ARMENIA
2021-2041
ideas in action

Armenia
2021-2041

Project Materials

May, 2021

This document is a summary developed in partnership with "ARMENIA 2041" Charity Foundation.
We emphasize that McKinsey's role in the project was only in terms of data provision and conducting analysis.

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Table of content – Detailed vision by sector and by enabler

Healthcare

2041 vision for Armenia's healthcare sector: preemptive medicine, digitization and high-quality care for all

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75 → 80 years

Life Expectancy at Birth in Armenia by 2041

Purpose of healthcare

- Provide Armenians with **high-quality medical care,** and address **population's health needs** (preventive care, healthy lifestyle, effective treatment, etc.)
- Healthcare contributes to Armenia's **GDP growth through a reduction in health conditions** and expanded participation in the labor force

Priorities

- Ensure **equal access to high-quality healthcare** in all regions of Armenia
- Mitigate behavioral risks and ensure early detection of the main death-causing NCDs
- Focus on **primary care development**
- Develop competitive **medical education and talent development programs**

Examples of flagship initiatives

Development of digital enablers (e-HIMS and telemedicine) to ensure equal access and support sector growth

Healthy lifestyle promotion and support to mitigate the main behavioral risks causing NCDs

Development of primary care as the first point of contact and effective treatment

Enhancement of talent creation and development to supply healthcare system with qualified and skilled employees

Revision of incentives and funding models to determine the most effective and efficient healthcare model for Armenia

Healthcare – Summary of analysis

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Main challenges

- NCDs are the main cause of death in Armenia but there's limited focus on population-level initiatives to reduce behavioral risks and promote individual prevention services
- There's a considerable gap between Yerevan and the regions in terms of both access to care and its quality and specificity
- Deteriorating quality of medical education
- High level of out-of-pocket expenditure and limited government expenditure with nearly no development of voluntary insurances

Economic contribution

	2019	Δ2014–'19
GDP, USD mln	641	+11% ▲
Employment Headcount, thou	49	-1% ▼
Productivity, gross value added/ employee USD thou	13	+12% ▲

Sector-specific KPIs

		Armenia, 2019	Armenia, 2014–'19 change	Peers average, 2019	Leader-peer, 2019
Universal Health coverage index		69	+3 ▲	70	76
Number of healthcare personnel and facilities per 1,000	**Hospital beds**	40	-2 ▼	54	108
	Doctors	47	+4 ▲	36	71
	Nurses and midwives	57	-3 ▼	65	113
Out-of-pocket exp. per capita, % of total health exp.		84%	+2% ▲	54%	25%

> *In Armenia, more people die not because of a lack of access to healthcare facilities but because of the poor quality of diagnosis and treatment*

> *Because of the low number of nurses, doctors have to spend time on basic healthcare tasks instead of diagnosis and more complicated treatments*

> *Mental health and psychiatric illnesses are not treated well in Armenia, and the same applies to rehabilitation centers. Both types of treatment are especially important for the post-war situation in Armenia today*

Healthcare Experts

Examples of flagship initiatives

A **Development of digital enablers (e-HIMS and telemedicine)** to ensure equal access and support sector growth

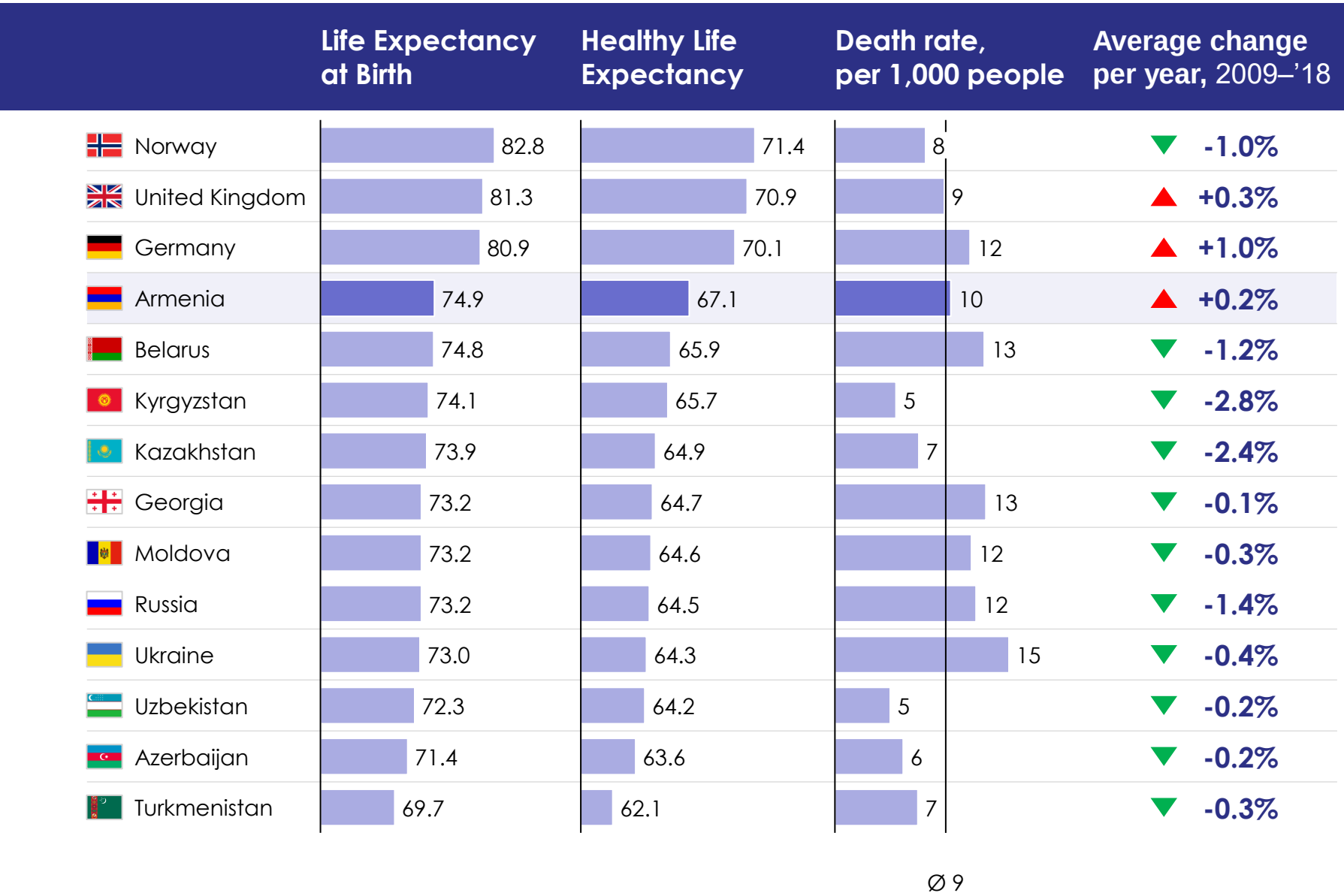
B **Healthy lifestyle promotion and support** to mitigate the main behavioral risks causing NCDs

C **Development of primary care** as the first point of contact and effective treatment

D **Enhancement of talent development** to supply healthcare system with qualified and skilled employees

E **Revision of incentives and funding models** to determine the most effective and efficient healthcare model for Armenia

Life expectancy remains the highest among Armenia's peers but lower than in developed countries



Key takeaways

Life expectancy (75 years) and healthy life expectancy (68 years) remain the highest among Armenia's peers but is lower than in more developed countries

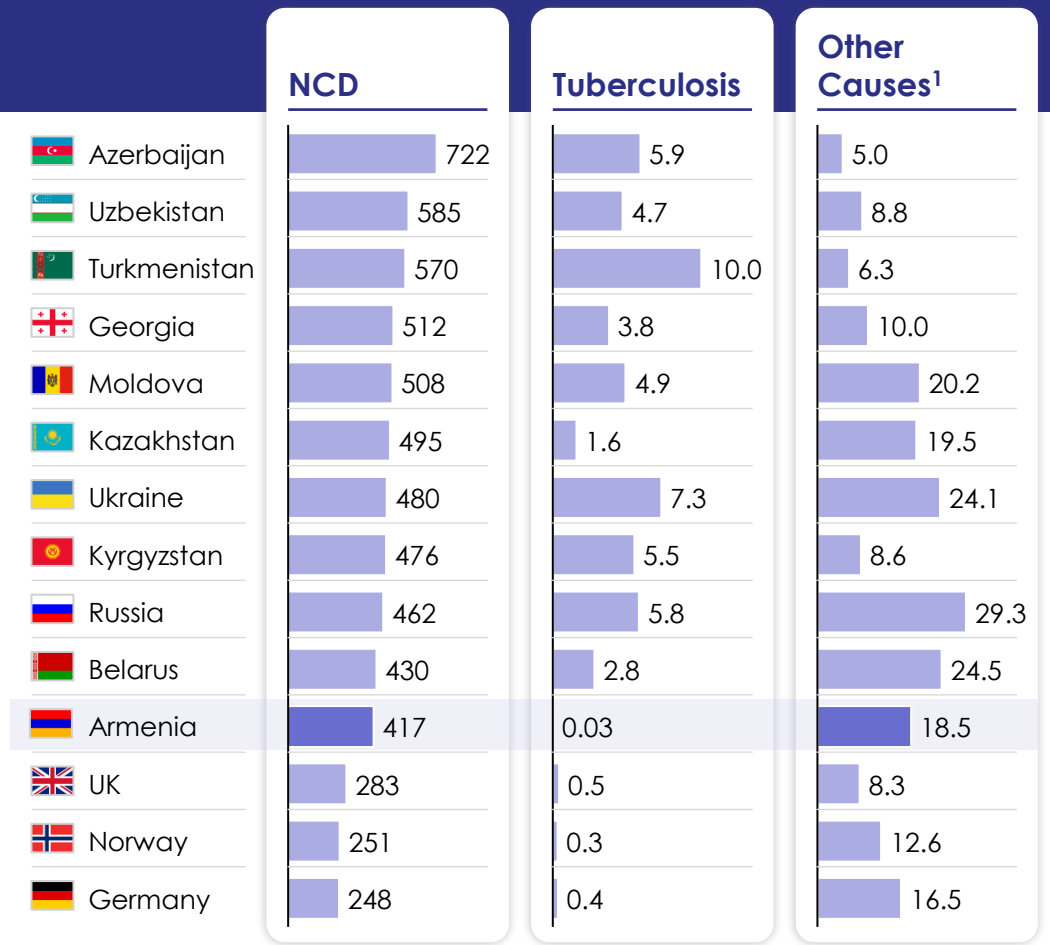
The death rate has increased, mostly due to a shift in age structure and the persisting high incidence of non-communicable diseases

Main challenges

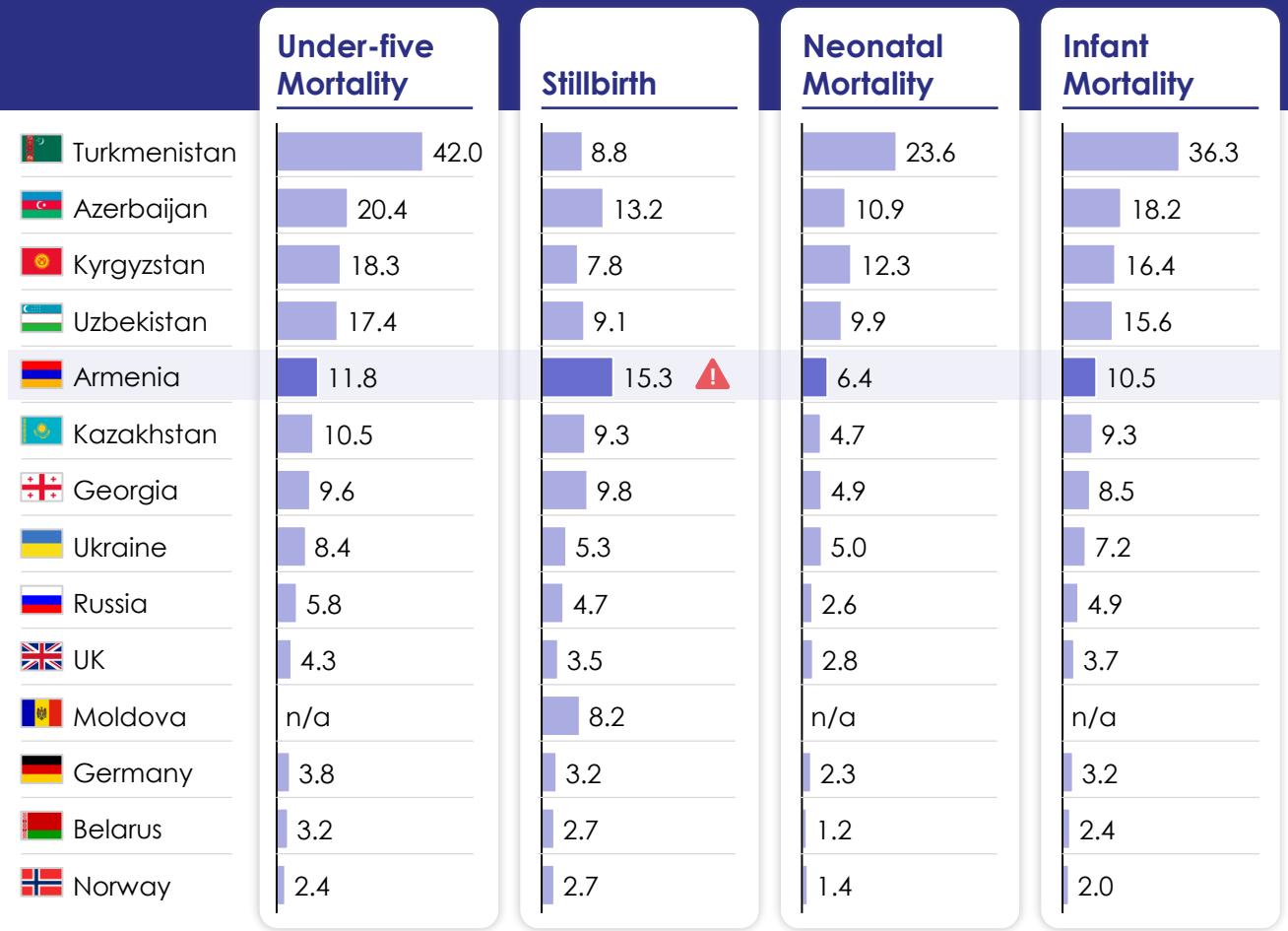
Increasing death rate

Noncommunicable diseases (NCD) and higher than average mortality among children are two main causes of death in Armenia

Mortality rate by cause of death,
2019, cases per 100,000 people



Child mortality rate,
2019, cases per 1,000 total births



1. Suicide, unintentional poisoning, missing, affected by disaster

Source: WHO; World Bank; OECD

Cardiovascular and lung diseases are the leading causes of death in Armenia

Main determinants of NCDs

Underlying Determinants

- Poverty and poor living conditions
- Social exclusion
- Design of cities and towns
- Availability and marketing of goods

Behavioral Risks

- Tobacco usage
- Harmful use of alcohol
- Physical inactivity
- Unhealthy diet and consumption of trans-fat, salt and sugar

Intermediate risk factors

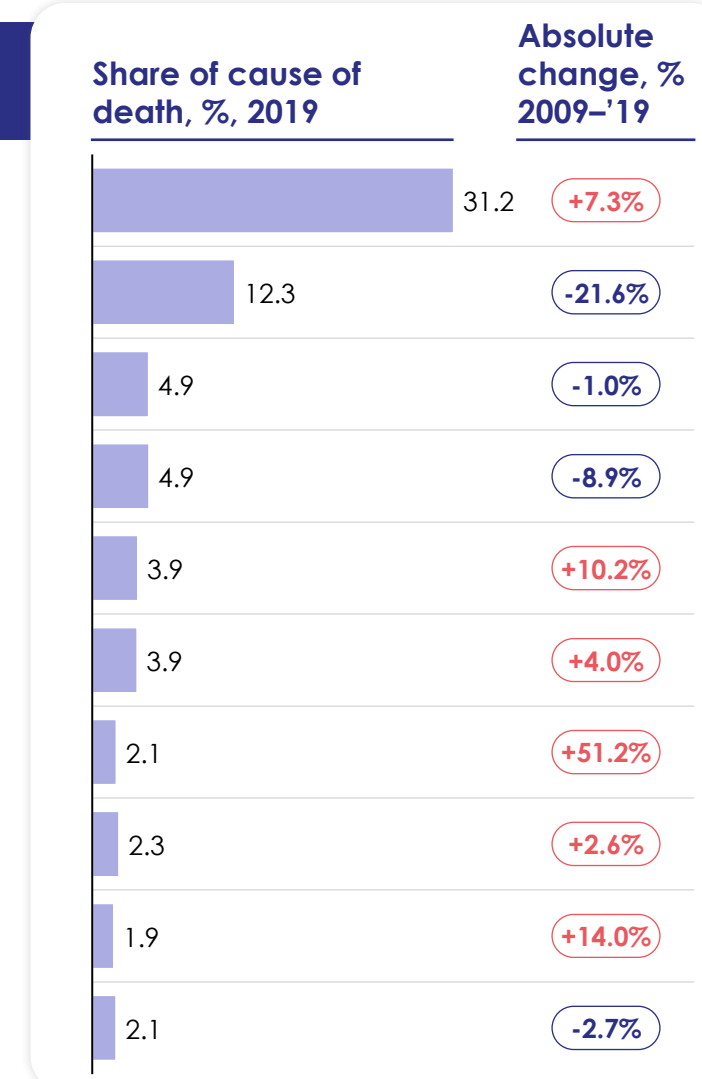
- Excess weight/obesity
- High blood sugar
- High blood pressure
- Abnormal blood lipids

Top 10 causes of death account for 70% of cases

1. Ischemic heart disease
2. Stroke
3. Tracheal, bronchial, and lung cancer
4. Diabetes mellitus
5. Chronic obstructive pulmonary disease
6. Cirrhosis and other chronic liver diseases
7. Alzheimer's disease and other dementias
8. Hypertensive heart disease
9. Colon and rectum cancer
10. Breast cancer

Main Groups of Causes of Death

Cardiovascular Diseases · Cancer · Diabetes · Other



Source: The Institute for Health Metrics and Evaluation (IHME), The Lancet: Global burden of 369 diseases and injuries in 204 countries and territories, 1990–2019; Prevention and control of noncommunicable diseases in Armenia, UN; Challenges and opportunities for purchasing High-quality health care: Lessons from Armenia; Prevention and control of noncommunicable diseases in Armenia – The case for investment

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Key takeaways

The probability of premature death from one of the four major NCDs for a person living in Armenia is 22%, with Top 10 causes being NCDs (the NCD share of the mortality burden is nearly 75%)

Annual economic cost of NCDs to the Armenian economy is estimated at 363 bn dram (~6.5% of GDP)

ROI analysis confirms highest return from implementing the tobacco control and salt policy packages (benefit-cost ratio of 14.51 and 14.28 dram respectively over a 15-year period for each 1 dram invested), followed by alcohol controlling and physical activity increasing (4.14 and 4.40 dram respectively). Investing in all five packages could save more than 41 000 lives over 15 years

Main challenges

Growth of mortality from preventable and treatable diseases

84% of healthcare expenditure is out-of-pocket with government spending amounting to less than 2% of GDP

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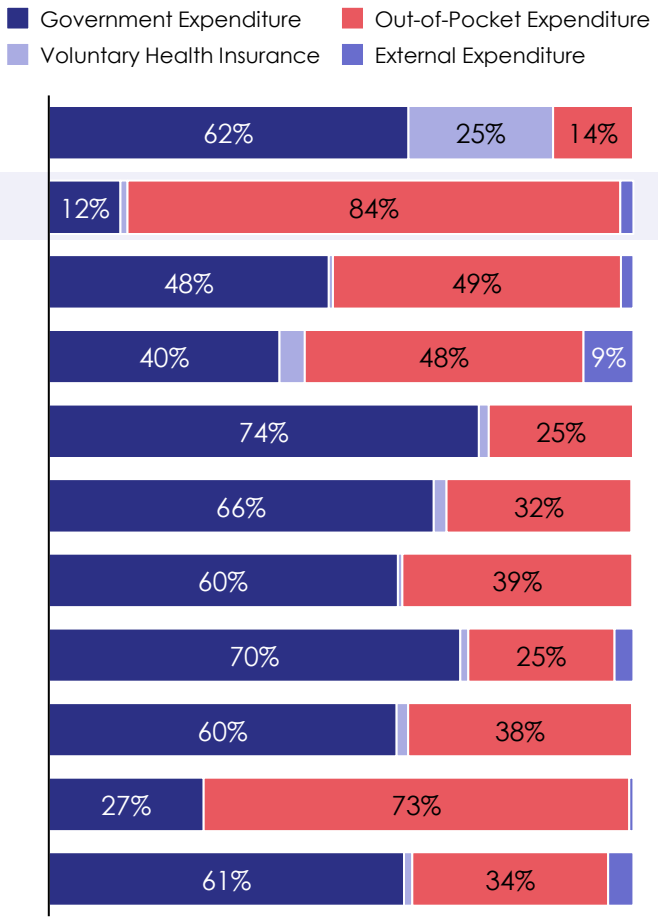
Healthcare Expenditure, 2018

	Current health expenditure, % of GDP	Change, 2018–09, pp	Current health expenditure per capita, PPP, thous. USD	CAGR, 2018–09, %
OECD members	12.5	+0.7	5.3	+4%
Armenia	10.0	+1.6	1.0	+8%
Ukraine	7.7	+1.1	0.7	+4%
Georgia	7.1	-2.7	0.8	+3%
Estonia	6.7	+0.2	2.4	+7%
Lithuania	6.6	-0.8	2.3	+6%
Latvia	6.2	+0.1	1.9	+7%
Belarus	5.6	+0.3	1.1	+4%
Russia	5.3	-0.3	1.5	+3%
Azerbaijan	3.5	+0.9	0.6	+5%
Kazakhstan	2.9	-0.6	0.8	+2%

Healthcare Expenditure Structure by source, % of total



Source: World Bank

Key takeaways

Though healthcare costs more than in peer countries, Armenia has the highest share of OOP health expenditure

OOP payments are made up of co-payments under the Basic Benefit Package, direct payments for services not covered by the BBP and informal payments

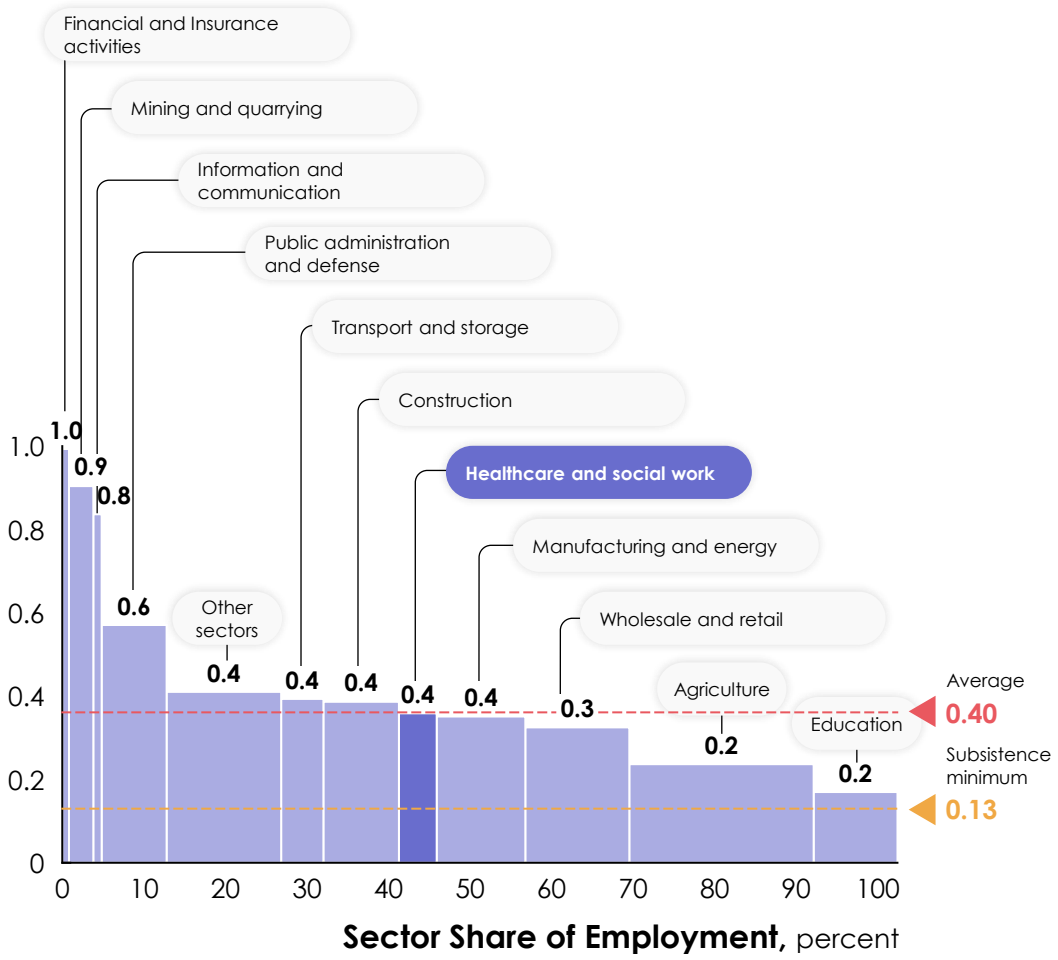
Government expenditure is mainly focused on direct medical care and medical supplies (58.6% and 32.8%, respectively)

Main challenges

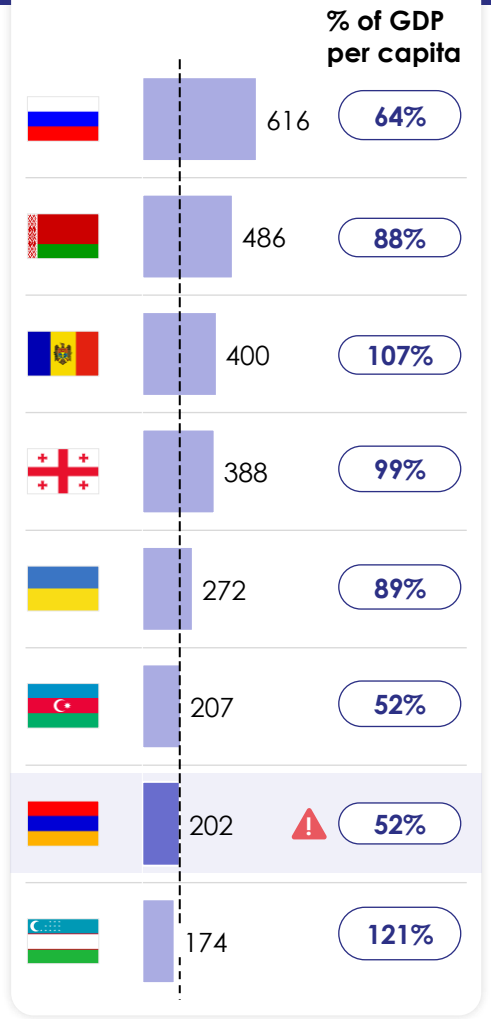
- Efficiency of government expenditure on healthcare
- High share of out-of-pocket expenditure
- Informal payments are required to receive certain services
- Low share of voluntary health insurance expenditure

Healthcare salaries are average for Armenia but below peer countries relative to GDP per capita

Average nominal salary by sector, 2019, USD thou



Mean monthly salary vs peers, 2019, USD



Source: Armstat, International Labour Organization, RA Ministry of Education and Science, expert interviews

Key takeaways

Healthcare workers' salaries are average for Armenia but not competitive against other qualified sectors, making medical careers unattractive

This could have implications for healthcare quality due to lower average take-home salaries and possibly less motivation to participate in professional development

Main challenges

Healthcare workers are not remunerated and incentivized properly

The healthcare system spans various dimensions, from healthy living to rehabilitation

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HEALTHCARE SYSTEM

1 Healthy Living	2 Preventive care	3 Diagnostics	4 Therapy and treatment	5 Long-term care and rehabilitation
Reduction of behavioral risks and promotion of active and healthy lifestyles	Regular check-ups, screening programs, vaccination	Correct diagnosis of diseases by symptoms and tests E-health system diagnostics	Therapy including hospitalization: medical management, surgeries, monitoring	Support for people with chronic illnesses or disabilities, recuperation programs

DIAGNOSTICS DIRECTIONS

Care quality

Healthy behavior and mindset

Quality of doctors and nurses

Medical education programs

Quality of equipment in medical facilities

Access to care

Distribution and accessibility of hospitals and medical centers

Number of doctors and nurses

Distribution and availability of medical equipment

Enablers

Tech & Innovation

Clinical advancement

Collection of digital health data

Availability of e-health

Ecosystem

Stakeholders collaboration

Regulations

Financial efficiency

Government spending

Insurance coverage

Incentives structure

1. Population-level initiatives to reduce the main behavioral risks are currently limited in Armenia

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○ No implementation ● Sufficient implementation

Risk Factor	Current status in Armenia (Male | Female)		Implementation of the WHO recommendation in Armenia	
Tobacco Usage	**Tobacco use**, % of adults: 52, 41, 54 | 2, 16, 5	More than 50% of people in Armenia are regularly exposed to secondhand smoking Compared with its peers, Armenia has a low percentage of young smokers Armenia ratified the WHO Framework Convention on Tobacco but has yet to fully implement several core demand-reduction measures	Monitor tobacco use and prevention policies ● Protect people from tobacco smoke ◑ Offer to help quit tobacco use ◑ Utilize warning labels ●	Run public awareness campaigns ◔ Enforce bans on tobacco advertising ◑ Enforce youth access restriction ◑ Raise taxes on tobacco ◔ Plain packaging for tobacco products ○
Harmful use of alcohol	**Alcohol per capita consumption**, l/year: 9.1, 19.1, 13.6 | 2.5, 4.6, 3.6	Although alcohol consumption in Armenia is lower than in peer countries, it has grown since 2010 There is increasing concern over alcohol consumption among the young with Armenia's children consuming more alcohol than in 44 other researched countries	Enforce restrictions on availability of retail alcohol ◑ Enforce restrictions on alcohol advertising ◔	Enforce drink-driving laws (sobriety checkpoints) ◑ Raise taxes on alcoholic beverages ◔
Physical inactivity	**Adults with insufficient physical activity**, %: 22.0, 12.8, 16.2 | 20.4, 13.5, 18.4	Half of adults' physical activity is related to transport and 40% is related to work Nearly 1/3 of adolescents have insufficient physical activity Yet there are very limited public awareness campaigns on the importance of physical activity	Run public awareness campaigns ◔ Create activity-friendly urban environment ◑	Ensure high-quality physical education in schools ◕
Unhealthy diet	**Obesity among adults**, I%: 14.0, 27.5, 30.2 | 25.0, 31.4, 36.0	Excess weight and obesity are a growing issue in Armenia, caused both by dietary risks and low levels of physical activity Salt consumption is estimated to be about twice the WHO recommendations No actions are undertaken to manage food behaviors and habits	Measure and monitor salt use ○ Promote reformulation of foods and meals to contain less salt ○ Adopt standards for labeling and marketing ○ Raise public awareness to decrease salt consumption ◔	Support settings to promote healthy eating ○ Ban trans-fat use in the food chain ○ Reduce sugar consumption through effective taxation on sugar-sweetened beverages ○

Source: Prevention and control of noncommunicable diseases in Armenia, UN; STEPS 2017; WHO; World Bank; Health Behavior in School-aged Arabkir Medical Centre, 2016

Current Status of Behavioral Risk Factors – Detailed (1/4)

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No implementation ◯ Sufficient implementation

Risk Factor	Policy name	Current state of Implementation	Score
Tobacco Usage	Monitor tobacco use and prevention polices	Representative and periodic data is available for adults and young people, such as from the 2016–2017 STEPS survey and a larger health system performance assessment survey (WHO Regional Office for Europe, 2016)	●
	Protect people from tobacco smoke	The WHO report assessed that only three of the eight categories of public places were completely smoke-free (WHO, 2017]. Places that are not yet completely smoke-free include government facilities, indoor offices and workplaces, and cafes and restaurants, public transport and other indoor public places. Smoking violations incur fines for the patron but not for the establishment (WHO Regional Office for Europe, 2017d]. No funds are dedicated to enforcement, and there is no system for investigating complaints from citizens	◑
	Offer to help quit tobacco use	Nicotine replacement therapy is legally sold in pharmacies without prescription but without public subsidy. Tobacco cessation services are available in some health clinics with some public subsidy (WHO, 2017f). There is mandatory training of primary healthcare workers on lifestyle counselling and training of trainers in brief interventions on tobacco control. Some tobacco cessation counselling or treatment may be provided during preventive healthcare check ups (WHO Regional Office for Europe, 2016). The STEPs survey found that 1% of respondents aged 18–69 (17% of men and 2% of women) had been advised by a doctor or health worker to quit using tobacco or to not start (Andreasyan et al., 2018). There is no toll- free telephone Quitline	◑
	Warn about the dangers of tobacco	Since December 2016, health warnings on tobacco packages are mandated to cover 50% of the front and of the principal display area and include a photograph or graphic warning (WHO, 20177f). There is no data on anti-tobacco mass media campaigns	●
	Enforce bans on tobacco advertising, promotions and sponsorship	Under a law adopted in 2006, bans exist on national and international television, radio, billboards and online advertising but not in the print media (WHO Regional Office for Europe, 2017d). Free distribution of tobacco products is banned, but all other forms of indirect advertising such as through promotional discounts and sponsored events are legal	◑
	Raise taxes on tobacco	The total taxes on the most sold brand of cigarettes comprised 35% of the retail price in 2016, of which 18.3% was specific excise tax and 16.7% was value added tax (WHO-2017f). The specific value- added component is not automatically adjusted for inflation, so cigarettes were not less affordable in 2016 than in 2008. According to WHO recommendations, the amount of total tax per pack should comprise at least 75% of the retail price	◔

Source: Prevention and control of noncommunicable diseases in Armenia, UN; STEPS 2017; WHO; World Bank; Health Behavior in School-aged Arabkir Medical Centre, 2016

Current Status of Behavioral Risk Factors – Detailed (2/4)

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No implementation ◯ Sufficient implementation

Risk Factor	Policy name	Current state of Implementation	Score
Harmful use of alcohol 	Increase excise taxes on alcoholic beverages	The tax rate on alcoholic beverages is 20% of the retail price. Alcohol taxation follows the price index but is not related to alcohol content. A special tax of 10% applies to imported alcoholic beverages, but no special taxes exist on products attractive to young people. The country scored "limited" on taxation in one WHO report (WHO Regional Office for Europe, 2016) and "partly achieved" in another (WHO Regional Office for Europe, 2017b)	
	Enact and enforce bans or comprehensive restrictions on exposure to alcohol advertising (across multiple types of media)	Regulations on the content and volume of alcohol marketing are in place but are only scored as "limited" in one WHO report (WHO Regional Office for Europe, 2016) and "partly achieved" in another (EHO Regional Office for Europe, 2017b). Advertising of beer, wine and spirits is restricted on national television, radio and billboards; however, there is no restriction on external advertising. Alcohol marketing is banned on television, but not all day, and product placement is allowed. Indirect advertising through sports sponsorship is allowed	
	Enact and enforce restrictions on the physical availability of retailed alcohol (via reduced hours of sale)	Armenia has legislation that establishes special restrictions and regulations on the sale of alcohol in government and educational institutions. Otherwise, no regulations exist for on- and off-premise sales of alcoholic beverages regarding hours and locations of sales, other than some restrictions for young people for a few hours in the evening. The minimum age for sale of all alcohol products is 18 years and is not well enforced. The restrictions in place were scored as "limited" in one WHO report, and the enforcement of minimum purchase age was scored as "moderate" [WHO Regional Office for Europe, 2016}. Another report considered the restrictions in this area as "partly achieved" [WHO Regional Office for Europe, 2017b]	
	Enact and enforce drink-driving laws and blood alcohol concentration limits via sobriety checkpoints	The maximum permissible level of blood alcohol content allowed while driving is 0.4g/ L according to current legislation, and blood alcohol concentration limits do not differ between novice and professional drivers. The police are planning to develop such proposals for legislative change, but this is yet to be done. This area was scored as "moderate" in a WHO report (WHO Regional Office for Europe, 2016)	
	Provide brief psychosocial intervention for people with hazardous and harmful alcohol use	There is mandatory training of primary healthcare workers in lifestyle counselling	

Source: Prevention and control of noncommunicable diseases in Armenia, UN; STEPS 2017; WHO; World Bank; Health Behavior in School-aged Arabkir Medical Centre, 2016

Current Status of Behavioral Risk Factors – Detailed (3/4)

ARMENIA 2021-2041 ideas in action

No implementation ◯ Sufficient implementation

Risk Factor	Policy name	Current state of Implementation	Score
Physical inactivity	Implementation of public awareness and motivational communications for physical activity, including mass media campaigns promoting physical exercise	No national public awareness campaign on physical activity was implemented between 2013 and 2017. This area was scored as "not achieved" in a recent WHO report (WHO,2017b). The Mayor of Yerevan had been promoting public awareness of physical activity by carrying out promotional activities and participating in a cycling marathon	
	Provision of physical activity counselling and referral as part of routine primary healthcare services through a brief intervention	There is still room to improve awareness around physical activity. There has been no workforce development in this area, which has therefore been scored as "limited" in a WHO report (WHO Regional Office for Europe, 2016). Lifestyle counselling is part of the terms of reference of primary healthcare providers, but in practice they are overwhelmed with paperwork and have little time for this	
	Ensuring that macro-level urban design incorporates the core elements of residential density, connected street networks that include side walks, easy access to a range of destinations and access to public transport	Bicycles are popular among young people, but cycling is deemed dangerous since streets are narrow and cycle lanes do not exist apart from a few painted lines in the road. No cities in Amenia participate in the WHO European Healthy Cities Network, and Armenia does not have a national healthy cities network. In Yerevan, exercise equipment has been placed in a few public spaces as part of housing renovation schemes	
	Provision of convenient and safe access to high-quality public open space and adequate infrastructure to support walking and cycling		
	Implementation of a whole-of-school program that includes high-quality physical education, availability of adequate facilities and programs to support physical activity among children	A 40-minute exercise slot is provided in the school curriculum, to take place 2–3 times per week. There is a health hour lesson in schools for promoting knowledge and skills for healthy lifestyles. A few schools have been piloting health-promoting school policies	
	Implementation of multicomponent workplace physical activity programs	The state of workplace interventions is generally unknown	
	Promotion of physical activity through organized sport groups and clubs, programs and events	Some gymnasiums are being built, but these are private and not easily affordable for the general population. Popular sports are wrestling, boxing and chess rather than team sports. Some sports activities are provided through after-school activities but are not free of charge (although low cost)	

Source: Prevention and control of noncommunicable diseases in Armenia, UN; STEPS 2017; WHO; World Bank; Health Behavior in School-aged Arabkir Medical Centre, 2016

Current Status of Behavioral Risk Factors – Detailed (4/4)

ARMENIA 2021-2041 ideas in action

No implementation ◯ Sufficient implementation

Risk Factor	Policy name	Current state of Implementation	Score
Unhealthy diet	Surveillance: measure and monitor salt use	A 24-hour urinary sodium excretion survey (gold standard) has not been carried out, but salt consumption was estimated using urine spot tests as part of the 2016–2017 STEPS survey (Andreasyan er al., 2018) (see details in section 2). The sodium content of food is not routinely monitored	◯
	Harness industry: promote reformulation of foods and meals to contain less salt	There is a government commitment to promote salt reduction and to work with industry on product reformulation. Industry has been asked to review salt levels. It is within the prerogative of the Ministry of Economic Development and Interventions to approve standards and regulations	◯
	Adopt standards for labeling and marketing; implement standards for effective and accurate labeling and marketing of food	Food labeling is "in the pipeline"	◯
	Knowledge; educate and communicate to empower individuals to eat less salt	Public awareness programs about healthy eating are limited, with a few television shows talking about healthy eating and increasing health messages	◔
	Environment; support settings to promote healthy eating	There is no school menu oversight, especially in the regions. The world Food Program has launched a feeding program for primary school children	◯
	Trans-fat	No national policies that limit or eliminate industrially produced trans-fat in the food supply are in place. There is no evidence that intake of trans-fat has been reduced. One WHO report scored interventions in this area as "limited" (WHO Regional Office for Europe, 2016), and another scored them as " not achieved" (WHO Regional Office for Europe, 2017b) As of 1 Jan 2018, a new standard on the content of industrial trans-fatty acids in oil and fat products came into force in the Russian Federation and countries of the Eurasian Economic Union [TR CU 02-4/2011: Technical regulations on oil and fat products, approved by decision of the Customs Union commission of 09.12.2011, No-383]. The industrial trans-fatty acid content in hard margarines, soft and liquid margarines, milk fat substitutes and fats for special purposes must not exceed 2.0% or the total fat content of the food products. It is not clear to what extent this has been implemented in Armenia	◯
	Sugar	No action has been taken to reduce free sugar intake. A tax on sugar sweetened beverages is being prepared	◯

Source: Prevention and control of noncommunicable diseases in Armenia, UN; STEPS 2017; WHO; World Bank; Health Behavior in School-aged Arabkir Medical Centre, 2016

2. Child vaccination is well-developed in Armenia, while vaccination among adults needs improvements

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Immunization coverage among 1-year-olds (%)

	BCG	HepB3	PCV-3	Hib-3	MCV1	MCV2[1]	Pol3	DTP3	Rotavirus
Armenia	99	92	95	92	95	96	94	92	92
Belarus	97	97	n/a	91	98	98	98	98	n/a
Lithuania	97	92	79	92	93	93	92	92	45
Russia	96	97	85	n/a	98	97	96	97	n/a
Latvia	96	99	84	99	99	96	99	99	85
Georgia	96	94	84	94	99	n/a	94	94	81
Azerbaijan	96	94	95	94	98	97	96	94	n/a
Estonia	92	91	n/a	91	88	90	91	91	81
Kazakhstan	87	97	89	97	99	98	97	97	n/a
Ukraine	84	76	n/a	80	93	n/a	78	80	n/a

1. Recommended age group 15 – 18 months

Source: Worldbank, Armstat, Armenia's Ministry of Health

Key takeaways

Levels of child vaccination against the most common diseases remain historically high

At the same time, there is a limited effort to immunize against the most common communicable diseases among adults

Fragmentation of the health delivery system leaves little motivation for the private sector to invest in preventive care (as opposed to closed systems where the healthcare "payor" or insurer has an interest in preventing disease)

Main challenges

Low rates of immunization against communicable diseases among adults

Limited participation of private sector in preventive care development

2. Preventive care for NCDs with the highest mortality rates is not leveraged to its full potential

Limited Extensive

Group of Diseases	Common Individual Prevention Services	Implementation in Armenia
Cardio-vascular diseases	Risk stratification in PHC	PHC doctors trained to calculate CVD risk and national program exists to test CVD risk factors
	Effective detection and management of hypertension	Program to increase detection. Limited review of quality of management against guidelines. Adherence not addressed
	Effective primary prevention in high-risk groups	Doctors are trained, but coverage of very high-risk patients with primary prophylaxis or appropriate drugs not known
	Rapid response and secondary care after AMI[1] and stroke	>75% of patients receive acetylsalicylic acid, beta blockers and statins after AMI; but this is not measured and quality of care is not routinely monitored
	Effective secondary prevention after AMI	>50% of those with AMI or stroke receive diagnosis and care within 6 hours of first symptoms in Yerevan, but quality and timeliness of care are not routinely monitored
Diabetes	Effective detection and general follow-up	Register of patients with diabetes is established by individual endocrinologists. Detection rate is not monitored and asymptomatic patient screening is limited
	Education on nutrition and physical activity and glucose management	The number of PHC visits each year by patients with diabetes is not monitored. Patients do not receive organized nutrition/physical activity support
	Hypertension management among diabetic patients	The quality of hypertension management of patients with diabetes is not monitored or known
	Prevention of complications	Annual eye examinations are offered but uptake, quality and outcome are unknown. Urinalysis is likely, but routine foot examinations/care is not
Cancer – first line	Prevention of liver cancer through hepatitis B immunization	To prevent liver cancer, universal immunization at birth against hepatitis B is in place with a 91.8% immunization rate in 2019
	Screening for cervical cancer and treatment of precancerous lesions	Cervical screening is available free of charge in policlinics but less than 15% of women undertake a pap smear test despite MOH recommendations
Cancer – second line	Vaccination against HPV	There is no national program for vaccination against human papilloma virus
	Early case-finding for breast cancer and timely treatment of all stages	In 2018 Armenia launched its first grant project for early breast cancer screening (results unknown) but before that less than 25% of women had a cancer ultrasound examination and less than 15% underwent mammography (not covered by BBP)
	Population based colorectal and oral cancer screening in high-risk groups linked to timely treatment	Population-based colorectal cancer screening is not in place, nor is oral cancer screening in high-risk groups

1. Acute myocardial infarction

Source: Armenia's Ministry of Health; https://nih.am/assets/pdf/atvk/hspa_eng_2016.pdf; WHO Better non-communicable disease outcomes: challenges and opportunities for health systems, 2016

Key takeaways

Armenia has a national check-up system through policlinics which gives access to screening for the main NCDs, but awareness of its importance and participation rates are low (25% of women and 19% of men visited a health facility for a routine check-up in three years)

Most common individual prevention services in Armenia are either not available or not widespread at the population level

Main challenges

- Limited awareness of screening programs
- Weak focus on individual prevention services at population level
- Limited coverage of screening programs by BBP (Basic Benefits Package)
- BBP does not cover most treatments for the conditions reviewed
- Poor quality of screening services in policlinics

3. Clinical laboratories in Armenia do not provide reliable results and are not always affordable for citizens

Most clinical laboratories are private with some Ministry of Health oversight

Though official data is unavailable, experts estimate that more than **90% of laboratories in Armenia are privately owned**

MoH monitors the quality of services in laboratories and issues **accreditation**

Patients pay for diagnostic services themselves and can apply for full or partial reimbursement

Diagnostics is covered by BBP for the most **vulnerable** citizens, while for other groups it is covered only **partially**.

Coverage is organized through a **reimbursement** mechanism which prevents some people from applying

Diagnostics results are generally unreliable

There is indirect evidence, **confirmed by independent journalists** and officials statements and experiments, that results are **unreliable** and inconsistent

Key takeaways

The quality of clinical laboratories remains a key issue for proper diagnostics in Armenia

Low reliability and consistency of results suggest a need to improve regulation and the quality assurance framework

The cost reimbursement mechanism creates additional bureaucratic barriers

According to a WHO study, public health laboratories are well-developed and the ongoing reform agenda is adequate

Main challenges

Low reliability of clinical laboratories test results

Lack of regulation and quality assurance framework

Bureaucratic barriers to reimbursement

Source: Joint External Evaluation of IHR Core Capacities, WHO, 2016; Expert Interview; https://hetq.am/ru/article/56236; https://hetq.am/en/article/56288; https://med.news.am/eng/news/17039/the-masis-case-how-erythrocytes-were-found-in-green-tea-and-who-will-be-held-responsible-for-this.html

3. e-health and telemedicine are not yet fully utilized for diagnostics and outpatient care in Armenia

ARMENIA 2021-2041 ideas in action

E-Health and Telemedicine Development in Armenia

- **Since 2010** some pilot programs have been introduced in several hospitals, but **no health-care facilities have successfully shifted from paper records** to e-HIMS[1]
- **E-HIMS portal is generally present in Armenia (armmed.am)** with more than 70% of facilities nominally connected to it but only 42 visits per 1,000 people registered in the past 6 months
- The Arabkir Medical Centre and the National Tuberculosis Control Program have **recently** implemented **their own e-HIMS** and now primarily use EMR systems for **outpatient care and diagnostic services**

A recent study has identified the main barriers to e-HIMS implementation in Armenia

Inability to prepare for changes	• Lack of proper documentation and understanding by hospital management of the current data flow procedures required for e-HIMS • No capacity-building/training of policy and decision makers in e-HIMS management • No competent healthcare data flow specialists available • Lack of collaborative partnerships to catalyze positive change • Specialists do not feel mandated or lack political will • Computer anxiety • High turnover among service providers
Uncertainty	• Requirements are not clear • Fear of not being capable (among staff and facilities in general) • Inability to identity future expectations concerning e-HIMS • Apathy around changing the current situation since future benefits are not clearly outlined
Financial considerations	• There are no financial resources for procurement, supply and maintenance of IT infrastructure at the facility level • Insufficient knowledge of cost—benefit ratio evaluation • Resistance to changing the existing budgeting and management structure
Attitude / motivation	• Doctors get no incentives while having to spend extra time learning and adapting to changes and are thus less motivated. • Lack of advocacy and lack of colleague advocacy • Lack of trust

1. Health Informatics Management and Systems

Source: Electronic health information system implementation in health-care facilities in Armenia, 2019; Armenia's Ministry of Health; armed.am

Key takeaways

Utilization of the national e-HIMS portal (armmed.am) remains limited due to several groups of barriers that are not being addressed at the population level

Though several telemedicine projects have been implemented in Armenia (including the ongoing Council of Europe Action Plan for Armenia 2019–2022) they have not had the scale to make telemedicine into a sustainable and popular early diagnostics tool

Main challenges

The national e-HIMS platform remains sub-scale and underutilized

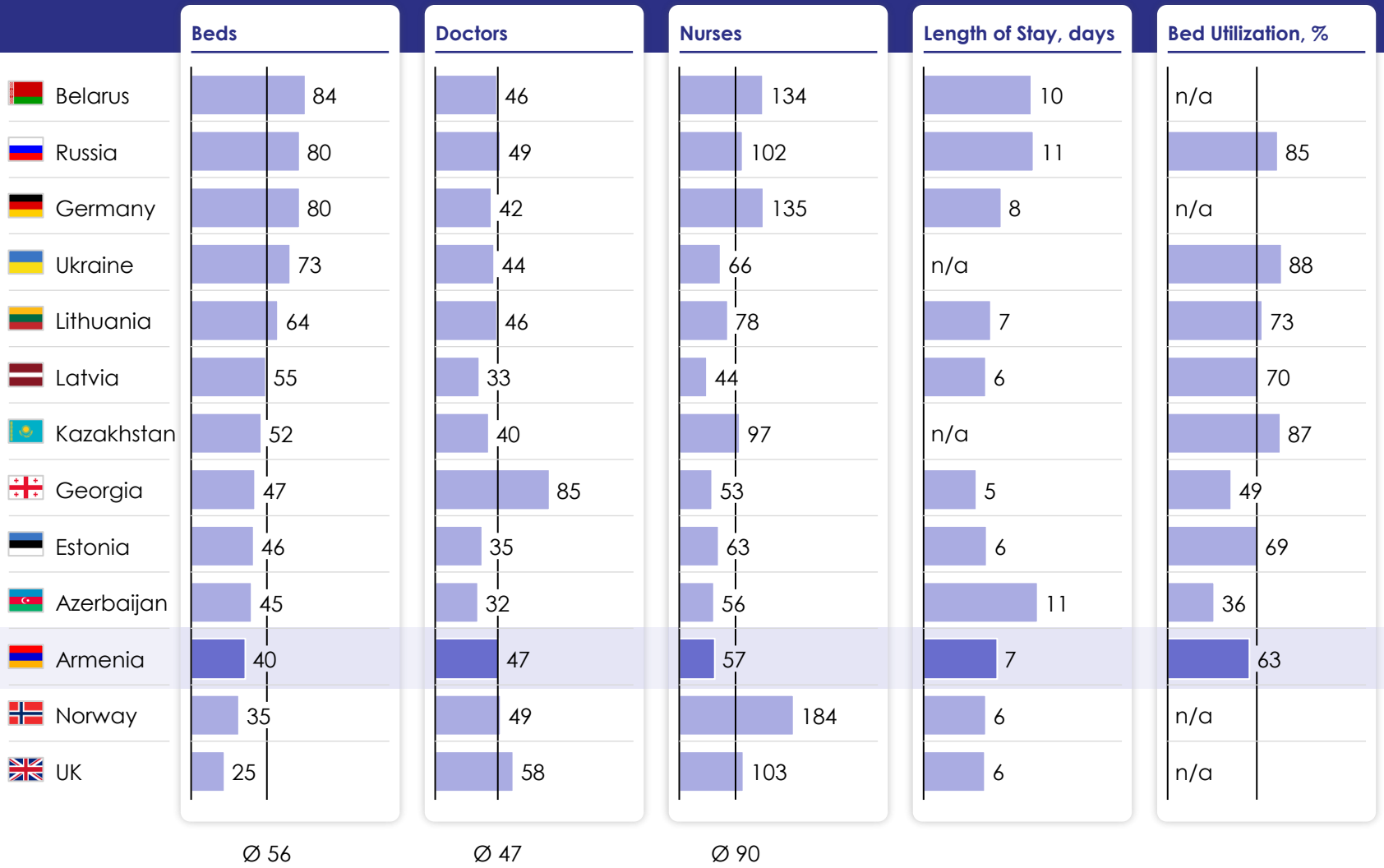
Doctors and medical crews lack the skills and motivation to utilize e-health

Telemedicine is an underleveraged tool for basic diagnostics and outpatient care

4. Armenia is behind its peers and developed countries in the number and utilization of beds and the number of nurses

ARMENIA 2021-2041 ideas in action

Main indicator per 10,000 people, 2019 or latest available



Source: Worldbank, Armstat, Armenia's Ministry of Health, WHO

Key takeaways

Armenia has the lowest number of beds relative to population among its peers and has a shortage of medical crews

The length of stay in Armenia's hospitals is shorter than for peer countries but still exceeds that in developed countries by 1-2 days

Bed utilization is lower than in peer countries, possibly indicating inefficiencies in hospital management or/and poor quality of equipment

Main challenges

Shortage of medical crews

Suboptimal utilization of beds

4. While both types of facilities are distributed equally, there is considerable inequality in bed distribution

	Outpatient Care		Inpatient Care				
	Number of facilities	Ratio per 10,000	Number of facilities	Ratio per 10,000	Number of beds, thousands	Ratio per 10,000	Utilization
Yerevan	138	12.7	53	4.9	7.6	70	76%
Ararat	60	23.4	6	2.3	0.8	13	67%
Armavir	60	22.7	4	1.5	0.2	19	61%
Kotayk	47	18.7	10	4.0	0.2	13	66%
Lori	41	19.2	7	3.3	0.5	27	69%
Gegharkunik	40	17.6	7	3.1	0.5	32	76%
Shirak	32	13.8	15	6.5	0.7	19	45%
Tavush	27	22.2	7	5.8	0.5	23	47%
Aragatsotn	24	19.2	6	4.8	0.4	19	56%
Syunik	17	12.3	7	5.1	0.4	35	58%
Vayots Dzor	8	16.5	3	6.2	0.1	17	35%
Total	494	16.7	125	4.2	11.8	40	63%

Source: Worldbank, Armstat, Armenia's Ministry of Health; WHO

Key takeaways

The low number of beds per capita is further worsened by unequal distribution of beds among the regions

Most outpatient and inpatient facilities and beds are located in Yerevan, while in other regions utilization is above or at the national average level

Most hospitals do not appear to have minimum requirements for treating acute cardiovascular events

Main challenges

Unequal distribution of inpatient medical care facilities, beds and equipment in Yerevan and regions

Relatively poorer qualification of the staff in regions in comparison to Yerevan

Outdated protocols and infrastructure for rapid transport to central hospitals

4. There is an unequal distribution of doctors and nurses between Yerevan and other regions

	Number of doctors, thousands	Ratio per 10,000	Number of nurses, thousands	Ratio per 10,000
Yerevan	9.8	90	8.5	78
Shirak	0.6	25	1.3	55
Kotayk	0.6	15	1.0	33
Lori	0.5	19	1.0	43
Ararat	0.5	22	1.0	41
Armavir	0.4	18	0.9	38
Gegharkunik	0.4	17	0.8	50
Tavush	0.2	24	0.5	48
Syunik	0.2	16	0.7	36
Aragatsotn	0.2	20	0.5	44
Vayots Dzor	0.1	23	0.2	44
Total	13.4	47	16.4	57

Because of the low number of nurses, doctors have to spend time on basic healthcare tasks instead of diagnosis and more complicated treatments

Healthcare Expert

The shortage of professional nurses is a growing problem in Armenia, and there are issues with their quantity and quality

Healthcare Expert

Key takeaways

Though on the national level there is no problem with the number of doctors, more than 70% of them are located in Yerevan

The shortage of medical crews is also driven by unequal distribution of them between Yerevan and the regions

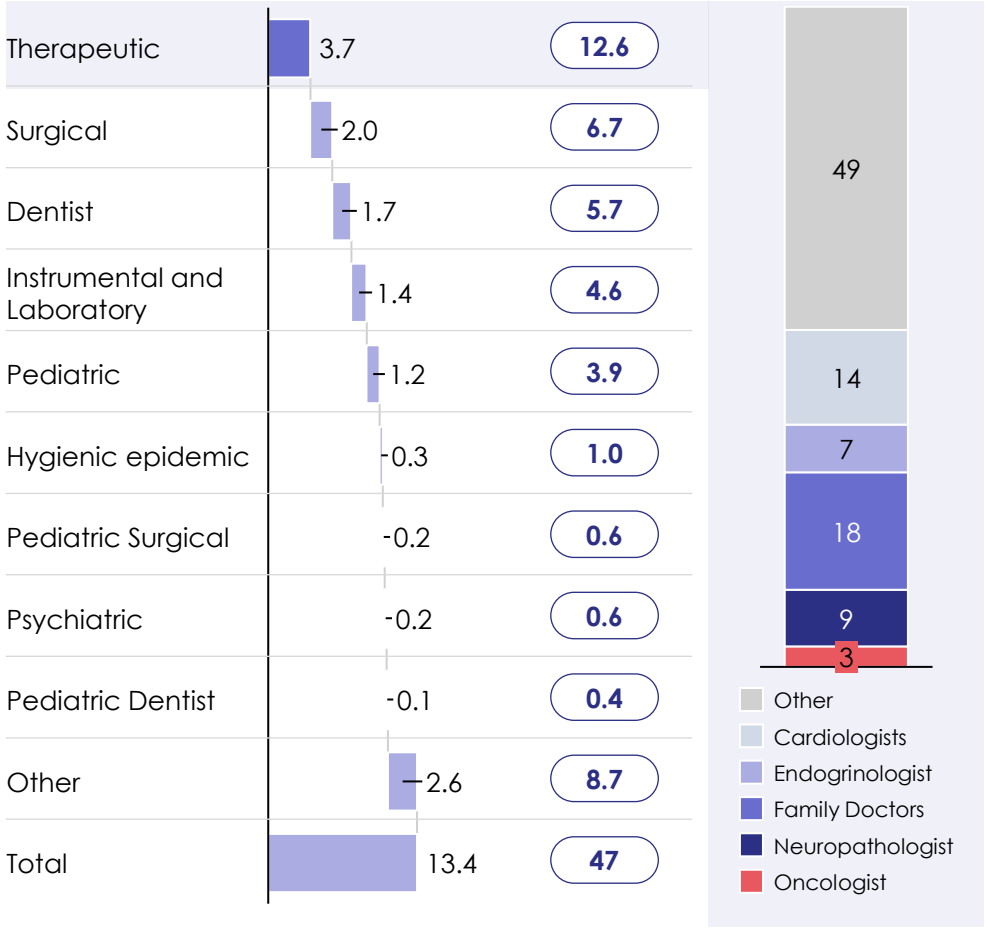
This creates risks of deterioration in the quality of treatment

Main challenges

- Shortage of medical crews
- Unequal distribution of nurses between Yerevan and regions
- Unequal distribution of doctors between Yerevan and regions

Source: Worldbank, Armstat, Armenia's Ministry of Health

4. In some sectors there are very limited numbers of specialists, most of whom are concentrated in Yerevan



The quality of medical education poses a challenge for Armenia

According to healthcare experts, there are several challenges facing medical education in Armenia:

- Limited control over the number of medical graduates
- Lack of accreditation and absence of licensure
- Outdated curriculum (last revision was done by Bologna process agreement)
- Limited control over experience and training of residents
- Lack of regulation of the number and types of residency programs. One must pay to be a resident (as opposed to being paid like in other countries)
- Continued Medical Education requirements are not mandatory

While some elements of CME and a legislative foundation have already been implemented in Armenia, there is no holistic, integrated and effective system of CME/CPD[1], impacting the quality of healthcare workers and adoption of modern technologies in the country

Healthcare Expert

1. Continued Medical Education/Continued Professional Development

Source: Worldbank, Armstat, expert interviews;
https://hetq.am/en/article/106185#:~:text=There%20are%2042%20doctors%20per,Organization%20study%20of%2053%20countries

ARMENIA 2021-2041 ideas in action

Key takeaways

Some medical sectors such as burn surgeons, forensic psychiatrists, forensic experts, geneticists, toxicologists, clinical psychologists, children's psychiatrists, dieticians and homeopaths, as well as a number of pediatricians have only 2–10 specialists, most of whom work in Yerevan

Medical education is at risk of becoming less competitive and being unable to supply the healthcare system with high-quality specialists

Main challenges

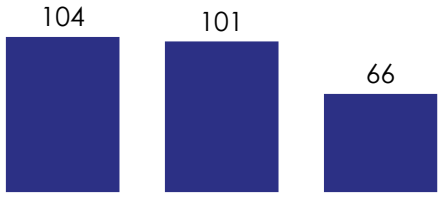
- Unequal distribution of specialized physicians between Yerevan and regions
- Deteriorating quality of medical education
- Suboptimal breakdown of doctors specializations
- Deteriorating quality of treatment

4. Emergency care is available for all citizens, but specialized inpatient facilities are concentrated in Yerevan

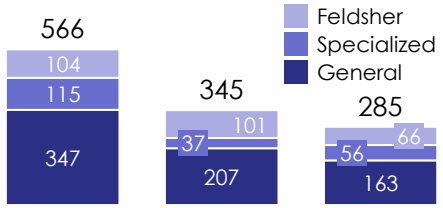
ARMENIA 2021-2041 ideas in action

Accessibility and Quality of Ambulance

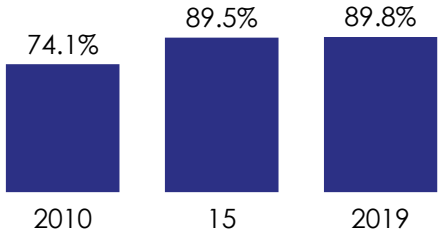
Number of emergency stations



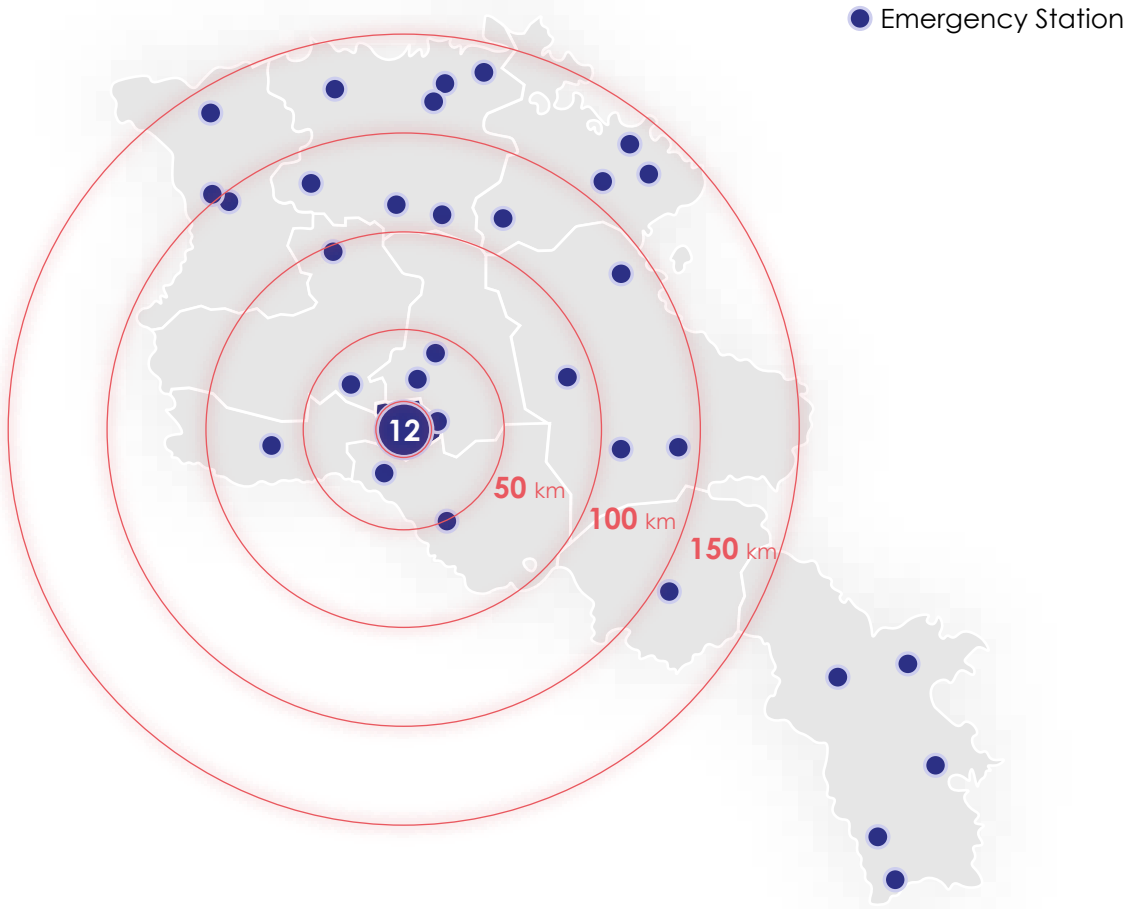
Number of ambulance teams[1]



Ratio of patients served by teams



Accessibility of emergency help and distance to Yerevan



Key takeaways

Though the number of emergency stations and ambulance teams of all types has decreased, the ratio of patients served remained high

Nevertheless, the high concentration of beds and specialized high-tech medical care in Yerevan together with the reduction in ambulance teams and stations is creating a risk of unequal access to emergency care, especially given that most stations are more than 50 km away from Yerevan

Main challenges

Increasing inequality of access to emergency care

1. The team is the functional unit of the emergency station providing cover per night (6 hours)

Source: Worldbank, Armstat, Armenia's Ministry of Health

5. Long-term care and both out- and in-patient rehabilitation are limited in Armenia

ARMENIA 2021-2041 ideas in action

Drugs coverage by the Basic Benefits Package (BBP)

Pharmaceutical goods procurement

Poor, vulnerable and special groups

50%
Co-pay for disability-3 population group, pensioners that are alone and unemployed and with children under 18 years in the family, children with single mothers

70%
Co-pay for pensioners who are not working

Non-vulnerable
No coverage

Centralized distribution of pharma-ceutical products

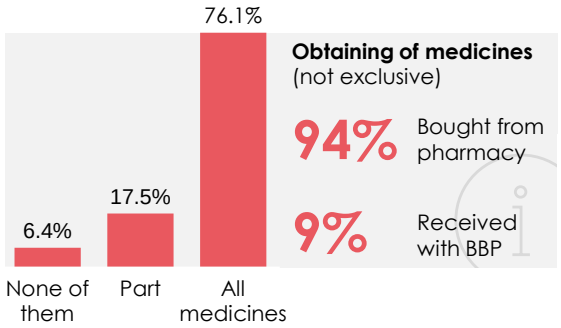
Full coverage for everyone with the following diseases

Tuberculosis	Cancer and hematological (malignant form)	Hemodialysis
Mental health	Epilepsy	Chronic diseases

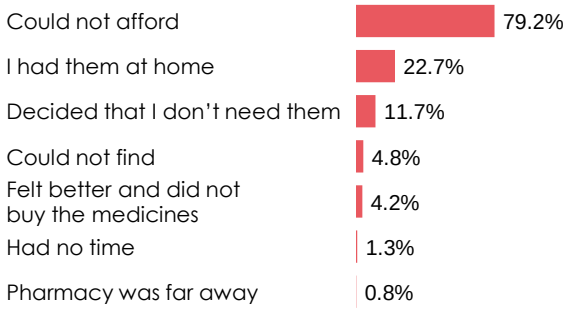
Diabetes is fully covered for the poor and vulnerable, others receive ~68%

Ways of obtaining medicines prescribed by a PHC doctor during the visit. 2016

Did you obtain/buy all the medicines, part of them, or none of them?



Why did you obtain/buy only part of the medicines or none of them?



Rehabilitation in Armenia is not well-developed

Rehabilitation in hospitals is available in Armenia but is very limited

- Following an acute episode[1] rehabilitation is organized within the hospital.
- The patient may also apply to a Red Cross center for further speech therapy and kinesiotherapy or have resort treatment, but this is not covered by BBP
- Rehabilitation services within municipal polyclinics are not comprehensive and are provided by traditionally trained nurses and physiotherapists

Rehabilitation outside the hospital setting is extremely limited, as is institutional long-term care and home-based care services

Key takeaways

Rehab and long-term care programs are generally underfunded – only 1.3% of the healthcare budget is allocated to these needs. About 1/3 of the budget is spent on medical supplies and products

While primary care services are provided free of charge to all citizens, coverage for outpatient medicines is limited to socially vulnerable groups and patients with specific diseases, while others need to buy prescribed medicines with their own money

According to WHO, in addition to financial barriers, access to pharma-ceuticals is constrained by the lack of physical availability of certain medicines

Main challenges

Insufficient focus on rehabilitation and long-term care

BBP provides limited coverage of medicines

Outpatient and Inpatient rehabilitation programs are limited

1. Epsiodes such as a stroke or myocardial infarction, etc.

Source: Armenia's Ministry of Health; https://nih.am/assets/pdf/atvk/hspa_eng_2016.pdf; WHO Better non-communicable disease outcomes: challenges and opportunities for health systems, 2016

NON-EXHAUSTIVE

Supporting levers for healthcare system development in Armenia

ARMENIA 2021-2041 ideas in action

Less Critical ☐ ☐ ☐ Most Critical

	Access to care	Care quality	Enabling dimensions		
1 Healthy living	**Population-level initiatives to reduce the main behavioral risks** Management of alcohol usage among young people		Regulatory activity to promote healthy food habits	**Appropriate level of government expenditure on healthcare and penetration of voluntary insurance**	Optimization of out-of-pocket expenditure and informal payments Incentiviza-tion of Healthcare workers
2 Preventive care	**Focus on individual prevention services (screening and vaccination) at population level** Coverage of screening programs by BBP[1] BBP[1] coverage of most treatments for pre-agreed conditions	**Quality of screening services in policlinics**	Participation of private sector in preventive care development Awareness about screening programs		
3 Diagnostics	Streamlining of expenditure reimbursement **Telemedicine is a tool for basic diagnostics and outpatient care** National large-scale electronic health Information Management Systems	**Reliability of clinical lab tests** Doctors and medical staff appropriately skilled and motivated to utilize e-health	Regulation and quality assurance framework		
4 Therapy and treatment	**Equality between Yerevan and regions in terms of:** • **Doctors and nurses** • **Hospitals and beds** • **Emergency care** Appropriate number of medical crews Protocols and infrastructure for rapid transportation	Utilization of hospital beds **Quality of equipment in medical facilities**	**Quality of treatment** **Qualification of the staff in regions**	**Quality of medical education**	
5 Long-term care and rehabilitation	**Outpatient and inpatient rehabilitation programs** BBP[1] coverage of medicines		Focus on rehabilitation and long-term care		

1. Armenian healthcare system is centered on the Basic Benefits Package (BBP) program

Table of content – Detailed vision by sector and by enabler

ARMENIA 2021-2041 ideas in action

Healthcare

NON-EXHAUSTIVE

Global trends will increasingly shape the healthcare industry in the future

ARMENIA 2021-2041 ideas in action

Category		Trend	Description	IMPLICATIONS FOR ARMENIA
Who are the beneficiaries of tomorrow?	1	Evolving towards more chronic diseases due to change in age pyramid	The number of individuals arriving at age 65 will increase dramatically, more patients will be living longer due to increased life expectancy	Increasing pressure to develop preventive care and promote healthy lifestyles to reduce main NCDs
	2	Increasing role of patients as consumers	Patient satisfaction and other patient-oriented report cards will assume increasing importance	Shift primary focus to quality of services and care
How to prevent diseases?	3	Promotion of healthy behavior and wellness mindset	Rise of general wellness management and reduction of behavioral risks; creation of new opportunities in wellness related to healthcare needs (e.g., wellbeing, happiness, etc.)	Increase public awareness to lower risky behavioral factors that cause the main NCDs
	4	Use of technologies for preventive care	Pre-symptomatic diagnosis based on real-time population data sets and AI predictive algorithms, managing health via mobiles and wearables	Put more effort into developing its preventive care system, including advanced methods of screening
How to treat diseases effectively?	5	Increasing specialization	Increasing complexity and specialization of care delivery and subsequent increase in specialization of roles, with enhanced personalized offerings and increased focus on primary care	Need to address the concentration of specialized doctors in Yerevan as more people in future may need their help in remote areas
	6	Digitization and development of e-healthcare	Digital health experiencing explosive growth across all segments, Increasing data transparency through information infrastructures	Digital tools and technologies may be used to improve productivity in the healthcare system
	7	Integrated care model	Large-scale adoption of holistic, integrated models of care, health systems exploring and in many cases activating integrated care models	Reform of healthcare in Armenia to create an effective and transparent system
	8	Shift to homecare	Shift in healthcare provision from hospital to home through leveraging technology	E-HIMS and telemedicine can be leveraged for outpatient care and basic diagnostics services

COVID-19 has unveiled changes that can be leveraged in the health systems of the future

The COVID-19 crisis stretched the system due the unexpected increase in demand, but also the need to continue providing safe/remote 'business-as-usual' care for non COVID19 patients

The systems across Europe faced significant challenges and lack of key resources as they struggled to provide timely and effective care to their populations

System pressure led to a dramatic acceleration of changes in key levers of the health system, that were previously seen as important but not urgent or difficult to scale

Key changes observed during COVID-19 that can strengthen European health systems when scaled across the region

1 Increasing recognition of the importance of strong public health systems and focus on prevention

2 Acceleration of adoption of innovation in digital and analytics-based solutions

3 Increase flexibility in deployment of forces and use of assets

4 Accelerated R&D and dissemination process, e.g. testing, vaccines

5 Rapid adoption of best practices care pathways

1: Increasing recognition of the importance of prevention

The COVID-19 has accelerated trends improving prevention in the Health System…

Increase in the level of preparedness for the "second wave"[1] [4]

Robust testing and contact-tracing strategies have been set up at an accelerated pace to allow countries to manage the health threat without collapsing the health system

New ways for government to engage with the population on prevention[2]

Health systems have been effective in communicating to the population to provide advice, influence behaviors and increase the population engagement to prevent infection from COVID-19

New mechanisms of interaction (such as social media, NHS apps) are now a normal way of communicating on prevention programs between government and the population

Citizens are now more self-empowered towards health decisions

Higher empowerment of Ministries of Health in the political debate

Now included in the strategic decision-making of countries

Higher level of cooperation across stakeholders[3]

Vaccination campaign has displayed an unprecedented cooperation network to produce, distribute and administer vaccines at the right pace, with the UK as the example of a fast implementation

…with prevention being on top of the political agenda

The inertia generated among the healthcare sector due to the COVID-19 crisis is placing healthcare as a strategic sector in the political debate

The EU4Health 2021-2027 program is leading the way by dedicating a minimum of 20% of the €5.1 billion total budget (2014-2020 health budget was €449.4 million)

1. Starting September 2020, https://ourworldindata.org/coronavirus
2. Hootsuite
3. https://www.who.int/vaccine_safety/committee/Module_Stakeholders.pdf?ua=1

Source: Oxford University, Our wolrd in Data (started Sept. 2020) | WHO "COVID-19 Vaccines: Safety Surveillance Manual" (undated)

2: Acceleration of adoption of innovation in digital

Reimagined second line care

Sheba Medical Center established a Telemedicine Program including a robot, controlled remotely by clinical staff, to check vital signs of quarantined patients and a digital platform to monitor less critical patients at home

Integrated digital first local health and care systems

A coalition of New York City leaders from the private and non-profit sectors developed a process to serve at-risk populations that included a dynamic texting platform and a network of 60+ social and clinical services

Data and analytics spine

Taiwan used big data analytics leveraging its national health insurance database and integrating it with its immigration and customs database to identify and contain cases

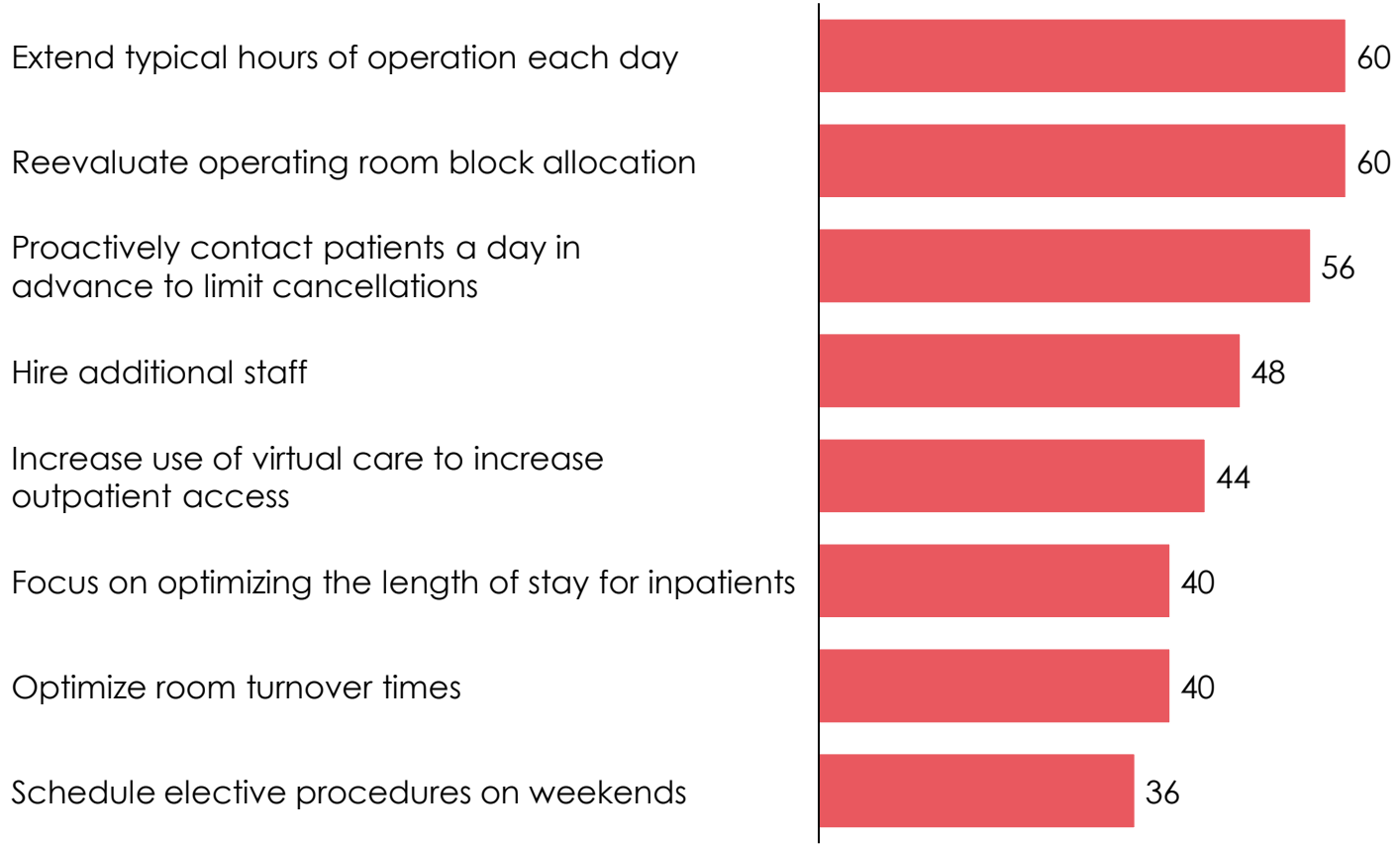
Digitally enabled integration between institutions

Inter-agency cooperation was established between the contact tracing teams of the Ministry of Health and the Police Force to track infected people, using social media scrapes

Source: Sheba Medical Center corporate website; Expert interviews; press search

3: Increase flexibility in deployment of forces and use of assets

Planned near-term action (next 3 months)



Illustrations

Workforce transformation

11,000 volunteers applied through a digital platform, created by the MoH, to provide assistance to the health system including administrative or technical support

1. Q14: What actions is your sysem planning to take in the near term (i.e., next 3 months) to increase operating room utilization?

4: Accelerated research & development and dissemination process

Observed changes	Illustrative examples
Involvement of countries in funding and supporting research to generate COVID-19 related evidence	EU provided specific funding to fight against COVID-19 and generate evidence4,8 UKRI in coordination with multi-sectorial stakeholders launched an initiative to fund ideas to that address COVID-193 NIHR RECOVERY trial to identify and develop treatment against COVID5 Governments involved in the generation of guidelines to manage properly COVID-19
Increased number of publications	+23k research papers have been published regarding COVID-19 until June 20201
Acceleration of evidence collection and publication process	Early solid evidence including large cohorts was generated and shared for free in top scientific journals2 Generation of solid evidence on COVID-19 evidence in 6 months through the "Solidarity Therapeutics trial"6 +132 developers of treatment against COVID-19 working with EMA7

1. Nature index | 2. https://www.nejm.org/doi/full/10.1056/NEJMoa2021436 | 3. https://www.ukri.org/opportunity/get-funding-for-ideas-that-address-covid-19/ | 4.https://ec.europa.eu/info/sites/info/files/research_and_innovation/research_by_area/documents/ec_rtd_coronavirus-research-projects-overview.pdf | 5. https://www.recoverytrial.net/ | 6.https://www.who.int/news/item/15-10-2020-solidarity-therapeutics-trial-produces-conclusive-evidence-on-the-effectiveness-of-repurposed-drugs-for-covid-19-in-record-time | 7. https://www.ema.europa.eu/en/human-regulatory/overview/public-health-threats/coronavirus-disease-covid-19/treatments-vaccines-covid-19 | 8. https://ec.europa.eu/info/news/commission-supports-international-clinical-research-network-treat-covid-19-2020-sep-18_en

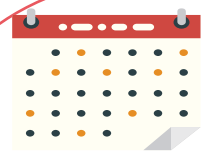
Source: UK Research & Innovation (Sept. 2020); The New England Journal of Medicine, "Dexamethasone in Hospitalized Patients with Covid-19 — Preliminary Report", July 2020; European Commission website

5: During COVID-19, we observed a rapid adoption of best practices care pathways

ARMENIA 2021-2041 ideas in action

Revealed trends: Needs based offering; Consumer perspective; Cooperation & partnerships; Telemedicne; Data transparency & IT; Big data & predictive analytics

1. Schedule an appointment



- Doctor's office proactively engages with patients to schedule appointments
- Non-urgent cases are being deferred by ~3 months, leading to significant reduction in patient visits (25-50%)

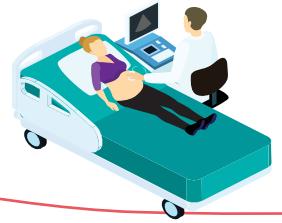
2. Doctor visit (primarily remote)

- Physician follow-ups are conducted via telemedicine (e.g., calls, video)
- Only urgency requires in-person (e.g., treatments, lab work); patients must under-go COVID-19 screening at entrance and wear personal protective equipment
- No caregivers are allowed to accompany patients
- Wait times are minimized for patients

3. Therapy selection

- Physicians are proactively shifting therapies to low frequency infusion or oral to limit patient visits
- Where feasible, physicians are deferring treatments until after COVID-19 (e.g., maintenance cases, last round of chemo)

4. Get medication/ treatment



- Ongoing urgent chemo infusion are still continuing in clinics; home-infusions are still limited
- Patients are encouraged to go to in-network infusion clinics closer to their home to limit travel
- Wait times at infusion clinics are minimized and distanciation measures are implemented
- Chronic patients treatments continue through hospital and local pharmacies agreements

5. Ongoing patient and population monitoring

- Ongoing monitoring are pursued through telemedicine channels
- Nurse navigators monitor patients for serious cases
- Ongoing monitoring of new case and deaths are pursued by health authorities
- Predicting the ICU occupancy and testing needs with predictive analytics tools is being implemented

Source: Expert interviews

Vision 2041: Improve health in Armenia by meeting the needs of existing and future generations

ARMENIA 2021-2041 ideas in action

STAGES OF HEALTH CONTINUUM

1 Healthy Living → 2 Preventive care → 3 Diagnostics → 4 Therapy and treatment → 5 Long-term care and rehabilitation

GOAL

Improve the wellbeing and quality of life of Armenian citizens and increase the life expectancy to 80 years by 2041

TRIPLE AIM

BETTER VALUE

BETTER HEALTH

BETTER CARE

KEY LEVERS

Improve access to medical care

Increase quality of medical care

Enablers

Improve regulatory framework

Drive adoption of e-health

Ensure financial sustainability of healthcare system

Vision 2041: Armenia needs to improve the quality of medical services and interventions across all stages

Stage	2021 – Current Status	2031 – Aim for Quality	2041 – Aim for Excellence
1 Healthy Living	Lack of population-level public awareness programs and interventions to prevent risk factors	Main risk factors are countered with implementation of WHO recommended interventions, decrease in behavioral risk factors penetration (e.g. % of smokers)	Healthy lifestyle is the norm among Armenian citizens, helping to increase healthy life expectancy by 5 years
2 Preventive care	Underleveraged stage of medical care with low accessibility and quality of individual prevention services and limited awareness of its importance	No less than 2/3 of Armenian citizens have an annual check-up including screening procedures to identify the main NCDs at early stages and vaccination against communicable diseases	Individual prevention services in Armenia are of world-class quality, attracting foreigners to undertake check-ups and screening procedures in the country
3 Diagnostics	Unreliable diagnostics results from Armenia's laboratories with bureaucratic procedures for reimbursement of out-of-pocket expenditure; e-HIMS is underleveraged and sub-scale	Ministry of Health strictly monitors the quality of diagnostics results in private laboratories, active usage of e-HIMS for outpatient care and basic diagnostics to ensure equal access to healthcare in Armenia	Clinical laboratories are well-developed and capable of providing all the most important diagnostics services to a high standard, Armenia's telemedicine is an "export" service, available across the world
4 Therapy and treatment	Unequally distributed facilities, doctors and nurses cause unequal access to healthcare across the country; poor treatment and quality of equipment; deteriorating quality of medical education	Optimal number of medical facilities of all types, equipped to modern standards and staffed with a highly-skilled workforce, providing equal access to healthcare; quality of medical education is a competitive advantage for Armenia	Armenia's medical facilities have one of the lowest hospital mortality rates in the world and are capable of treating all main diseases effectively
5 Long-term care and rehabilitation	Rehabilitation programs are very limited and of poor quality, medicines are made available to only a small number of citizens	In most cases rehabilitation involves the use of modern technologies on an outpatient basis, inpatient rehabilitation quality is monitored, BBP provides wider coverage of prescribed medicines	Armenia's healthcare system offers all types of end-to-end rehabilitation (including mental) to a high standard

Table of content – Detailed vision by sector and by enabler

ARMENIA 2021-2041 ideas in action

Healthcare

NON-EXHAUSTIVE

Several projects have been created with diaspora support and positively contributed to the Healthcare sector

Name of the project	Main concept	Impact
Izmirlian MC	Create a multifunctional hospital, which is equipped with advanced, modern medical devices and skillful, experienced and highly qualified specialists	The center is repaired with European standards and is equipped with modern devices In 2012 after the old facilitiy's renewal the renamed Izmirlian center became one of most advanced healthcare facilities specialized in proctology
Armenian Eye Care	Eliminate preventable blindness in Armenia and to make quality eye care accessible to everyone in the country. Deliver care through a five-point strategy — direct patient care, medical education and training, public education, research, and capacity building.	6 subspecialty clinics Educational center and a laboratory Cooperation with Pfizer Assisted in more than **20,000 surgeries**
Action Sante Armenie France (as part of Bullukian Foundation)	Training of caregivers Care of cardiovascular diseases, the leading cause of death in Armenia, within its Franco-Armenian Cardiovascular Center (CCFA)	Benchmark establishment in the prevention and fight against cardiovascular pathologies in Armenia >3,000 consultations in cardiology, 400 coronary angiographies 300 angioplasties, 80% of which were in the acute phase of myocardial infarction

NON-EXHAUSTIVE

Full-scale transformation of healthcare system is possible through a set of levers applicable across multiple stages of healthcare

ARMENIA 2021-2041 ideas in action

How can Armenia create a healthcare system that identifies, prevents and can effectively cure all main diseases?

Dimensions of impact		Main levers
Improve access to medical care	Optimize the load of healthcare system	Ensure primary care accessibility
		Optimize the flow of patients by implementing digital solutions
		Increase the share of day-surgeries and decrease the length of stay
		Promote adherence to treatment among risk groups
	Ensure operational excellence	Rebalance the workload of healthcare workers
		Optimize administrative workload and eliminate inefficiencies
	Promote healthy lifestyle	Limit access to tobacco, alcohol and unhealthy food
		Leverage public awareness campaigns about behavioural risks and their consequences
		Increase awareness about health status and risks
		Promote urban design that supports physical activity, especially walking and cycling
	Amplify preventive care	Promote regular check-ups importance and ensure easy access to it
		Run public awareness campaigns about the importance and ways of early NCD identification
		Leverage individual prevention services (incl. screening procedures, vaccination, etc.)
Increase medical care quality	Increase patients satisfaction	Increase the comfort of visiting medical facilities for consultations, check-ups and treatment
		Improve doctor visit experience
	System transformation of standards for treatment of orphan diseases, difficult cases of cancer and mental disorders	Leverage feedback mechanisms
	Ensure clinical excellence	Improve prestige and attractiveness of the healthcare career
		Upskill and provide support to doctors and nurses
		Ensure high quality of medical education
	Implement evidence-based care pathways	Utilize digital and AI solutions to fasten diagnostics, decrease error rate and assist doctors with check lists
	Adopt modern clinical standards	Update standards of treatments and diagnostics for cardiovascular, diabetes, cancer and lung diseases
Leverage Enablers	Improve regulatory framework	Implement quality assurance mechanisms to ensure high reliability of diagnostics results
		Incentivize and support PPP in healthcare to stimulate R&D activities
	Ensure financial sustainability of healthcare system	Revise incentives and payment models
		Rebalance healthcare funding to decrease out-of-pocket expenditure burden

ARMENIA 2021-2041 ideas in action

Each lever can be pulled through various initiatives (1/2)

How can Armenia create a healthcare system that identifies, prevents and can effectively cure all main diseases?

Dimensions of impact	Main levers	Examples of Initiatives
Improve access to medical care	Optimize the load of healthcare system	Ensure primary care accessibility
		Explore new delivery settings to tap the benefits of scale while addressing clinical and access related needs (e.g., community care hubs)
		Achieve full integration and coordination with the rest of the system in order to meet the growing complex needs with a comprehensive approach
		Optimize the flow of patients by implementing digital solutions
		Utilize telemedicine to reduce the number of patient visits to medical facilities
		Separate the flows of the patients based on their needs, types of appointment (electronic or traditional), etc.
		Increase the share of day-surgeries and decrease the length of stay
		Promote e-HIMS usage as the main way of scheduling a doctors appointment
		Develop a system for short-stay inpatient treatment
		Promote adherence to treatment among risk groups
		Revise treatment standards to decrease the time patients spend at the hospitals
		Introduce the system for regular monitoring of chronic and risk group patients
		Educate chronic and risk group patients on the importance of following prescribed treatment
	Ensure operational excellence	Rebalance the workload of healthcare workers
		Transfer of basic therapy preparation procedures (e.g. taking blood pressure), diagnostics and medicines prescriptions from doctors to nurses
		Separate administrative and organizational tasks of nurses from the anamneses procedure
		Optimize administrative workload and eliminate inefficiencies
		Digitization of medical histories, prescriptions and diagnostics results
		Allocation of doctors on duty for home visits
Increase medical care quality	Promote healthy lifestyle	Limit access to tobacco, alcohol and unhealthy food
		Impose taxation, packaging and display limitations, advertising and promotion bans for tobacco, alcohol and food with high content of salt and sugar
		Ban trans-fat usage in the food chain, enforce strict standards for salt and sugar content
		Leverage public awareness campaigns about behavioural risks and their consequences
		Include the main principles of healthy diet and harmfulness of tobacco and alcohol into school education programs
		Run population-level awareness campaign against smoking and alcohol consumption and importance of healthy diet
		Increase awareness about health status and risks
		Organize dedicated days for check-ups of certain groups of diseases – e.g. mass cardiovascular screening available in public places like parks and trade centers
		Run a population level screening program to gather the data on main NCD status
		Promote urban design that supports physical activity, especially walking and cycling
		Incentivize policlinics based on the share of the attached patients undertook check-up
Leverage Enablers	Amplify preventive care	Promote regular check-ups importance and ensure easy access to it
		Stimulate employers to organize check-up days for their workers
		Run public awareness campaign to educate people on importance of check-ups and ways to undertake it
		Run public awareness campaigns about the importance and ways of early NCD identification
		Streamline the procedure of check-up appointment via e-HIMS
		Run public awareness campaign to educate risk groups on the danger of NCDs and the ways and opportunities of early identification
		Leverage individual prevention services (incl. screening procedures, vaccination, etc.)
		Start population level screening campaigns with simplified access
		Subsidize more individual prevention services and promote their accessibility to all citizens

NON-EXHAUSTIVE

ARMENIA 2021-2041 ideas in action

Each lever can be pulled through various initiatives (2/2)

How can Armenia create a healthcare system that identifies, prevents and can effectively cure all main diseases?

Dimensions of impact	Main levers	Examples of Initiatives
Improve access to medical care	Increase the comfort of visiting medical facilities for consultations, check-ups and treatment	Separate check-up facilities from regular policlinics or transfer them to a dedicated "wing" of the policlinics to make the procedure more comfortable
		Decrease time spent in the medical facilities by utilizing healthcare analytics tools
		Develop and maintain cleaning standards in policlinics, introduce clear and easy navigation, improve general conditions for waiting
		Develop and monitor the execution of ethic standards for doctors, nurses and facility crew
	Improve doctor visit experience	
	Leverage feedback mechanisms	Introduce the tools for gathering patients feedback, promote its usage and link incentives to its results
Increase medical care quality	Improve prestige and attractiveness of the healthcare career	Create a clear and transparent career pathway for healthcare workers
		Leverage non-monetary incentives like government rewards, public awareness campaigns, etc.
		Introduce accreditation and licensing to ensure high level of competencies and skills
	Upskill and provide support to doctors and nurses	Organize and support regular clinical analysis led by world-class specialists and appoint accountable doctors
		Create a center for doctors development with access to education materials, courses and training programs
		Create a platform for all doctors and nurses to get consultation with high-skilled professionals
	Ensure high quality of medical education	Ensure high standards in medical education admission
		Make CME mandatory – introduce regular testing procedure to receive/confirm accreditation and work license
		Update education curricula to the modern standards
		Create a dedicated entity to control clinical excellence and adherence to clinical pathways (e.g. like IQTIG in Germany)
		Monitor the adherence to clinical pathways through e-HIMS and medical records
	Utilize digital and AI solutions to fasten diagnostics, decrease error rate and assist doctors with check lists	
	Update standards of treatments and diagnostics for cardiovascular, diabetes, cancer and lung diseases	
Leverage Enablers	Implement quality assurance mechanisms to ensure high reliability of diagnostics results	
	Incentivize and support PPP in healthcare to stimulate R&D activities	Launch partnerships with leading healthcare institutions to boost R&D and improve educational opportunities
		Create centers of excellence for bringing together start-ups, SMEs, research teams and corporate innovation labs in different sectors
	Revise incentives and payment models	Link the incentives models to the outcomes of the healthcare system with focus on preventive care, decreasing mortality form NCDs and low hospital lethality
		Link salaries of medical facilities managers to the salaries of doctors and nurses and provide grants and financing opportunities for certain achievements
	Rebalance healthcare funding to decrease out-of-pocket expenditure burden	Finance healthcare development from the increased taxes on alcohol, tobacco and unhealthy food
		Revise the funding of healthcare by stimulating private activity e.g. introduce compulsory basic private health insurance package for citizens to cover all common medical expenses
Increase patients satisfaction		
System transformation of standards for treatment of orphan diseases, difficult cases of cancer and mental disorders		
Ensure clinical excellence		
Implement evidence-based care pathways		
Adopt modern clinical standards		
Improve regulatory framework		
Ensure financial sustainability of healthcare system		

5 groups of first priority initiatives that could be leveraged (1/2)

ARMENIA 2021-2041 ideas in action

P Can be started by private sector

Initiative	Description	Countries with best practices
A Development of digital enablers: e-HIMS and telemedicine (P)	• Digitization of the most administrative and scheduling procedures to decrease the workload of doctors and nurses and improve transparency • Utilization of big data and AI to leverage diagnostics and treatment quality • E-HIMS roll-out to ensure proper connectivity and patient co-management • Telemedicine development to ensure equal accessibility of basic diagnostics and outpatient care	
B Healthy Lifestyle Promotion and Support	• Development of population level interventions to restrict access to the main behavioural risk factors • Improvement of risk factors prevention measures and consequences awareness through public education campaigns and inclusion of healthy habits development in school education programs • Creation of opportunities to maintain healthy lifestyle, e.g. urban design development, physical education promotion, help with combating tobacco and alcohol addiction	
C Development of primary care (P)	• Improvement of primary care accessibility in all regions of the country by optimization of facilities network and usage of digital enabled solutions • Introduction of special primary care programs to ensure adherence to treatment among risk groups • Improvement of the comfort in medical facilities for consultations, check-ups and treatment • Promotion and support of check-up and individual prevention services at population level	
D Enhancement of talent creation and development (P)	• Enforcement of continuing medical education system to ensure the quality of doctors and nurses • Introduction of clinical analysis system and accessible mentorship for doctors and nurses in regions • Creation of Centers of Excellence for doctors and nurses upskilling and development • Raising medical education admission requirements paired with curricula modernization • Utilization of digital solutions to assist doctors in diagnostics and treatment prescription	
E Revision of incentives and funding models	• Revision of the current funding models to incentivize the right objectives for the healthcare development such as focus on primary and preventive care by increasing co-payment for unnecessary or excessive appointments • Promotion of voluntary insurance among employers • Introduction of the outcomes based incentives model for medical facilities management • Stimulation of PPP in healthcare through various subsidies and incentives for prioritized objectives	

5 groups of first priority initiatives that could be leveraged (2/2)

ARMENIA 2021-2041 ideas in action

Main levers	First priority initiatives cover all of the main impact levers				
	A Development of digital enablers	B Healthy Lifestyle Promotion	C Development of primary care	D Talent creation and development	E Revision of incenti-ves and funding
Ensure primary care accessibility	✓		✓		
Optimize the flow of patients by implementing digital solutions	✓	✓	✓		
Increase the share of day-surgeries and decrease the length of stay				✓	✓
Promote adherence to treatment among risk groups	✓	✓	✓	✓	✓
Rebalance the workload of healthcare workers	✓		✓	✓	✓
Optimize administrative workload and eliminate inefficiencies	✓		✓		✓
Limit access to tobacco, alcohol and unhealthy food		✓	✓		
Leverage public awareness campaigns about behavioural risks and their consequences	✓	✓	✓		
Increase awareness about health status and risks	✓	✓	✓		
Promote urban design that supports physical activity, especially walking and cycling		✓	✓		
Promote regular check-ups importance and ensure easy access to it	✓	✓	✓		✓
Run public awareness campaigns about the importance and ways of early NCD identification	✓	✓			
Leverage individual prevention services (incl. screening procedures, vaccination, etc.)	✓		✓		✓
Increase the comfort of visiting medical facilities for consultations, check-ups and treatment	✓		✓	✓	✓
Improve doctor visit experience			✓	✓	✓
Leverage feedback mechanisms	✓		✓		✓
Improve prestige and attractiveness of the healthcare career				✓	✓
Upskill and provide support to doctors and nurses	✓			✓	
Ensure high quality of medical education	✓			✓	
Utilize digital and AI solutions to fasten diagnostics, decrease error rate and assist doctors with check lists	✓		✓		
Update standards of treatments and diagnostics for cardiovascular, diabetes, cancer and lung diseases			✓	✓	
Implement quality assurance mechanisms to ensure high reliability of diagnostics results					✓
Incentivize and support PPP in healthcare to stimulate R&D activities	✓			✓	
Revise incentives and payment models					✓
Rebalance healthcare funding to decrease out-of-pocket expenditure burden					✓

End-state of the healthcare system should be designed on workshops with stakeholders based on current state diagnostics

ARMENIA 2021-2041 ideas in action

Workshop approach and frameworks are in a separate document

Current state

Typical starting point

- Ministry of Health as payer
- Funding from general revenues
- Block budgets for providers
- Providers lack of autonomy

Sources of insights

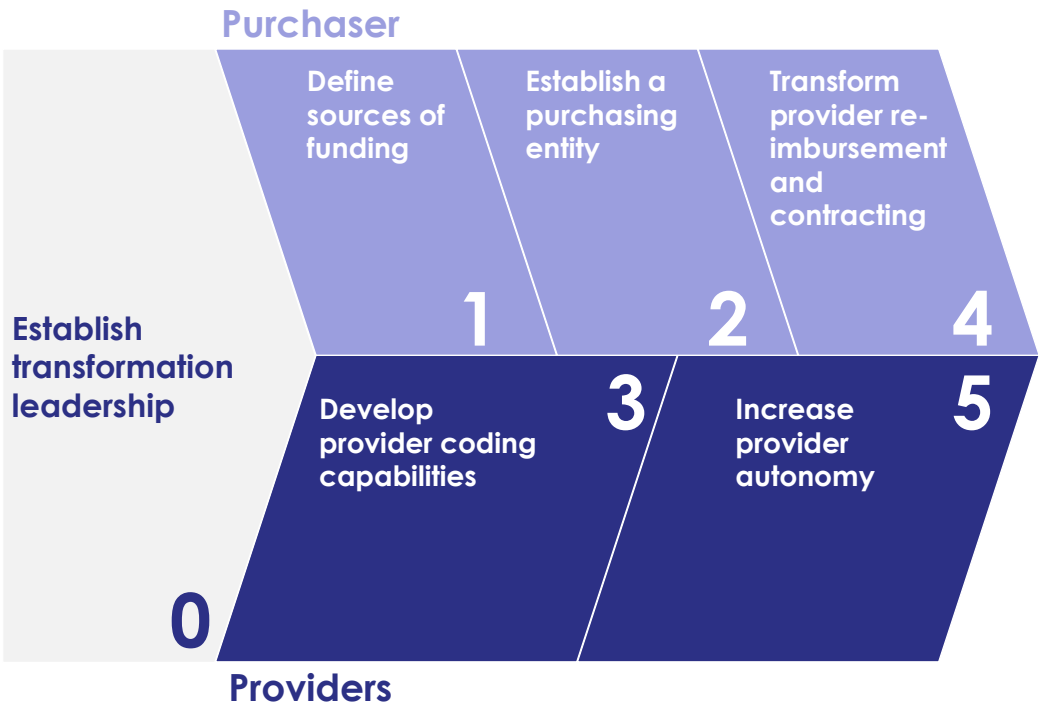
A. Sector challenges and opportunities diagnostics

B. Current financing model analysis

C. Regulation system analysis

D. Current reimbursement system

Transition journey[1] usually takes 5-10 years



End-state design

Possible end-state model

- Social health insurance
- Mixed model
- Private health insurance
- Community-based insurance

Inputs for end-state design

A. Sector development vision

B. Case studies of other countries experience

C. Prioritized development initiatives

D. Results of the series of work-shops with the main stakeholders

1. Details provided in a separate document