be revised to differentiate training trajectories, such as management, public health and health facility management. As a first step, the content of professionals’ basic education is being reviewed, with consideration of the required competence for managers.

A comprehensive management system is required for monitoring and assessing the competence of professionals, revising plans and curricula for initial and advanced professional training and forecasting and planning in order to ensure the functions of public health and health management. Novel technologies in health are being introduced, such as hybrid technologies in outpatient and inpatient care, in Shymkent and other regions, and indicative planning and management is used for governance. The ratings of all health facilities are publicly available on a designated website. A committee for the control of medical and pharmaceutical activity at the MHSD has set criteria for assessing the risk of deterioration of the quality and efficiency of health care that comprises 250 indicators. A system of incentives for high-quality performance is in place for all health personnel except the leadership; the salaries of head doctors are set by *akimiats*, which are regional bodies with executive power. As large-scale changes in the control of NCDs will be possible only with high-level support, incentives based on achieved improvements in NCD-associated indicators should be introduced for leaders, starting with head doctors.

A patient-centred approach has begun to be introduced in Kazakhstan. A patient support service led by the deputy head doctor for health service quality control has been established in polyclinics, which supervises the performance of their call centres. Patient satisfaction surveys are performed monthly in both at primary and secondary health facilities in the form of exit polls. In agreement with the Ministry, nongovernmental organizations have devised patient satisfaction questionnaires that are used by *oblast* health departments throughout the country, and the data are collected and transferred to *oblast* health departments for analysis. Managers closely monitor the results of these surveys, as reimbursement depends partly on the level of patient satisfaction. In case of patient complaints, payments and incentives are reduced (WHO Regional Office for Europe, 2015). Nevertheless, despite their relevance for payment, the patient satisfaction survey data are not exploited for strategic planning.

The health services quality system has two components: internal and external quality improvement and control. Internal audit mechanisms were introduced in 2009 and rolled out over the following two years. The objectives of the internal audit are to control the quality of health services, to ensure compliance with national regulations and standards of care, identify the roots of poor performance and find solutions and ways to improve quality (WHO Regional Office for Europe, 2015). Internal audits and quality control are in place in PHC and hospitals. In each health facility, the internal audit team is led by a deputy health facility manager and consists of trained experts among the employees of the health care institution, such as a pharmacologist, paediatrician, internist or epidemiologist. An example of process improvement is establishment of assistance in navigating the system by an administrator and a social worker for patients attending polyclinics. According to facility managers and internal audit teams, additional training in quality improvement with analysis of issues and preparation of improvement plans is required for internal audit teams and senior health providers (WHO Regional Office for Europe, 2015).

Challenge 13. Creating adequate information solutions

For an adequate, timely, cost-effective response to the NCD burden, it is important to have appropriate information, analyse it and address health inequalities, performance and outcomes at all levels of the health system. The Republican Centre for Electronic Health is responsible for the functioning of the health information system in Kazakhstan. It ensures collection of statistical reports from health care institutions (by Internet) and compiling of reports at national level.

All citizens of Kazakhstan are assigned to the health facility of their choice through an Internet application “GosUslugi”, with a unique identification number. The database of assigned populations covers all permanent residents of Kazakhstan. Migrants are eligible for medical (not preventive) care but are not included when calculating indicators.

Personal information is collected through various personal registers (registers of hospital discharges, cancer patients, patients with diabetes, pregnant women and women of fertile age) and databases of the health care quality management system at facility level and is submitted to *oblast* health departments. The data specifications, however, differ significantly between *oblasts*, as various software applications are used; consensus on the data format to be used is yet to be reached. In the short term, it would be expedient to add these data to the emergency service database for continuity of NCD care. Online health and vital statistics registers (connected through the unique identification number) have been created, and death and birth certificates are filled in online, allowing analyses of inequalities in health and care by sex, age, residence and social and economic determinants.

Registers should be linked and the information collected by healthy lifestyle centres and in primary care about risk factors, NCD screening and the results of population-level actions. Screening information such as uptake and test results are collected in the prophylaxis departments of polyclinics; the target for screening is 70% of the eligible population. Potentially, all this information could be linked through the unique personal identification number. **Such harmonized information will allow estimates of the NCD burden and be a useful basis for complex analyses of NCD data for strategic planning and policy, including reducing inequalities in health. Currently, the information is used mainly for reporting and control.**

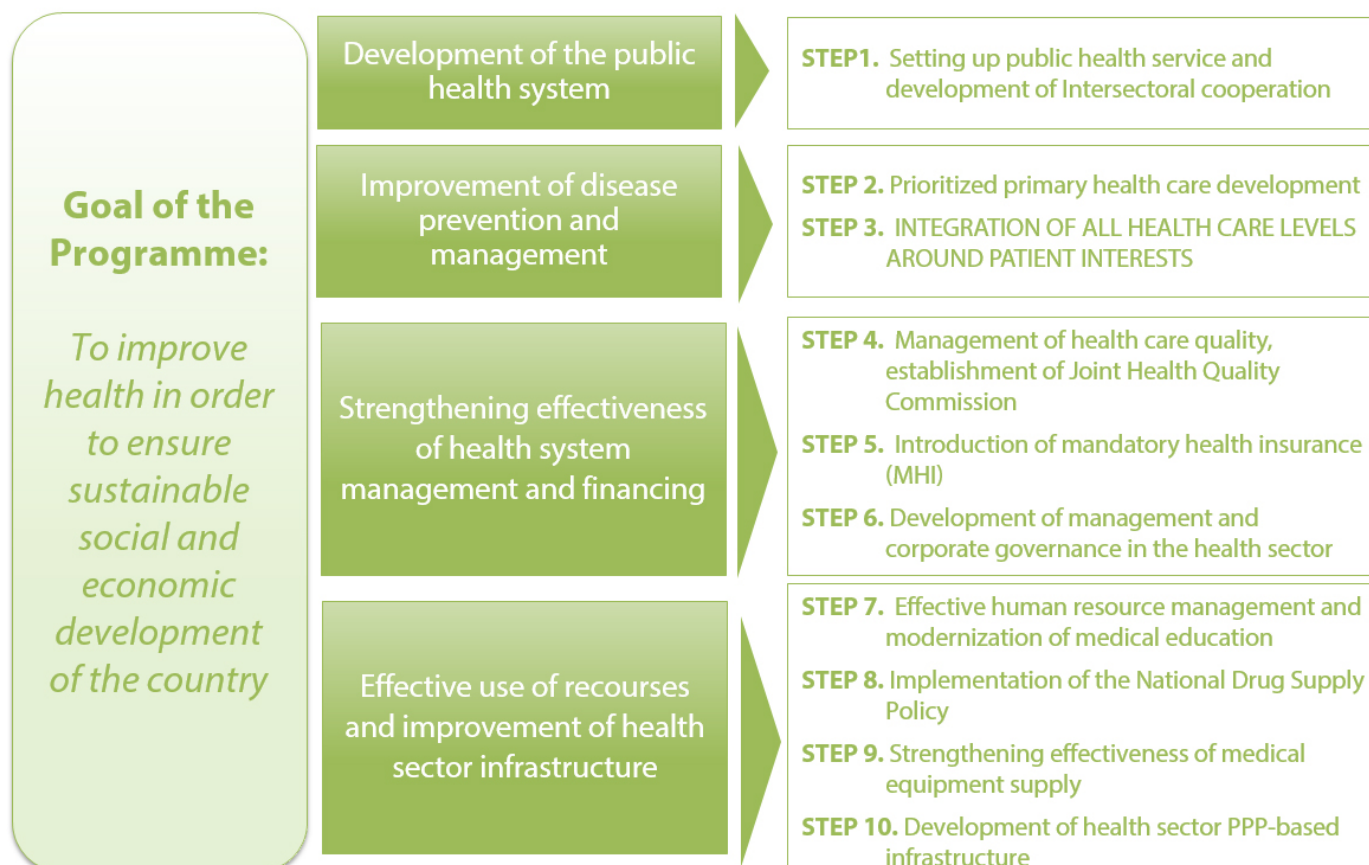
Health services are delivered by use of the unique identification number. An electronic system manages referrals from PCPs to outpatient specialist consultations, diagnostic procedures and hospitalization. Once patients are registered by PCPs and automatically assigned unique patient referral codes, they can be followed up online. PCPs and patients can thus track elective hospitalization lists and waiting times, while respecting confidentiality and patient data protection (WHO Regional Office for Europe, 2015). The current system, however, does not allow transfer of patient hospital discharge records to general practitioners. The Ministry plans to provide its citizens with a health card that will contain records accessible by all health providers (WHO Regional Office for Europe, 2015).

The planned personal online e-health passport will allow patients to manage their chronic disease and promote a healthy personal lifestyle. Currently, telephone consultations are possible with family doctors, and assistive technologies for patients with chronic NCDs are being developed, including mobile phone text reminders to take medicines. The World Bank-financed project of integrated care for four NCDs, which includes new clinical guidelines, algorithms and recommendations on consultation and prescriptions, should be used in developing electronic medical records as a reference in the software for doctors. Thus, the newly introduced personal e-health passports could be used to improve the prevention and clinical management of NCDs and patient self-management and provide disaggregated data to inform clinical, managerial and strategic decision-making and address inequalities.

Challenge 14. Managing change

Reforms of the health system have been high on the political agenda, as outlined in both the Development Strategy of Kazakhstan 2050 and the Strategy Goals for the Health Sector (Government of Kazakhstan, 2016b). In particular, Kazakhstan has set the ambitious goal of increasing average life expectancy up to 73 years by 2020, to reach the levels of countries of the Organisation for Economic Co-operation and Development. This aim will not be achieved without tackling the burden of premature mortality due to NCDs. The *Densaulyk* 2016–2019 programme explicitly identifies the objectives and steps in health system reform (Fig. 16).

Fig. 16. Goal, objectives and implementation steps of the *Densaulyk* national health sector development programme 2016–2019



An important step in implementing the national programme is “Development of management and corporate governance in the health sector” (step 6). The aim of this step is to continue the decentralization of financial and service delivery arrangements, which has led to more autonomy at regional and district levels. In particular, there is a plan to establish joint district health centres, in which polyclinics and district hospitals will be merged into one entity, in order to increase the continuity and efficiency of care. Despite remarkable achievements and ambitious plans in health reform, a few challenges remain in the management of change. First, most of the above-mentioned activities are of a top-down nature. In particular, managerial capacity at regional and facility levels should be extended to ensure successful implementation of reforms. Similarly, adjustment of accountability mechanisms should give facility managers greater autonomy. Secondly, the planned scaling-up of disease management programmes, integration of PHC with hospitals at regional level and integration of the health and social sectors should be done with caution to avoid creating another vertical or parallel stream of care. This will require careful monitoring and evaluation of inputs, processes and outcomes. Thirdly, current quality control mechanisms are somewhat repressive and do not encourage continuous quality improvement or development of managerial capacity.

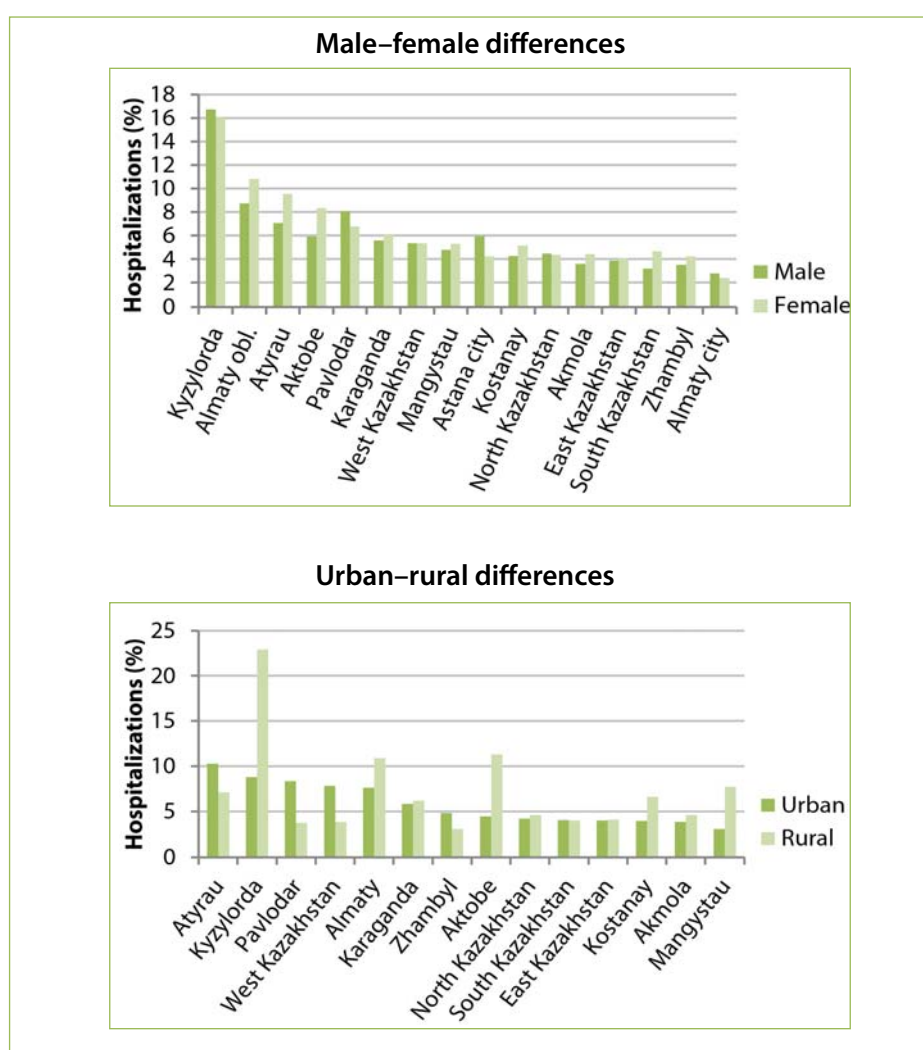
Another challenge in the management of change is poor public awareness of reforms and innovations and rapid scaling-up, which often create resistance to change and limit the effect of reforms. For example, transition of primary care towards family medicine, with delivery of services to mixed populations, generated reluctance to use primary care services in general and mistrust of their quality (WHO Regional Office for Europe, 2015). A good example of increasing public awareness is the communication strategy used in implementing the Development Strategy of Kazakhstan 2050 and “100 specific steps in achieving five institutional reforms” (Government of Kazakhstan, 2016b). In particular, the live web platform (strategy2050.kz) shared the vision of the Strategy with a wide audience and allowed tracking of the activities of various stakeholders in achieving the Strategy objectives.

Challenge 15. Ensuring access to care and reducing financial burden

The Government of Kazakhstan has made significant progress in improving access to primary care for populations in rural and remote areas through investments in infrastructure, equipment and human resources. In addition, comprehensive capitation rates based on consideration of factors such as age, sex and allowances for work in rural areas were established to induce doctors to practise in such areas. Risk-adjusted geographical allocation formulae for general budgetary transfers from the Republican budget to *oblast* and local budgets have contributed to a significant reduction in regional variations in resource allocation (MHSD, 2015b) by taking into consideration factors such as the population, incidence of cancer and the numbers of nurses and medical students in a region. Both developments have improved equity in access to primary care, although, as noted above, challenges remain due to severe shortages of medical staff in rural areas.

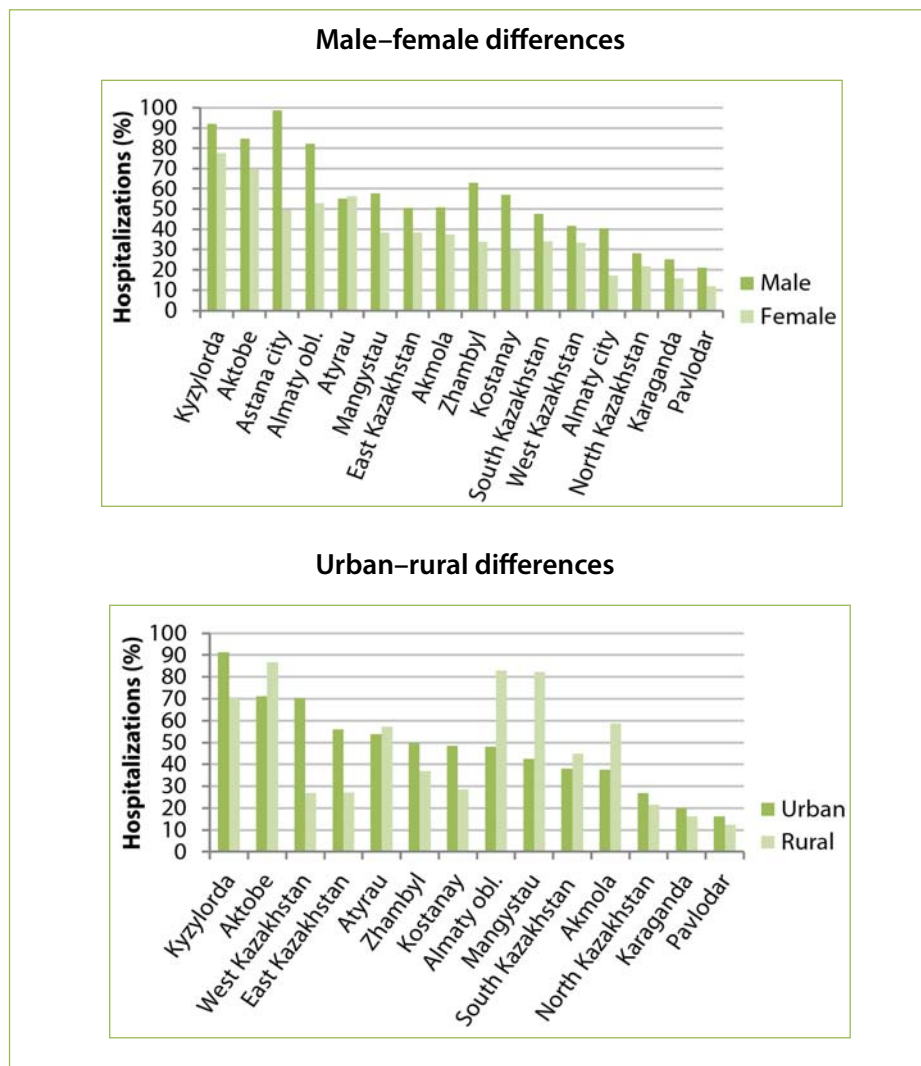
While few data are available on differences in access to primary care, a recent study (WHO Regional Office for Europe, 2015) found significant regional variation in hospitalization for ambulatory conditions, including hypertension and angina pectoris, between men and women as well as between rural and urban areas, suggesting that access to high-quality PHC varies considerably by population subgroup in Kazakhstan (Figs. 17, 18).

Fig. 17. Regional variation in hospitalization for hypertension, Kazakhstan, 2014



Source: Adapted from WHO Regional Office for Europe (2015).

Fig. 18. Regional variation in hospitalization for angina pectoris, adult population (≥ 18 years), Kazakhstan, 2014

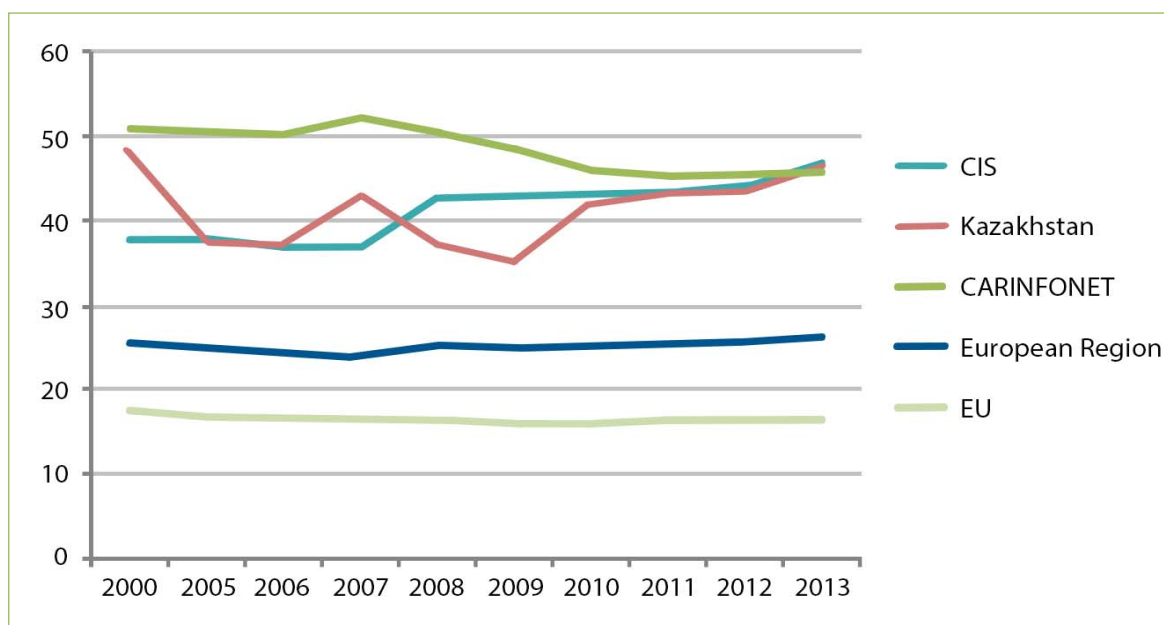


Source: Adapted from WHO Regional Office for Europe (2015).

Due in part to high levels of informal payment, financial risk protection in Kazakhstan remains inadequate, despite sustained efforts to improve it. Ideally, financial risk protection is measured as the percentage of households that incurred catastrophic or impoverishing health expenditure (Xu et al., 2010), but those data are not available in Kazakhstan. Instead, out-of-pocket payments are frequently used as a proxy measure. As can be seen in Fig. 19, early efforts to improve financial risk protection by extending the State-guaranteed benefit package and drug coverage decreased the share of out-of-pocket expenditure until 2009, at which point the trend reversed.

Although data on the impact of the high out-of-pocket expenditures in Kazakhstan are scarce, **a few studies have reported that varying proportions of respondents indicated that they did not use health services because of the high cost** (Balabanova et al., 2012). Furthermore, global evidence indicates that adequate financial risk protection requires that out-of-pocket payments represent < 20% of total health expenditure. When such payments represent about 45%, catastrophic and impoverishing health expenditure can be expected for 3.5% and 1.5% of households, respectively (Xu et al., 2010). Kazakhstan therefore still has much to do before eliminating catastrophic health expenditures and ensuring universal coverage.

Fig. 19. Out-of-pocket expenditure as percentage of gross domestic product, Kazakhstan, 2000–2013



Source: Health for all database (WHO regional Office for Europe, 2016a)
CIS, Commonwealth of Independent States; CARINFONET, Central Asian Republics Health Information Network; EU, European Union



5. Innovations and good practice

5.1 Telemedicine: an opportunity to improve the access of stroke patients to expert care

More than 40% of the Kazakhstan population lives in rural areas. To facilitate the access of this large part of the population to medical and health facilities, a telemedicine programme was introduced in 2004. Since then, 133 392 000 telemedical consultations have been conducted in the 199 health care facilities that are connected via the national telemedicine network. The linked facilities are 141 district and city hospitals, national institutions, medical schools and universities. In 2015, 24 970 000 telemedical consultations were held; the greatest demands were for advice on cardiology, respiratory diseases and neurological conditions. As stroke therapy is a time-critical process and there are relatively few trained practitioners, telemedicine is an attractive technique of care for stroke patients.

“Telestroke” is the use of telemedicine specially for the diagnosis and treatment of ischaemic and haemorrhagic stroke. It is a versatile tool and is not limited to delivery of thrombolysis; it can be used in complex cases. It may shorten hospital stays because of faster diagnostic testing and acute care guidance provided by an expert. Telestroke also allows continuous education of staff and use of standardized protocols to improve patient care (Pezzella et al., 2013; Rubin and Demaerschalk, 2014).

“Teleneurology” has been proven to reduce hospital stays significantly in rural hospitals, without increasing the number of readmissions or investigations. It can avoid unnecessary patient transfers and ensure timely identification of patients who may require interventions or surgery (e.g. patients with subarachnoid haemorrhage, intraventricular haemorrhage, malignant infarction of the middle cerebral artery or basilar artery occlusion).

5.2 Algorithms and protocols for stroke care

Stroke management is a time-critical process involving neurologists, nurses and emergency radiology and laboratory services. The algorithms of acute care for stroke patients shown in Figs. 20 and 21 are displayed in the emergency room of Hospital No. 4 in Almaty. They are examples of good practices, showing not only the actions to be taken but also the timing and where the patient is to be directed.

This information is extremely useful for stroke teams, as it ensures multi-professional collaboration and contributes to coordinated care, which is one of the main features of the stroke unit approach. Placing the algorithms where patients and relatives can see them contributes to creating a culture of physician–patient alliance and enhances patient participation in care. The algorithm in Fig. 20 is an example of a systematic evidence-based approach to stroke care.

Fig. 20. Algorithm for emergency personnel in hyper-acute phase of stroke management in an emergency setting

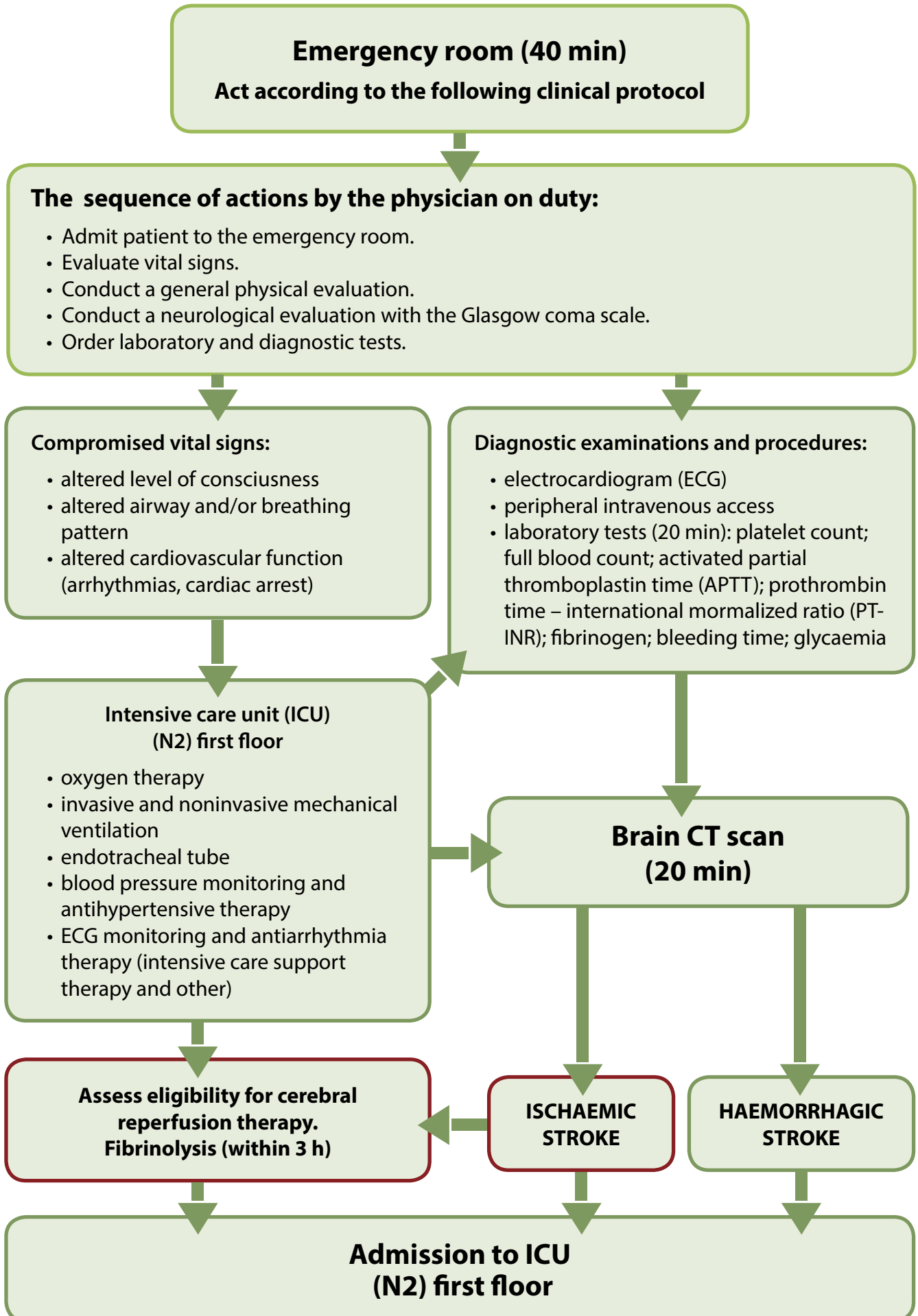
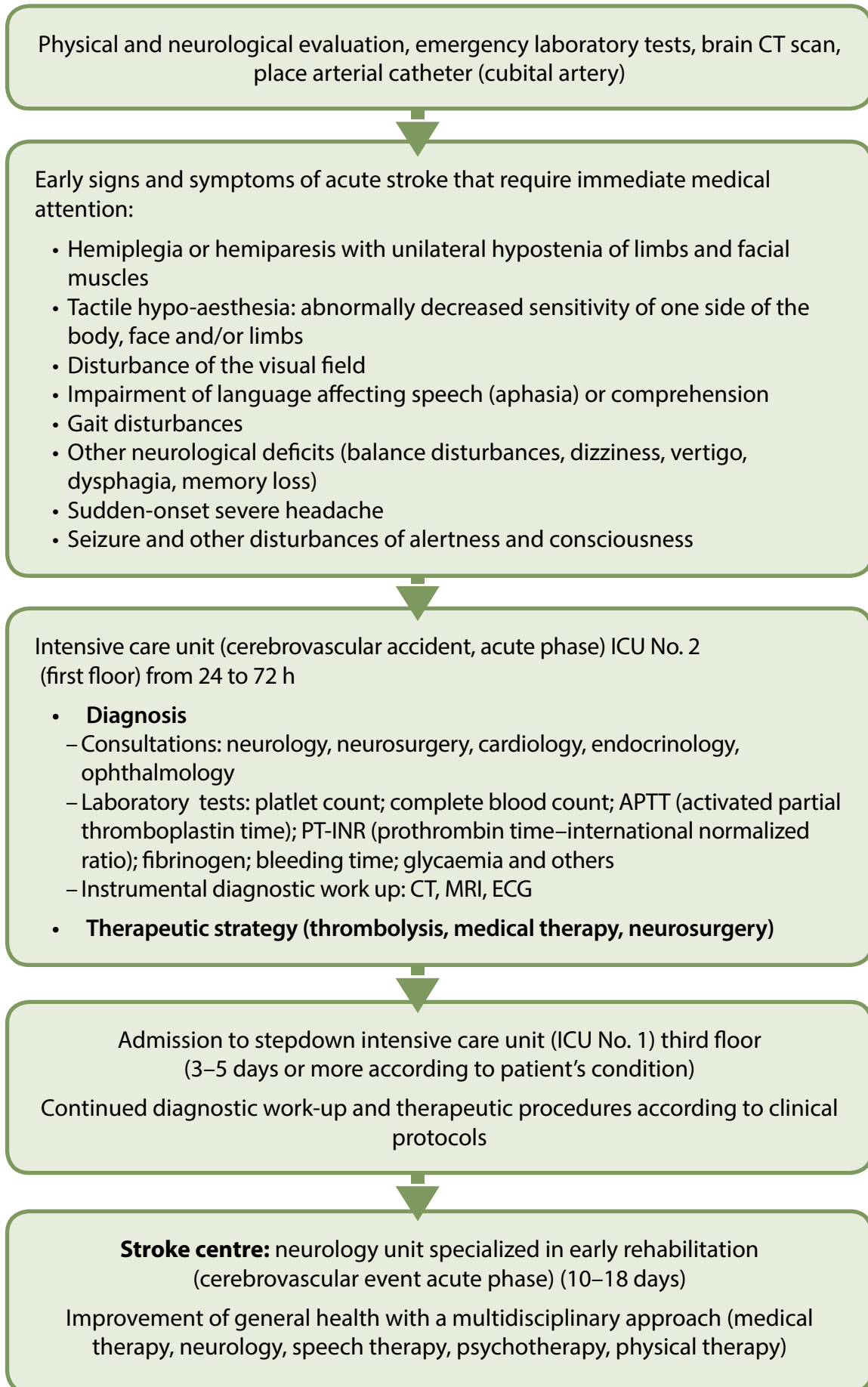


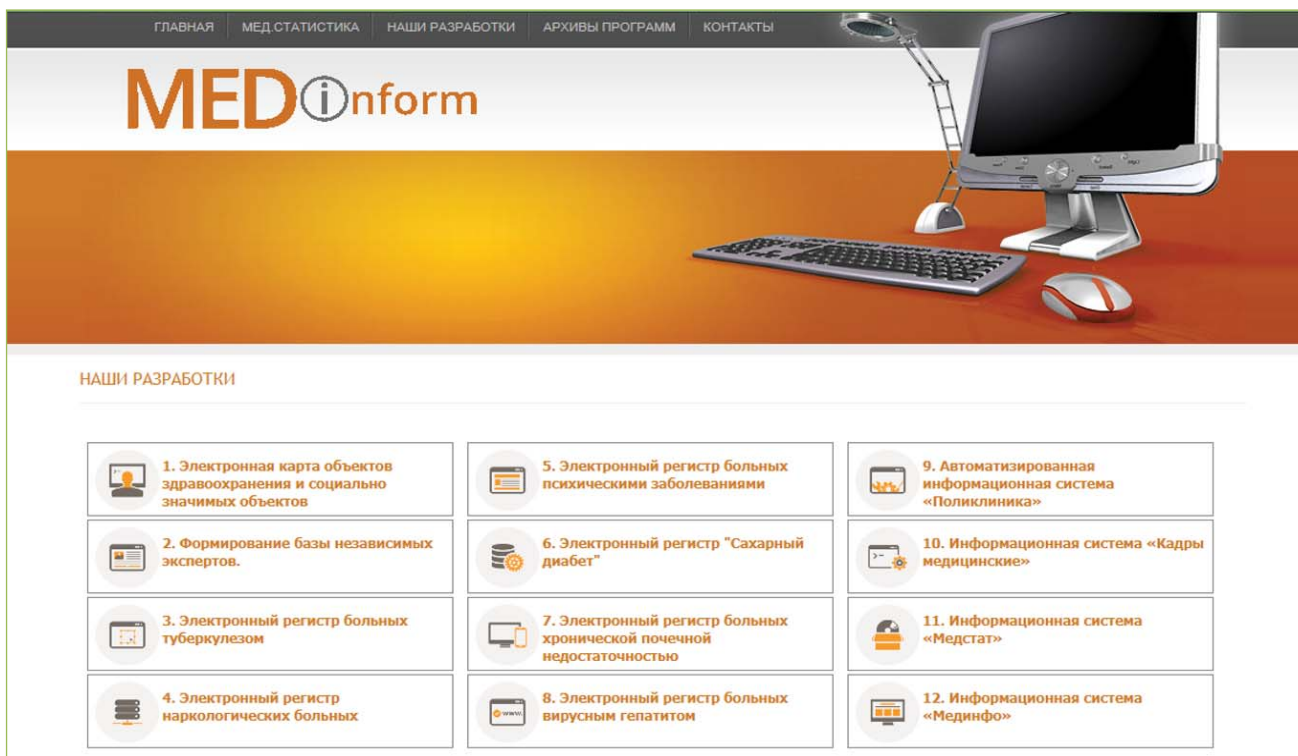
Fig. 21. Algorithm of full stroke care pathway for patients admitted to Hospital No. 4 in Almaty



5.3 Health information systems

Kazakhstan has established online health and vital statistics registries, which are linked by the unique identifiers given at birth (Fig. 22). Death and birth certificates are filled in online. Linkage makes it possible to analyse inequalities in health and care by sex, age, residence and social and economic determinants as well as data linkage and analytical work at all levels.

Fig. 22. Online registers of health and a vital statistics



Source: <http://www.medinfo.kz/#/apps>.



6. Policy recommendations

This section provides a number of recommendations, which are based on the findings of the mission and discussions at the final workshop with key stakeholders. The policy recommendations are grouped in eight main directions.

- Reform the public health system to ensure focus on prevention of NCDs; address fragmentation, and establish a national STEPS survey (WHO, 2017).
- Establish an intersectoral NCD working group that reports to the National Coordination Council for Health.
- Prioritize use of population- and individual-level NCD “best buys” appropriate for Kazakhstan.
- Eliminate fragmentation in primary care, and make it a hub for people-centred care.
- Move towards a quality outcome-oriented management system.
- Align financial incentives to improve NCD outcomes.
- Align the coverage of NCD medicines in the State-guaranteed benefit package to those recommended in clinical protocols and in ambulatory care.
- Analyse information for strategic planning and identifying and addressing health inequalities.

Reform the public health system to ensure focus on prevention of NCDs; address fragmentation, and establish national STEPS survey.

Public health functions related to NCDs are shared by many scientific institutions, such as those for healthy lifestyles, CVD, information systems and nutrition, and two ministries. As a result, there is no clear accountability for public health. An assessment of essential public health functions is under way, which should identify clear options. There are a number of nongovernmental organizations for NCDs, particularly for diabetes and tobacco use, but their role could be enhanced.

A comprehensive, national NCD surveillance system is needed, which allows analysis and reporting of data by age, sex and socioeconomic indicators for analysis and understanding of how to translate equity, gender and social determinants into action. A number of actions could facilitate achievement of this goal.

- Support the review of public health services in Kazakhstan to define the specific institutional arrangements required for essential public health operations.
- Consider options for consolidating some of the technical agencies within the Ministry of Health and the Ministry of Education, to create a national public health authority at technical level.
- Establish a dedicated secretariat with competence in communication and strategic analysis.
- Improve accountability for implementation of population-based interventions for NCD prevention and control by establishing and periodically conducting national STEPS surveys.
- Mainstream equity and the social determinants of health into NCD prevention and control by strengthening national monitoring capacity to account for gender and socioeconomic differences.
- Strengthen and expand public health human resources and competence to address the intersectoral agenda of NCDs, including documenting the impact of NCDs on the economy and health impact assessments of policies in other sectors.
- Extend the role of civil society in planning and implementing NCD prevention and control, e.g. encourage establishment of a stroke support organization to enable patients to participate actively in their own care.

Establish an intersectoral NCD working group that reports to the National Coordination Council for Health.

Currently, there is weak coordination within and between sectors, with overlapping mandates and roles in health. International experience at national and local levels, including the WHO healthy cities network, suggests that effective, sustainable collaboration requires high-level political commitment, a common agenda across sectors with joint target-setting, funding, accountability and bidirectional evidence support. NCDs require intersectoral action; however, there is no comprehensive NCD strategy or action plan for cross-sectoral engagement, policy coherence or joint accountability. A number of actions could facilitate achievement of this goal.

- Create a dedicated secretariat for the national intersectoral council, with managerial competence in agenda-setting, coordination, planning and joint target-setting.
- Establish an intersectoral NCD working group with national and regional representation, which reports to the Council, to develop and implement an intersectoral NCD action plan with targets and indicators aligned with those of the WHO Global Monitoring Framework.
- Pilot-test a WHO healthy cities initiative in Kazakhstan to advance intersectoral work at local level.

Prioritize use of population- and individual-level NCD “best buys” appropriate for Kazakhstan.

Major improvements in NCD outcomes can be achieved with relatively low-cost, high-impact, evidence-based, population and individual interventions, known as “best buys”. Kazakhstan has made progress in introducing these interventions, but their implementation requires further strengthening. A number of actions could facilitate achievement of this goal.

- Intensify efforts and enforcement modalities to address use of alcohol and tobacco.
- Accelerate actions to reduce obesity through cost-effective population-based interventions or “best buys” to reduce physical inactivity and unhealthy diets. In particular, national action on salt and measures to address marketing of unhealthy foods to children would be important.
- Focus on and scale up clinical prevention by:
 - improving identification of high-risk patients in primary care (e.g. cardio-metabolic risk assessment);
 - making smoking cessation programmes available in primary care; and
 - scaling-up provision of high-impact, evidence-based interventions for management of hypertension and prevention of acute events (e.g. package of essential NCDs protocol)
- Make prevention “everyone’s business” by introducing opportunistic risk stratification and evidence-based interventions along the clinical pathway.
- Strengthen patient education, and engage patients in self-management.
- Enhance the role of primary care providers in the prevention and management of NCDs, including allied health professionals.
- Ensure that prevention, treatment and rehabilitation take into account gender and socioeconomic differences in health and health-seeking behaviour.

Eliminate fragmentation in primary care, and make it a hub for people-centred care.

Reform over the past few years has resulted in several achievements in the prevention and management of NCDs. While the underlying principles of these initiatives are in line with global trends, the reforms remain disconnected and create further fragmentation in the provision of services. The introduction of various parallel screening and disease management programmes with parallel accountability mechanisms and the empowerment of narrow specialists generate gaps, overlaps and competition for patients, which increase system inefficiencies overall. In light of the upcoming reforms, such as scaling up disease management programmes and establishing *rayon* medical centres, the delivery of care could be integrated into PHC. A number of actions could facilitate achievement of this goal.

- Extend the scope of practice, competence and skills of nurses to include prevention, follow-up and support for self-management of NCDs.
- Enable primary care providers to diagnose, treat and manage common NCDs by removing constraints on drug prescription.
- Empower primary care providers in active follow-up after screening and mainstreaming disease management programmes.
- Review the trajectories of patients in the establishment of *rayon* medical centres, e.g. through case managers and joint discharge planning that includes family doctors, specialists, patients, carers and family and social workers.

Move towards a quality outcome-oriented management system.

Increasing capacity at the Republican Centre for Healthcare Development by affiliation with the International Society for Quality in Healthcare had positive results, including standards for accreditation of health care facilities. The establishment of joint quality committees prepares the way for a full accreditation system for facilities. Existing quality control mechanisms focus on controlling the quality of inputs, and few address processes; most of the mechanisms are used to punish and control rather than to empower. An outcome-oriented quality system is required, with mechanisms to generate “virtuous circles” of continuous performance improvement. A number of actions could facilitate achievement of this goal.

- Install a “team learning” environment in health care facilities by case analysis and coaching in clinical governance.
- Ensure continuous updating of human resource competence by establishing “quality circles”, peer support and continuing medical and professional education based on credit-hours.
- Increase the efficiency of resource use by allowing flexibility to maintain equipment, infrastructure, distribution of personnel and management by results (quality management system) in health care facilities.

Align financial incentives to improve NCD outcomes.

Kazakhstan has made notable progress in reforming health financing by using advanced methods to pay health providers and creating incentives to improve the efficiency and quality of health services. Collectively, these payment methods are a significant improvement over the previous line-item budgets; however, they should be refined and adjusted if they are to have a significant impact on the ability of the health system to effectively address NCDs. As currently designed, the health system is unlikely to improve NCD outcomes; on the contrary, some of the performance penalties are likely to undermine the ability of health providers to deliver care in the most efficient manner. A number of actions could facilitate achievement of this goal.

- Revise the selection of indicators so that they show direct rewards for high rates of delivery of individual core NCD services and successful management of NCD behavioural and metabolic risk factors.
- Limit the use of performance penalties, particularly those relating to mortality and length of stay in hospitals, as they can have unintended negative consequences.

Align the coverage of NCD medicines in the State-guaranteed benefit package to those recommended in clinical protocols and in ambulatory care.

Much progress has been made in improving the availability of and access to high-quality medicines in Kazakhstan, and more is planned within the mandatory social health insurance reform that will be implemented in 2017. The final challenges relate to differences in coverage of medications for

inpatients and outpatients. In some cases, the State benefit package covers medications only for inpatients, which is an incentive to hospitalize patients rather than to treat them at primary care level. This arises because there is currently no explicit linkage between clinical protocols and the medicines covered by the State benefit package for ambulatory care. A number of actions could facilitate achievement of this goal.

- Cover all NCD medications specified in clinical protocols in the State-guaranteed benefit package, also for outpatients.
- Intensify efforts to increase access to medicines in rural and remote areas.
- Enforce policies for dispensing generic medications.
- Improve the quality of generic medicines produced and sold in Kazakhstan.
- Phase out prescription and use of medicines for which there is weak evidence of effectiveness (e.g. neuroprotective agents for the acute phase of stroke).

Analyse information for strategic planning and identifying and addressing health inequalities

Currently, information collected in facilities is used mainly for reporting and control. Introduction of e-health and vital statistics registers linked through personal codes will make it possible to address inequalities in health care through analyses disaggregated by various socioeconomic variables. The harmonized information will allow more accurate estimates of the NCD burden and be a useful resource for complex analyses of the data, strategic planning and clinical management of NCDs. A number of actions could facilitate achievement of this goal.

- Use the new personal online e-health passport for patient NCD self-management and healthy lifestyle promotion, and incite physicians to use it for clinical management.
- Analyse disaggregated data and use it to inform decision-making on e.g. clinical management and strategic planning, while addressing inequalities.



7. Postscript

Assessment of the national capacity of Kazakhstan for the control of noncommunicable diseases (NCDs) was performed during 2016. It did not include data from 2017 that demonstrate significant systemic measures aiming to improve control and prevention of NCDs. In 2017 the Ministry of Health supplied further information on developments that had occurred within the country since the assessment visit took place in April 2016: these are described as follows.

NCD control activities continue to follow the WHO Global Action Plan for the Prevention and Control of NCDs, 2013–2020; Framework Convention on Tobacco Control and European Strategy for Tobacco Control; and European Food and Nutrition Action Plan, 2015–2020.

In January 2017 the government went through a structural transformation process, and the Ministry of Health and Social Development of Kazakhstan was reorganized into the Ministry of Health and the Ministry of Labour and Social Security. Public health policy-making is the responsibility of the Department of Strategic Development and Public Health, established in 2017 within the Ministry of Health. The public surveillance function in the field of sanitary and epidemiological well-being returned to the Ministry of Health, represented by the Public Health Committee.

In 2017 a project-based approach was implemented in the government bodies of Kazakhstan, and projects were identified to promote economic growth. In addition to the health system modernization project monitored by the Government of Kazakhstan, the Ministry of Health identified and implemented 10 national projects aimed at efficient achievement of health-related strategic objectives. These include projects on public health, integration of health services around patient needs, drug management policy, medical education, human resources management, management and corporate governance, deregulation for business development, development of infrastructure and public–private partnerships, financing through national insurance and development of e-health. Each of these projects has a direct or indirect impact on successful control of NCDs.

Taking into account the outcomes of the 2016 self-assessment and the need to protect public health through population-level interventions, a public health service was established in 2017. Public health is one of the key objectives of the national health care development programme for 2016–2019. In 2017 the epidemiological surveillance service was reorganized into the Public Health Committee to monitor and conduct control of NCDs in addition to communicable diseases. A further plan is to establish a national public health centre in 2018 to provide evidence and policies with the aim of preserving public health and preventing disease.

Kazakhstan has commenced integration of such specialized services as cancer care, mental health and tuberculosis into primary health care. The approach consists of interactive patient-centred care and multidisciplinary teamwork. Since 2016, the Republican Stroke Coordination Centre has been coordinating care for stroke patients. Further, a pilot project consisting of disease management programmes for hypertension, chronic cardiac failure and diabetes is now being disseminated at the national level.

Kazakhstan is a relatively young country, in which 27% of the population are children and adolescents aged under 15 years. Children are perceptive to information, and encouraging them to maintain a healthy lifestyle will promote growth of a healthy generation. At present, six schools in four pilot regions fall within the WHO health promoting schools project, and 60 universities are implementing healthy university projects. Under these projects, schools and universities conduct health promotion and prevention of behavioural risk factor activities for students.

The National Health Coordination Council under the Government of Kazakhstan ensures efficient cross-sectoral collaboration. Nongovernmental organizations (NGOs) play an important role and some government functions will be delegated to NGOs in the near future. Kazakhstan plans to engage local authorities and mass media to ensure a smooth transition into the public health promotion agenda. Partnerships between the public and private sectors should become drivers for health development and maintenance of healthy lifestyles.

Like many other countries, Kazakhstan is keen to reduce out-of-pocket health expenses through the introduction of the national prepaid insurance. Affordable health care and cost-based procurement are the objectives of the country's medical services. Ultimately, the Ministry of Health is committed to changing the focus of health services from treatment to prevention.

Kazakhstan supports and joins global efforts on NCD prevention and control by extensive use of evidence-based practices and strategies in health planning, policy and practice.



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Annex 1. Data sources and methods

The principal source of data on demographic and health-related indicators for this report was the European Health for All database (WHO Regional Office for Europe, 2014). Most of the data were for 1980–1990 to 2009–2010. The indicators were selected for analysis on the basis of expert recommendations and practical considerations of the available evidence.

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

- EU-15: the 15 Member States in the European Union on 1 May 2004: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom;
- EU-12: the 12 Member States that joined the European Union in May 2004 or in January 2007: Bulgaria, Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia and Slovenia; and
- the Commonwealth of Independent States until 2006: Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, the Republic of Moldova, the Russian Federation, Tajikistan, Turkmenistan, Ukraine and Uzbekistan.

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

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

Table A2.1. Tobacco control: summary of core service coverage

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

Source: WHO Regional Office for Europe (2014).

*Additional criteria not included in the Global Action Plan

Table A2.2. Interventions to prevent harmful use of alcohol: summary of core service coverage

Intervention	Coverage		
	Limited	Moderate	Extensive
Raising taxes on alcohol	Alcohol taxes follow price index.	Alcohol taxes follow price index, with special taxes on products attractive to young people.	Alcohol taxes follow price index and are related to alcohol content, including special taxes on products attractive to young people.
Restrictions or bans on advertising and promotion	Regulatory framework regulates the content and volume of alcohol marketing.	Regulatory framework regulates the content and volume of alcohol marketing, including direct and indirect marketing and sponsorship.	Full ban on alcohol marketing of any kind
Restrictions on retail availability of alcohol	Regulatory framework exists on serving alcohol in government and educational institutions.	Regulatory framework exists on serving alcohol in government institutions, and serving alcohol is banned in educational institutions.	All governmental and educational institutions must be alcohol free.
Minimum purchase age regulation and enforcement*	Minimum age for purchasing all alcohol products is 18 years.	Minimum age for purchasing all alcohol products is 18 years, and effective enforcement measures are in place.	Minimum age for purchasing all alcohol products is 18 years, effective enforcement measures are in place, with loss of licence for illegally selling alcohol to people aged < 18 years.
Allowed blood alcohol content for driving	Maximum of 0.5 g/L	Maximum of 0.5 g/L and 0 for learning and professional drivers	Maximum of 0.2 g/L and 0 for learning and professional drivers
Multisector policy development*	Multisector national strategy on alcohol policy	Multisector national strategy and a coordinating council on alcohol policy	Multisector national strategy, a coordinating council on alcohol policy and an adequately resourced nongovernmental sector, free of potential conflict of interest with public health

Source: WHO Regional Office for Europe (2014).

*Additional criteria not included in the Global Action Plan

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

Intervention	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 $\geq 30\%$.	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 $< 20\%$.
Reducing salt intake and salt content of foods	$\leq 10\%$ reduction of salt intake has been registered since the mid-2000s.	Salt intake has been reduced by $\geq 10\%$ since the mid-2000s.	Salt intake has been reduced by $> 10\%$ since the mid-2000s.
Virtual elimination of <i>trans</i> -fatty acids from the diet	No evidence that <i>trans</i> -fats have been significantly reduced in the diet	<i>Trans</i> -fats have been reduced in some food categories and in certain industries but not overall.	<i>Trans</i> -fats are virtually eliminated from the food chain through government legislation and/or self-regulation.
Reducing free sugar** intake*	Reduction of the intake of free sugars** is mentioned in policy documents, but no action has been taken.	Reduction of the intake of free sugars** by 5% is mentioned in policy documents and partially achieved in certain food categories.	Reduction of the intake of free sugars** by 5% is monitored, with a focus on sugar-sweetened beverages.
Increasing intake of fruit and vegetables*	The aim to increase consumption of fruit and vegetables is mentioned, but no monitoring data have been collected.	The aim to increase consumption of fruit and vegetables is in line with the WHO/FAO recommendations of ≥ 400 g/day, and some initiatives exist to this effect.	The aim to increase consumption of fruit and vegetables is in line with the WHO/FAO recommendations of ≥ 400 g/day, with population initiatives in place and incentives to increase availability, affordability and accessibility.
Reducing marketing pressure on children to consume food and non-alcoholic beverages*	Marketing of foods and beverages to children is noted as a problem, but no specific action has been translated into government-led initiatives.	The WHO recommendations on marketing have been acknowledged, and steps have been taken for self-regulation to reduce marketing pressure on children.	The WHO recommendations on marketing and a framework for implementation are followed consistently, including a mechanism for monitoring.
Promoting awareness about diet and activity	No workforce development for nutrition and physical activity, and nutrition and physical activity are not priorities in primary care.	Some workforce has been developed for nutrition and physical activity; nutrition and physical activity are considered priorities in primary care.	Workforce has been developed for nutrition and physical activity, and nutrition and physical activity are priorities in primary care.

Source: WHO Regional Office for Europe (2014).

* Additional criteria not included in the Global Action Plan

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

Reference

WHO Regional Office for Europe (2014). Better noncommunicable disease outcomes: challenges and opportunities for health systems. Assessment guide. Copenhagen (http://www.euro.who.int/__data/assets/pdf_file/0005/247649/HSS-NCDs_Guide_WEB_Version_20-11.pdf, accessed 5 March 2015).

Annex 3. Criteria for scoring coverage of individual services

	Country score	Limited	Moderate	Extensive
CVD and diabetes				
Risk stratification in primary health care		10-year CVD risk is documented in fewer than 30% of records of patients over 40 years of age with at least one main CVD risk factor; specific risk factors not routinely documented	10-year CVD risk is documented in 30-60% of records of patients over 40 years of age with at least one main CVD risk factor. Incomplete risk factor documentation or not using systematic method	10-year CVD risk routinely documented in more than 60% of records of patients over 40 years with at least one main CVD risk factor. Systematic method of calculation with routine documentation of specific risk factors
Effective detection and management of hypertension		Fewer than 30% of estimated cases with high blood pressure are identified in primary health care, evidence-based generic antihypertensive drugs infrequently prescribed, no efforts to address patient adherence	30-60% of estimated cases with high blood pressure are identified in primary health care, evidence-based antihypertensive drugs often (25-75%) prescribed, some efforts to increase patient adherence but not systematic	More than 60% of estimated cases with high blood pressure are identified in primary health care, evidence-based generic antihypertensive drugs routinely (>75%) prescribed; government-funded systematic efforts to increase adherence
Effective primary prevention in high-risk groups		Prescribers not aware of indications for primary prophylaxis. Under 10% of patients with very high (>30%) 10-year CVD risk identified and prescribed multidrug regimens (antihypertensive, acetylsalicylic acid, and statin) for primary prophylaxis. Acetylsalicylic acid prescribed indiscriminately to all hypertensive patients	Prescribers aware of indications for primary prevention with multidrug regimen. Low coverage (10-25%) of very high-risk patients with primary prophylaxis, or appropriate drug regimens prescribed but very low patient adherence. Acetylsalicylic acid prescribed indiscriminately to all HTN patients	Routine prescription of multidrug regimens, including statins, for patients at very high CVD risk. Coverage of at-risk patients exceeds 25%. Evidence for good long-term patient adherence. Acetylsalicylic acid not prescribed to hypertensive patients with low or medium CVD risk
Effective secondary prevention after AMI including acetylsalicylic acid		Fewer than 25% of patients after AMI receive acetylsalicylic acid, beta-blockers and statins.	25-75% of patients after AMI receive acetylsalicylic acid, beta-blockers and statins.	More than 75% of patients after AMI receive acetylsalicylic acid, beta-blockers and statins.
Rapid response and secondary care after AMI and stroke*		Fewer than 25% of those with AMI or stroke receive diagnosis and care within 6 hours of first symptoms.	25-50% of those with AMI or stroke receive diagnosis and care within 6 hours of first symptoms.	More than 50% of those with AMI or stroke receive diagnosis and care within 6 hours of first symptoms.

	Country score	Limited	Moderate	Extensive
Diabetes				
<i>Effective detection and general follow-up*</i>		<p>Fewer than 75% of primary health care practices establish and maintain a register of all patients aged 17 or over with diabetes.</p> <p>Less than 25% detection/registration rate, based on estimated prevalence of type 2 diabetes in adult population. Not using evidence-based, systematic method to select asymptomatic patients for screening</p>	<p>25-75% of primary health care practices establish and maintain a register of all patients aged 17 or over with diabetes.</p> <p>25-50% detection/registration rate, based on estimated prevalence of type 2 diabetes in adult population. Using evidence-based, systematic method to select asymptomatic patients for screening, but limited coverage</p>	<p>More than 75% of primary health care practices establish and maintain a register of all patients aged 17 or over with diabetes.</p> <p>More than 50% detection/registration rate based on estimated prevalence of type 2 diabetes in adult population. Using evidence-based, systematic method to select asymptomatic patients for screening with high coverage</p>
Patient education on nutrition and physical activity and glucose management		<p>Fewer than 25% of those diagnosed with type 2 diabetes had at least 3 primary health care visits in past year.</p> <p>Fewer than 25% of registered people with diabetes receive organized dietary counselling.</p> <p>Primary health care has no counselling about physical activity.</p> <p>Fewer than 25% of registered people with diabetes had glycosylated haemoglobin measurement in past 12 months.</p>	<p>25-75% of those diagnosed with type 2 diabetes had at least 3 primary health care visits in past year.</p> <p>25-75% of registered people with diabetes receive organized dietary counselling.</p> <p>Primary health care routinely offers counselling on physical activity.</p> <p>25-75% of registered people with diabetes had glycosylated haemoglobin measurement in past 12 months.</p>	<p>More than 75% of those diagnosed with type 2 diabetes had at least 3 primary health care visits in past year.</p> <p>More than 75% of registered people with diabetes receive organized dietary counselling.</p> <p>Primary health care routinely offers counselling and options for physical activity through partnerships.</p> <p>More than 75% of registered people with diabetes had glycosylated haemoglobin measurement in past 12 months.</p>
Hypertension management among diabetes patients		<p>Fewer than 25% of registered people with diabetes with hypertension have achieved a blood pressure < 140/90 mmHg; angiotensin-converting enzyme (ACE) inhibitors not routinely prescribed as first-line antihypertensive.</p>	<p>25-75% of registered people with diabetes with hypertension have achieved a blood pressure < 140/90 mmHg; ACE inhibitors routinely prescribed as first-line antihypertensive.</p>	<p>More than 75% of registered people with diabetes with hypertension have achieved a blood pressure < 140/90 mmHg; ACE inhibitors routinely prescribed as first-line antihypertensive.</p>
Preventing complications		<p>Fewer than 25% of registered people with diabetes had a foot examination, eye examination (fundoscopy) and urine protein test in past 12 months.</p>	<p>25-75% of registered people with diabetes had a foot examination, eye examination (fundoscopy) and urine protein test in past 12 months.</p>	<p>More than 75% of registered people with diabetes had a foot examination, eye examination (fundoscopy) and urine protein test in past 12 months.</p>

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

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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