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Ambulatory care sensitive conditions in the Republic of Moldova

Health Services
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Division of Health Systems
and Public Health

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Abstract

In the context of a multicountry study on ambulatory care sensitive conditions (ACSCs) in the WHO European Region, this study seeks to contribute to strengthening health services delivery by identifying possible improvements to effectively prevent, diagnose and treat ACSCs in primary health care settings, and deriving contextualized and actionable policy recommendations for health service delivery transformation.

This study contains the results of desk research, data analysis, a country stakeholder meeting and follow-up interviews aimed at identifying potential opportunities that enable ACSCs to be effectively prevented, diagnosed and treated in a primary health care setting in the Republic of Moldova.

Keywords

AMBULATORY CARE
PRIMARY HEALTHCARE
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Abbreviations

ACSCs	ambulatory care sensitive conditions
ATU	autonomous territorial unit
CNAM	National Health Insurance Company
CNMS	National Centre of Health Management
FD	family doctor
FM	family medicine
MHI	mandatory health insurance
NCDs	noncommunicable diseases
OOP	out-of-pocket
PHC	primary health care
PPPs	public–private partnerships

Executive summary

Ambulatory care sensitive conditions (ACSCs) are health conditions for which hospitalization or emergency care can be avoided by addressing these conditions effectively in primary health care (PHC).

The aim of this study is to identify which elements of PHC need strengthening to successfully avoid unnecessary hospitalizations of ACSCs in the Republic of Moldova. How this strengthening can be achieved is captured in a set of actionable policy recommendations.

After the literature review focusing on the current situation in the Republic of Moldova, their stakeholders chose two ACSCs with the highest hospitalization rates: hypertension and diabetes. Data on hospitalization for these conditions were then analysed to assess regional differences. After the selection of ACSCs, a stakeholders' consultation with policy-makers, health insurance representatives and medical professionals identified barriers and opportunities to effectively prevent, diagnose and treat the two ACSCs in PHC. To gain further insight in health service delivery in the Republic of Moldova, a follow-up country visit was organized for in-depth interviews with medical professionals.

Data analysis showed that 18 389 patients were admitted with hypertension as primary diagnosis (6% of all registered patients with hypertension) and 11 910 with diabetes (15% of all registered patients with diabetes) in 2013. Experts interviewed for this study estimated that at least 60% of hypertension (about 12 000 admissions) and 40% of diabetes hospitalizations (5000 admissions) could have been avoided by strengthening interventions at PHC level. These figures are conservative compared to similar research from Germany and the United Kingdom.¹

Analysis showed that large regional variations exist in the proportion of patients hospitalized and that hospitalization is higher in rural areas than in the capital city of Chisinau. Edinet and Cantemir provinces showed, respectively, the

highest hospitalization rates for hypertension (28%) and diabetes (28%).

Overall, findings show that in order to reduce hypertension and diabetes hospitalization rates, management of services delivery needs strengthening in the Republic of Moldova. Attracting and maintaining health workers in rural areas is challenging. Reimbursement of medication is limited; for hypertension medication patients, co-payment is estimated at 50% on average as reimbursement levels differ per drug. Test strips required for self-monitoring blood-glucose levels for diabetes patients – recognized as a crucial element to self-management – are not covered by health insurance. Costs of purchasing these test strips are around US\$ 130 per year, using one test strip per day (gross domestic product per capita in the Republic of Moldova is US\$ 2230). Medications for the treatment of chronic complications of diabetes are covered by health insurance only for inpatients, which becomes a pull factor for hospitalizations. Out-of-pocket payments during hospitalization episodes are common and jeopardize access to care.

Regarding the planning of services, nation-wide programmes screen for high blood pressure. In general, family doctors (FDs) over-rely on hospital specialists in the diagnosis and management of diabetes and hypertension. In some instances, FDs do not consider themselves adequately equipped to manage diabetes and hypertension. FDs meet regulatory limitations in their scope of practice. For example, according to clinical protocol, diagnosis of diabetes needs to be confirmed by a hospital specialist, whereas the diagnosis of hypertension can be made by the FD; but FDs often request confirmation from medical specialists. Another constraint is requiring hospital specialists to order glycosylated haemoglobin tests despite the fact that FDs administer these tests. An electronic information system for patient records to improve information sharing between hospitals and PHC centres was expected in 2014, but is not yet in place.

In the Republic of Moldova, PHC is delivered by family medicine centres, health offices, FD offices, health centres and by autonomous PHC centres. While a gatekeeping system is in place, approximately 45% of people seek care

¹ Directory of Ambulatory Emergency Care for Adults, second edition. London: National Health Service Institute for Innovation and Improvement; 2010.

directly from medical specialists, bypassing the primary care physicians. Self-referral to emergency care centres substitutes PHC visits more often in urban than rural areas, where these services are less available. Long waiting times make PHC visits unpleasant. More tasks could be delegated to nurses, especially patient education at the primary care level. In general, PHC suffers from negative public perception. This has behavioural consequences as patients self-refer to specialists, and the likelihood of adhering to FDs' advice decreases. Improving the status and role of PHC by providing more resources to the PHC sector in the Republic of Moldova is imperative.

When all hospitalizations for all conditions are considered, the Republic of Moldova has a longer average hospital stay than the rest of Europe. Upon discharge from hospital, there is concern that FDs are not well equipped to deal with complicated cases. Especially in rural areas, FDs require training to manage complications of diabetes and hypertension.

Information for patients is not sufficiently available in the form of, for example, understandable leaflets. Clinical protocols contain a section on patient information, but this is not up to international standards and does not sufficiently address the limited health literacy of its public. The documents are not centrally published and distributed among patients. As a consequence, several PHC centres develop their own patient information leaflets at their own costs, which are very inefficient, whereas in other PHC centres this information is only available in

the form of industry-sponsored documentation. The lack of coordinated development and distribution of patient information affects adherence to treatment, medication and lifestyle behavioural changes that could reduce emergency visits and hospitalizations for diabetes and hypertension.

There are clear initiatives that can reduce unnecessary hospitalization of patients with diabetes and hypertension conditions. The scope of practice of FDs and nurses could be expanded; co-payments for specific pharmaceuticals should be reviewed; clinical protocols for diabetes and hypertension should be updated and made coherent across settings and levels of care, but the roles and responsibilities of FDs, specialists and nurses should also be made explicit and reflect a task distribution that is agreed upon by the involved parties; patient management and education should be strengthened and carried out by nurses; enforcement mechanisms should be applied to the everyday practice of health workers; performance incentives that link payment to health outcomes should be implemented; and innovative systems to help patients remember their pharmaceuticals uptake could be implemented to improve appropriate medicine utilization, via telephone or text message, as well as more traditional instruments such as the use of medicine boxes. An appropriate mix of medicines covered by the basic benefit package, also in ambulatory settings, and selected on value for money would be an important step forward in improving health and reducing hospitalizations.

1. Introduction

This study presents and discusses findings and policy recommendations about health conditions that could be effectively prevented, diagnosed and treated in primary health care (PHC) settings in the Republic of Moldova. Hospitalization rates of ambulatory care sensitive conditions (ACSCs) are a proxy for quality and for model of care centred on people. The study aligns and complements the country assessment conducted for strengthening health systems for better noncommunicable diseases (NCDs) outcomes from a health services delivery perspective (1).

This study focuses on two ACSCs hypertension and diabetes, as tracers to identify opportunities and challenges for strengthening PHC in the Republic of Moldova given the current provision of health services.

The assessment is part of the multicountry study on ACSCs in the WHO European Region. Other countries included in this initiative are Germany, Kazakhstan and Latvia. The purpose of the multicountry study is to contribute to strengthening PHC by identifying opportunities and challenges to effectively prevent, diagnose and treat ACSCs, and deriving contextualized and actionable policy recommendations for health service delivery transformation. A summary analytical framework for the study is presented in Annex 1.

Avoiding unnecessary hospitalizations is important in terms of quality of health services provided to the population but also in terms of efficiency of the overall

health system. In 2013, out of 509 105 hospitalizations in the Republic of Moldova, 30 299 were due to hypertension and diabetes (2–3). According to 11 medical experts from the Republic of Moldova interviewed for this study, at least 60% of hypertension hospitalization and 40% of diabetes hospitalization could have been avoided by strengthening interventions at primary care level.

Despite the important progress made in strengthening PHC, patients often self-refer to the hospital, and family doctors (FDs) often request guidance from specialists. In a context of low density of FDs in rural areas and limited scope of practice of doctors and nurses at primary level, the number of emergency visits and hospitalization is high. The actions for reversing this situation in the short and medium term from a health services delivery perspective are known and require tackling the root causes at health system level.

The study starts with the methodology used, followed by the description of the selected ACSCs in the Republic of Moldova. Next, it discusses potential improvements that could effectively prevent, diagnose and treat selected ACSCs in the PHC settings from a health service delivery perspective including identifying opportunities and barriers. The last section provides actionable policy recommendations to move towards effectively addressing the selected ACSCs in the PHC setting in the Republic of Moldova from a system (macro) level but also from the health care providers (meso) and health professional (micro) levels.

2. Methods

An overview of the methodology applied to this type of study is provided in Annex 1. Briefly, the main steps consisted of desk research, analysis of hospital admission data, a stakeholder consultation and the follow-up of key informant interviews. These steps are described further below.

2.1 Health services desk research

The analytical framework (see Annex 1) was used to describe the current health services situation in the Republic of Moldova using publicly available literature to identify potential opportunities that enable or challenges that impede ACSCs from being effectively prevented, diagnosed and treated in PHC. A structured search strategy to retrieve the most recent and additional information available in the public domain was applied. First, the WHO Country Office, Republic of Moldova and the WHO Regional Office for Europe provided relevant background documentation on the Moldovan health system, including official policy documents and relevant grey (unpublished) literature and/or sources regarding routine hospital admission or discharge data. Second, reports of the European Observatory on Health Systems and Policies (e.g. Health System in Transition report and relevant articles in Eurohealth) were gathered. Third, consultants from Ecorys searched literature index databases PubMed and Google scholar using search terms based on the different elements in the analytical framework. The articles used in this study are from the period 2011–2013. All searches were restricted to studies and reports published in English.

2.2 Selection of ACSCs: stakeholder consultation

According to the methodology summarized in Annex 1, hospital data were expected to guide the identification of ACSCs with the highest hospital admission rates; in the case of the Republic of Moldova, this was not possible since data were not made available *prior* to

the stakeholder consultation. A stakeholder consultation served the purpose of selecting relevant ACSCs in the country. Stakeholders included representatives of the Ministry of Health, the National Health Insurance Company (CNAM), primary care doctors and nurses from professional organizations representing health providers, and representatives of the National Centre of Health Management (CNMS), the Centre for Health Policies and Studies, and the Swiss Agency for Development and Cooperation (see Annex 2).

The consultation, organized as a one-day workshop held in January 2014 at the premises of the Ministry of Health, was structured in three sessions.

- First, a limited number of ACSCs relevant for the Republic of Moldova were selected based on an initial voting system, followed by consensus among different stakeholders. ACSCs selected by stakeholders as top ranking were cross-checked with hospital admission data after the stakeholder consultation, when hospital admission data became available.
- Second, challenges and opportunities for strengthening PHC related to selected ACSCs were identified.
- Third was the identification and discussion of actionable policy recommendations for the most important challenges and barriers per selected ACSC.

In each session, participants were assigned to two groups and asked to rank the suggestions made by the other group, in order to identify those elements deemed most important by both groups.

2.3 Preliminary hospital admission data analysis

Hospital data related to ACSCs were obtained from CNMS. The data were used to select the ACSCs with the highest hospitalization rates in the Republic of Moldova, both in absolute and relative terms. When available data allowed, regional variation for hospitalization was calculated to indicate regional hospitalization rates for a given ACSC.

2.4 Follow-up country visit: key informant interviews

A follow-up country visit took place in March 2014 to gain further insight about health service delivery for the two selected ACSCs (hypertension and diabetes) and verify the feasibility of the policy recommendations. To this purpose, in-depth interviews were conducted with four FDs (two in Chisinau, two outside Chisinau), four specialists (two endocrinologists, two cardiologists, two inside and two outside Chisinau), three Ministry of Health officials, three managers of hospital/PHC centres and two vice-directors of data-related agencies. The interview protocol is provided in Annex 3.

Findings based on the above-mentioned steps are provided in the next section including the main opportunities and barriers identified.

2.5 Limitations of this study

2.5.1 Regional variation

Regional variation analysis shows how the proportion of hospitalized patients differs per region, but understanding

the causes of this regional variation would require in-depth and ad-hoc analysis of hospital admissions. It would also be necessary to investigate how regions differ in the way they register patients in the databases, as differences in hospitalization rates might actually represent differences in registration practices.

2.5.2 Estimate potential savings

This study used data provided by CNMS on incidence, prevalence and hospitalization rates. An additional dataset from CNAM was analysed to assess if potential savings could be estimated, which turned out to be unfeasible due to the fact that the CNMS and CNAM data differed widely in terms of number of patients registered. The CNMS data were considered the most up-to-date and is used as reference data by the Ministry of Health and, therefore, were used for this study.

3. Building the case for focusing on ACSCs

Out of a total of 509 105 hospital discharges in the Republic of Moldova in 2013, hypertension and diabetes are the top ranking ACSCs, followed by pneumonia (2). Table 1 indicates the discharge rates for ACSCs included in the CNMS database. These do not include all ACSCs, as the CNMS database does not classify diseases according to the 10th Revision of the International Statistical Classification of Diseases and Related Health Problems and, hence, does not correspond to the full list of ACSCs described in the methodology report (2).

Table 1. Hospitalization rates for 7 selected most occurring ACSCs, adult population (>18 years), 2013

ACSC	Hospital discharges (No.)	Percentage of total ^a
Hypertension (without ischemia)	18 389	3.6
Diabetes mellitus	11 910	2.3
Pneumonia	10 571	2.1
Acute respiratory disease	5 822	1.1
Gastric ulcer	2 823	0.6
Asthma	1 752	0.3
Anaemia	908	0.2

^a The total number of discharges is 509 105.
Source: CNMS, 2013 (2).

3.1 Selection of a limited number of ACSCs relevant for the Republic of Moldova

During the stakeholder consultation (see subsection 2.2), participants were assigned to one of two groups. Each group was asked to select 3–5 ACSCs that were identified and pre-selected as priorities using input from desk research provided by Ecorys. Both groups were asked to mention explicitly the criteria utilized for ranking the

ACSCs. Table 2 shows the selected top ACSCs of each group, and the criteria are presented in Table 3.

Table 2. Proposed ACSCs after session 1

Group 1	Group 2
Diabetes with complications	Hypertension
Hypertension	Diabetes
Bronchopneumonia	Seasonal breathing diseases
Renal infection	
Pancreatitis	

Table 3. Selection criteria used

Group 1	Group 2
High referral rates	High prevalence
Number of hospitalizations	Cost-efficiency of the intervention
Increased sick leave	High prevalence of complications
Increased disability	Increased sick leave
Large burden on family	Increased disability
	National priority of Government
	Availability of pay-for-performance indicators

Thereafter, the two groups were asked to comment on the ACSCs and selection criteria of the other group. This comment round served to seek consensus about the top two ACSCs and the selection criteria. The ranking was performed by voting. Groups were also able to cast a negative vote when they opposed the selection of an ACSC or a selection criterion. The results of the ranking are presented in Table 4.

Table 4. Priority ACSCs and selection criteria

Priority	Group 1	Group 2
ACSC		
1	Diabetes with complications	Hypertension
2	Hypertension	Diabetes
Selection criteria		
1	High referral rates	High prevalence
2	Number of hospitalizations	Cost-efficiency of the intervention
3	Increased disability	
4	Large burden on family	

Both groups considered (the complications following from diabetes and hypertension as the most important ACSCs for the Republic of Moldova. Seasonal breathing diseases were considered important based on prevalence but, due to low hospitalization, were not regarded as a key ACSC. According to the stakeholders, ACSCs can be selected as a priority when they have: high referral rates from primary to secondary care, a high number of hospitalizations, high prevalence, increased disability, placed a large burden on the family and when the treatment in primary care is more cost-efficient compared to secondary care. The data available confirmed the high number of hospitalizations for both diabetes and hypertension.

3.2 Prevalence, incidence and regional variation for hypertension and diabetes

This subsection describes the data available for hypertension and diabetes. Figures are complemented with results of the follow-up country visit (see subsection 2.4) and, when this is the case, interviews are indicated as the data source.

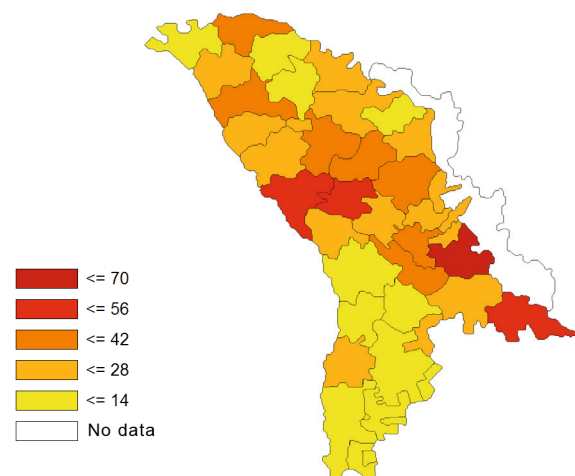
In 2013, there were 79 656 reported cases of diabetes (3.7%) in the adult population of the Republic of Moldova (defined as being at least 18 years of age) within the total

adult population of 2 163 894 inhabitants (3). Of those with diabetes, 13 905 received insulin treatment (17.5% of all cases) as per the CNMS data set (3). Yearly, there are about 10 000 new cases of diabetes. During the interviews held during the follow-up country visit, medical doctors suggested that people with diabetes go to the hospital when they face major complications; in all other cases, they are treated at PHC centres.

There are 306 693 (14.2%) registered cases of hypertension in the Republic of Moldova in the adult population (defined as being at least 18 years of age) and 36 573 new cases registered in 2013 as per CNMS data (3). Similar to diabetes patients, people with hypertension go to the hospital when they face a major emergency. A large part of the hypertension population is unidentified since hypertension is often without symptoms in its early stage. According to key informants interviewed during the follow-up country visit, approximately 30% of the population suffers from hypertension. Neighbouring country Romania, as a reference case, had a hypertension prevalence of 40.41% in 2012 (4). Since only 14.2% of the population in the Republic of Moldova is registered with hypertension, it is estimated that only half of the cases are diagnosed.

Obesity is an important risk factor for diabetes and hypertension. Fig. 1 shows the wide regional variation in the number of new cases of obesity per 10 000 inhabitants in the Republic of Moldova.

Fig. 1. Obesity incidence per 10 000 population in the Republic of Moldova, 2012

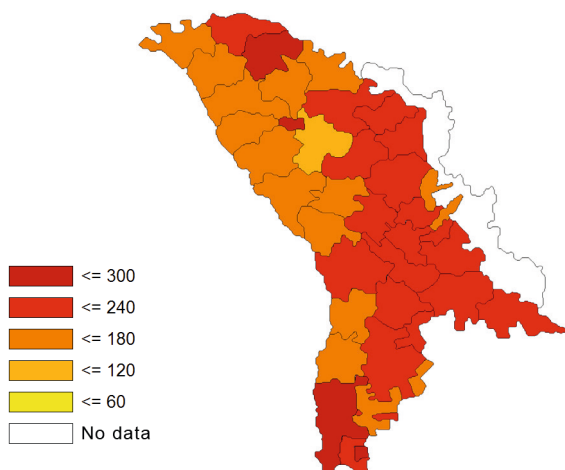


Source: CNMS Electronic System of Data Presentation, version 2, 2013 (5).

3.2.1 Diabetes

Fig. 2 shows regional variation in the number of diabetes cases per 10 000 inhabitants in 2012. In Donduseni district, 293.3 out of 10 000 inhabitants had diabetes.

Fig. 2. Diabetes prevalence per 10 000 population in the Republic of Moldova, 2012

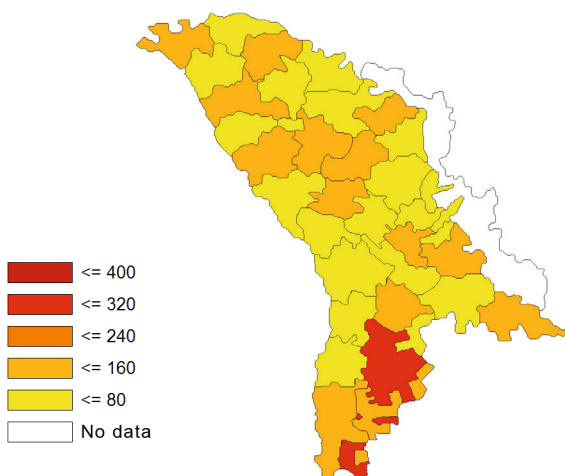


Source: CNMS Electronic System of Data Presentation, version 2, 2013 (5).

3.2.2 Hypertension

In 2012, the Autonomous Territorial Unit (ATU) of Gagauzia had the highest number of hypertension cases at 310.77 per 10 000 inhabitants. Again, regional variation is observed (Fig. 3).

Fig. 3. Hypertension prevalence per 10 000 population in the Republic of Moldova, 2012



Source: CNMS Electronic System of Data Presentation, version 2, 2013 (5).

Differences in regional variation may be due to better registration by FDs or can indicate differences in case mix. It is not possible to conclude from this data that one region is outperforming another. However, it does show that regions have large differences, *either* due to FDs' efforts or regional variation in case mix.

3.3 Regional variation in discharge data

In general, a strong linear relationship ($R^2 = 0.83$, $p < 0.00$) exists between regional prevalence and regional rate of hospitalization in the Republic of Moldova. Hence, regions with a higher absolute number of patients have a higher absolute number of hospitalizations. However, as regions are not equal in size,¹ the most important question is whether the proportion of hospitalized patients differs per region. In the subsection below, hospital discharge data of the different districts is divided by the prevalence data in order to get an indication of the percentage hospitalization per district.

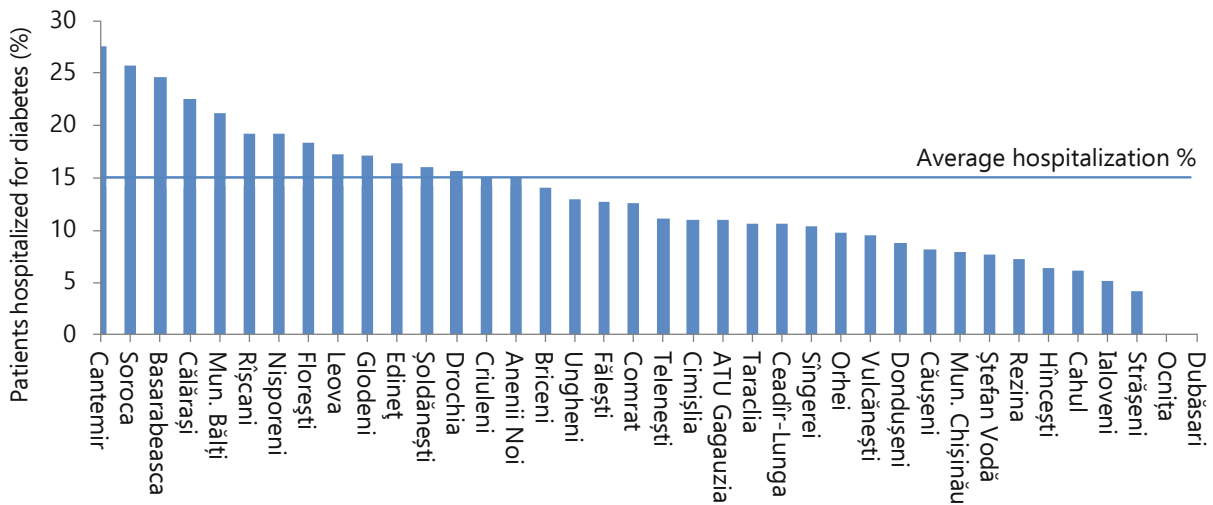
3.3.1 Diabetes

Out of 79 995² people with diabetes, 14 197 (17.7% of the total diagnosed patient group) take insulin, and 15% were hospitalized in 2013. Regional variations are observed (Fig. 4). In the rural Cantemir district, 28% of diabetes patients were hospitalized at some point in time in 2013; the figure is just 8% in Chisinau. Note that these figures concern hospitalization, not doctor consultations (2–3).

¹ A region with 1000 inhabitants and 100 hospitalizations has a higher absolute number of hospitalizations than a region with 100 inhabitants and 10 hospitalizations. However, in both instances, the same proportion of the population is hospitalized (10%).

² This figure includes minors under the age of 18 years.

Fig. 4. Regional variation in patients hospitalized for diabetes in the Republic of Moldova, 2013



Sources: Statistical Yearbook of the Health System in the Republic of Moldova, 2013 (6); CNMS data (2-3).

3.3.2 Hypertension

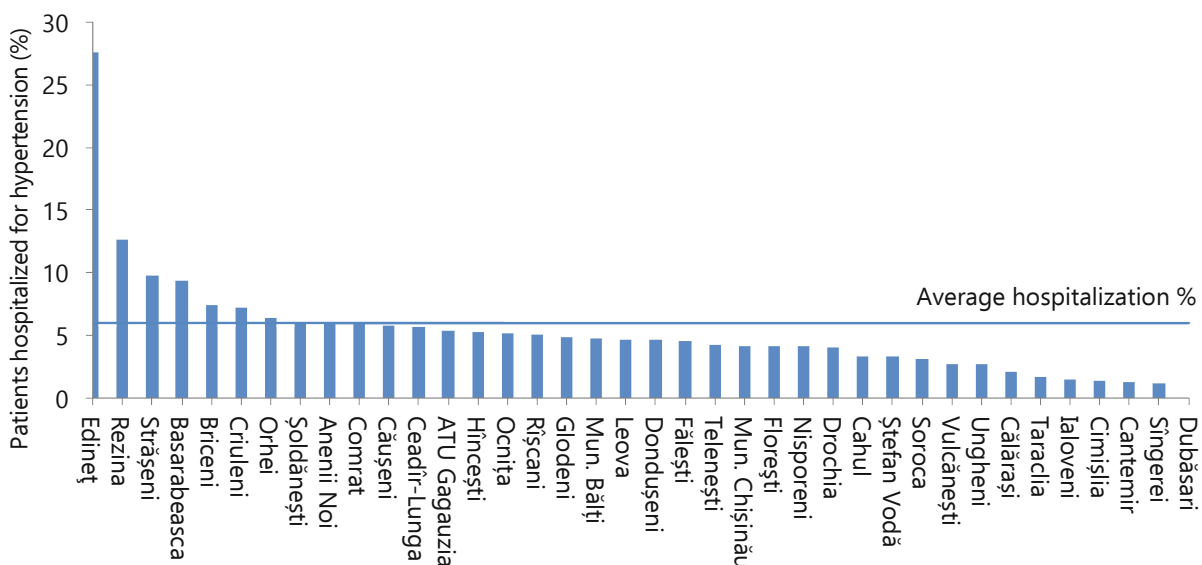
In the Republic of Moldova in 2013, out of 306 910³ patients with hypertension, 18 389 patients were hospitalized (6% of total diagnosed patient group). Hypertension has the largest absolute number of ACSC-related hospitalizations, but the proportion of hospitalizations is relatively low. Similar to diabetes, regional variations are

observed, with most hospitalizations occurring in the rural Edineț district (28%) compared to urban Chisinau (4%). Regional variation in hospitalization is not uncommon and can be an artefact of registration practices, as well as a true reflection of referral behaviour or quality of care. Further understanding of the true causes for regional variation requires patient registry research to compare patient types.

In some districts, a larger proportion of patients were hospitalized (Fig. 5). Since the presented value is a

³ This figure includes minors under the age of 18 years.

Fig. 5. Regional variation in patients hospitalized for hypertension in the Republic of Moldova, 2013



Sources: Statistical Yearbook of the Health System in the Republic of Moldova, 2013 (6); CNMS data (2-3).

ratio of discharge to prevalence, this could be due to lower prevalence values (due to poorer registration) or due to a higher rate of complications resulting from hypertension and/or diabetes. Alternatively, patients may be hospitalized in regions other than the ones in which they are registered for prevalence calculations, inflating the ratio of some districts. From these data, it is not possible to exclude any of these explanations.

It is observed that districts with a high rate of hospitalization for hypertension do not necessarily have a high one for diabetes. Fig. 6 shows no (statistical) correlation between hypertension and diabetes discharge rates in the Republic of Moldova. This can be explained by the fact that patients with diabetes and hypertension are most likely registered as diabetes patients with complications rather than as both hypertension and diabetes patients. Only the Edinet district consistently scores high on both diabetes and hypertension hospitalizations.

3.4 Estimated avoidable admissions for diabetes and hypertension

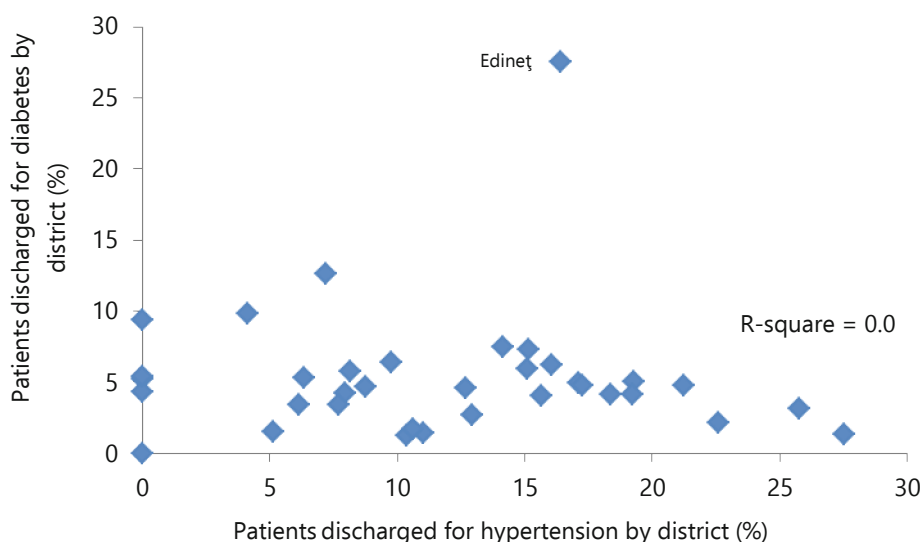
Concerning diet and healthy lifestyle, FDs who participated in the stakeholder consultation indicated that limited food is available that is both affordable and suits

diabetics. No leaflets are available that list meals suitable for diabetes patients and include price information and ingredients. Endocrinologists interviewed during the follow-up country visit indicated that the main reason for hospitalization of diabetes patients (i.e. complications resulting from diabetes) are caused by a poor diet rather than by low adherence to medication.

The 11 medical doctors (both FDs and specialists) interviewed during the follow-up country visit were asked to estimate which proportion of hospitalizations for hypertension and diabetes could be avoided. Their estimations were combined and averaged.

In 2013, the Republic of Moldova had 2 163 894 adult inhabitants, of which 11 910 (0.6%) adults were hospitalized for diabetes and 18 389 (0.8%) adults were hospitalized for hypertension (2). On average, it was estimated that approximately 40% of complications in diabetes type 2 patients could have been avoided by following a better diet. Similarly, it was estimated that 60–70% of hypertension emergency cases could have been avoided with better medication adherence and lifestyle decisions. These estimates suggest that about 12 000 hypertension hospitalizations and about 5 000 diabetes hospitalizations could be avoided annually. Hospital specialists interviewed during the follow-up country visit

Fig. 6. Correlation between regions in hospitalization of hypertension and diabetes in the Republic of Moldova, 2013



Sources: Statistical Yearbook of the Health System in the Republic of Moldova, 2013 (6); CNMS data (2–3).

estimated that about one quarter of hypertension patients that do not adhere to their medication properly could benefit from a primary care follow-up.

The estimations by the medical doctors interviewed during the follow-up country visit have not been subjected to a Delphi method consensus, and have not been validated with an analysis of patient records. As a form of convergent validity, the provided estimates are compared to estimates from other relevant studies on ACSCs.

In 2012, Germany had 81.9 million inhabitants, of which 196 000 (0.2%) were hospitalized for diabetes and 279 000 (0.3%) were hospitalized for hypertension. The research group coordinated by Sundemacher et al. (7) applied the Delphi method in a group of 40 physicians, from urban and rural settings, covering 15 medical disciplines consisting of both inpatient and outpatient physicians. In three rounds (35 physicians completed all three rounds), 70% consensus was reached on the percentage of cases for which hospitalization could have been avoided. According to the Delphi panel, 83% of hospitalized hypertension cases and 81% of hospitalized diabetes cases could be avoided.

In the United Kingdom, the National Health Service (8) put together a catalogue of ambulatory emergency care in 2007 that was updated in 2010. The catalogue contains 49 conditions that could be managed in an ambulatory setting. The list includes “new onset insulin dependent diabetes” and “hypoglycaemia” (low blood glucose level). For both conditions, the National Health Service states that 60–90% of all cases admitted to the hospital could have been avoided.

In light of these reference figures, the estimates provided for hypertension by the 11 medical doctors interviewed for this study seems to have convergent validity. The estimate of avoidability for diabetes, however, seems to be on the conservative side. This may well reflect the limited capability of PHC in the Republic of Moldova to successfully manage diabetes.

3.5 ACSCs in brief

In the Republic of Moldova, among the 7 ACSCs studied that were derived from the international literature, hypertension and diabetes account for the highest number of hospitalizations. This is also confirmed by health professionals and policy-makers.

In 2013, 18 389 hypertension patients, representing 6% of all hypertension diagnosed patients, were hospitalized. About 12 000 of these hospitalizations could have been avoided. In the same year, 11 910 diabetes patients were hospitalized, representing 15% of all diabetes patients. About 5 000 of those hospitalizations could have been avoided.

Further analysis on the data provided by CNAM indicates large regional variations. Furthermore, it was estimated that only about 50% of patients with diabetes are registered in the CNMS database.

In the following section, health service delivery challenges and opportunities that explain hospitalization of ACSCs in the Republic of Moldova, particularly diabetes and hypertension, are analysed.

4. A health services delivery perspective to ACSCs

Since the last decade, several steps have been taken to improve the quality of health service delivery in the Republic of Moldova (9). Strengthening PHC is permanently high on the agenda of multilateral discussions between the Ministry of Health, medical associations and PHC professionals. The aim is to achieve coordinated and integrated care by providing high-quality health services that meet the needs of the population.

The previous section shows that, despite being ACSCs, both diabetes and hypertension face high hospitalization rates in the Republic of Moldova. This section analyses how planning services, organizing providers, improving performance and managing services delivery affect the rate of hospitalization for ACSCs and, in particular, for hypertension and diabetes. The section describes opportunities and challenges to overcome in the provision of health services to tackle high hospitalization rates and especially of hypertension and diabetes. Section 5 provides policy recommendations to avoid ACSC hospitalization in the Republic of Moldova.

4.1 Governance and management of health services

4.1.1 Health insurance and coverage of services

Since 2010, the Republic of Moldova applies a mandatory health insurance (MHI). The total MHI contribution includes a combination of pay-roll contributions from the working population and budget contributions from the Government to insure the unemployed. In the rural area of the Orhei district, medical doctors interviewed during the follow-up country visit indicated that about 30% of patients are not insured. During the follow-up country visit, a key informant from CNAM estimated that, in 2013, about 17% of the residents of the Republic of Moldova were not insured. This group mainly concerns

self-employed persons (mostly in the agricultural sector) who, according to the legislation, are expected to enrol in health insurance themselves. Although 83% of the population in the Republic of Moldova is covered by health insurance (in 2013, compared to 80.3% in 2011 (10)), unequal access to health care still exists. This can be explained by the limited reimbursement of pharmaceutical care, resulting in high out-of-pocket (OOP) payments. Primary and emergency health care are universally covered in the Republic of Moldova. This means that every citizen has free access to these services, irrespective of health insurance status (10–11).

The current primary care services included in the basic benefit package are: consultation of FD, follow-up maternal and child care, immunization, chronic disease management, nursing care, home care, services targeted at acute communicable diseases, screening, health promotion and disease prevention (12). However, the content of the basic benefit package is subject to change annually as it is based on the availability of resources to cover the services (13).

4.1.1.1 Diabetes

During the stakeholder consultation, it was revealed that insulin is provided free of charge. However, only a limited number of insulin dependent patients receive insulin analogs in Chisinau (7%). Medical doctors interviewed during the follow-up country visit call for increased availability of this type of insulin.

Medication to treat the complications following diabetes is only reimbursed for acute emergency care cases, not for chronic conditions such as nephropathy and retinopathy. According to the participants in the stakeholder consultation, this is due to insufficient funds available in the governmental budget for medication.

Crucial to controlling the blood-sugar levels are glucometers. A total of 13 000 glucometers have been provided free of charge in the Republic of Moldova during 2012–2013. However, this number is lower than the number of insulin dependent patients (14 197) (see subsection 3.3). A glucometer test is provided free of charge at a PHC centre. According to the key informants

interviewed during the follow-up country visit, test strips used in a glucometer are not covered by health insurance. The tests cost approximately 5–6 lei or 1825–2190 lei per person per year when using one test a day. Taking the lower estimate, the costs are about US\$ 130 per year, in a country with a gross domestic product per capita of about US\$ 2230 according to the World Bank statistics (14). When assuming that a person with diabetes uses a test strip with each meal, (three) per day, the costs are around US\$ 390 per year. Without health insurance for these test strips, it is unlikely that the most at-risk group can adequately balance their diet and insulin intake, which obviously is causing complications.

4.1.1.2 Hypertension

Hypertension is the leading cause of hospitalizations among ACSCs in the Republic of Moldova. One pull factor for hospitalization is that, for the period of hospitalization, medication is free to patients. The stakeholder consultation revealed that almost all hypertension medication is available to patients in the Republic of Moldova except statins, for which the inclusion on the positive list was still under discussion in 2014. When included on the positive list, statins will be made available to a selected group of patients, for example, those with a genetic disposition to hypertension.

Cardiologists interviewed during the follow-up country visit indicate that, on average, 50% of the cost of each hypertension drug is reimbursed by health insurance. Key informants interviewed during the follow-up country visit estimated that about 25–30% of patients receive a prescription for hypertension medication that is too costly for them to afford.

4.1.2 Access and OOP payments

Limited access to care can be mainly explained by high OOP expenses. Also, it appears that those in a low-income group with health insurance have difficulties in access to care (15).

Health services in the Republic of Moldova are provided free of charge, but certain pharmaceuticals, such as for

hypertension, are subject to co-payments. However, during the stakeholder consultation, it was indicated that 40% of insured patients make OOP payments. In 2012, a survey among 250 PHC practices including 2102 patients showed that 30% of respondents postponed or cancelled a visit to the FD due to the high level of co-payments for medicines. In addition, one out of five respondents mentioned that they had to pay OOP for visiting a FD, and three out of 10 respondents made an OOP payment for visiting a specialist after referral by a FD (16).

The largest part of OOP payments are for inpatient services (70% of the insured and 90% of the uninsured) (17). The Health System in Transition report (10) mentions a survey carried out in 2011 to investigate the percentage of patients being hospitalized and having paid OOP to health personnel. The average OOP amount appeared to be around US\$ 100.

In 2011, the Ministry of Health proposed to officially introduce co-payments for primary and ambulatory care by including it as a clause in the draft Law on MHI Funds. The aim is to increase the level of coverage under the MHI. The proposal is still pending for approval by the Parliament.

In order to ensure sustainability of PHC, it is important to regularly assess PHC utilization.

4.1.3 Availability of after-hours clinics

During weekdays, the regular opening hours of FD practices are between 08:00 and 17:00. During the weekend, FDs work half days on Saturdays. The provision of out-of-hours care differs per region. In urban areas, out-of-hours primary care is often provided by emergency care services. In rural areas, out-of-hours primary care is mainly delivered by FDs or family medicine (FM) nurses who are available 24/7 (16). In a recent WHO study, half of the respondents reported the possibility of visiting a FD after regular opening hours. Nevertheless, visiting a FD appeared to be more difficult during the evenings (10). These results show that there seems to be room for improvement in the delivery of out-of-hours care. Discussion of alternative methods for

the provision of out-of-hours care through dialogue with different stakeholders is mentioned in the literature to be of help (16).

4.1.4 Availability and distribution of health workforce

The share of FDs in relation to the total number of physicians is 17%. The average number of inhabitants in the catchment area per FD is 1900, higher than the national standard of 1500 established by the Republic of Moldova (12). In rural areas, this figure can be as high as 6900 inhabitants (in Cimislia) per FD (15). This is due to the shortage and distribution of FDs (17).

The health workforce has declined from 16 000 physicians in 1990 to 10 000 in 2010, a reduction of about 40%. The per capita number of FDs in the Republic of Moldova (5.2 per 100 000 population) is far below the 8.2 average in the European Union (10). Together with the current ageing phenomenon, which results in an ageing workforce (average age of 49 years for FDs), it poses a challenge to the future availability of FDs. However, the inflow of FDs is expected to increase due to the rise in medical school graduates specializing in FM (1). In addition, some regions do not have sufficient numbers of physiotherapists and FM nurses (11). The Republic of Moldova has 15 FM nurses per 100 000 population (2011), but this number has been declining since 2002 (10).

Stakeholders consulted for this study indicated that there is a major shortage of FDs and nurses in PHC centres. In addition, there are concrete difficulties in recruiting and maintaining skilled staff, particularly in rural areas. Rural areas are not seen as attractive working environments by FDs. FDs prefer to live close to the city due to its better educational opportunities, infrastructure and quality of life. To fulfil the minimum requirements for PHC availability, health offices staffed with FM nurses serve as the major PHC facilities (11). It was suggested that improving salaries and providing accommodation for FDs in rural areas may attract and maintain health professionals. Overall, relatively low salaries and lack of incentives are the most prominent factors mentioned to affect the health sector and the quality of health services.

An assessment of human resources in the health sector in the Republic of Moldova has been undertaken by the World Bank during past years and additional evidence is currently collected by WHO (1). The salary increase required by medical professionals to consider relocating to more remote areas of the Republic of Moldova has not yet been assessed.

4.1.5 Development of information management and communication technology

Although computers are increasingly used in daily health care practice, patient records are often not digitalized in the Republic of Moldova. Moreover, one out of three FDs in rural areas does not make use of a computer (12). An adequate provision of chronic care requires the support of patient registers to inform the multiple providers involved in the care process. However, the current information systems do not cover the complete health pathways. Each task is supported by different software products, which obstruct the integration of health services and decision-making based on clinical, statistical, as well as financial information (1). Additionally, the information systems are not maintained in a proper manner. The records are not regularly updated, and exchange of information between FDs and medical specialists after patients' referral is scarce (12).

4.1.6 Public-private partnerships in PHC delivery

Increasing attention is paid to the development of public-private partnerships (PPPs) in health service delivery in the Republic of Moldova. In 2008, the Law on PPP was implemented to allow for and promote private investments in the public sector. Correspondingly, the Ministry of Health has adapted the health legislation to enable the introduction of PPPs in the health care sector. In 2010, a decision was made by the Government on the introduction of PPPs in some health care fields. Supported by the International Finance Corporation, two pilot projects on PPPs have been initiated. These pilots are focusing on diagnostic imaging services in the Republican Clinical Hospital and the radiotherapy services in the Institute of Oncology (10).

However, as PPPs in health service delivery have only recently been initiated, the Republic of Moldova's experience and knowledge on PPPs is still limited. In order to succeed, PPPs require a carefully defined strategy for service delivery, and the impact of PPPs on working processes should be fully understood (16). PPP initiatives related to PHC are not known.

4.2 Model of care

4.2.1 Integrated care management

Primary and specialized outpatient care services, such as medicine centres and territorial medical associations, are effectively interacting as these services are mostly delivered within the same setting. This facilitates access of different doctors to patient records and laboratory results. In contrast, the level of integration between PHC centres and secondary/tertiary hospitals is often insufficient, leading to duplication of investigations and no or limited exchange of patient information.

From the stakeholder consultation, it became clear that, after hospital discharge, it is the patient's own responsibility to provide information about the received treatment and recommendations for follow-up to the FD. Subsequently, the FD is responsible for the management and monitoring of follow-up in the outpatient setting. However, high readmission rates exist due to the low quality of outpatient services in the Republic of Moldova (10).

4.2.2 Discharge planning and monitoring of high-risk patients

Since 2013, discharged patients are registered in a countrywide information system. Hospital discharge data provides a summary of patients' conditions to inform the providers involved in the follow-up. However, the countrywide information system refers to the discharge episode and therefore does not include information related to visits and follow up at ambulatory care. A bilateral exchange of summaries is, therefore, required. These are often delayed, leading to time consuming efforts by

health providers to collect all the relevant information about the patient's health status.

High-risk patients, such as patients with hypertension, are monitored on a regular basis in nearly all PHC practices in the Republic of Moldova. Also, secondary prevention in terms of screening certain risk groups is one of the core tasks of the FD (12). A performance-based indicator requires PHC centres to screen all adults older than 40 years of age on high blood pressure to identify at-risk patients in an early stage. During the follow-up country visit, key informants suggested that the attendance to this screening is much lower in rural districts.

4.2.3 Dependency on specialist care

The diagnosis of diabetes and asthma carried out by a FD needs to be reconfirmed by a hospital specialist according to the national clinical protocols. Conversely, hypertension can be diagnosed by FDs. In view of the stakeholders consulted for this study, despite the fact that FDs are familiar with the diagnosis and management of hypertension, it is common that FDs underestimate their own ability and seek specialists' advice. Furthermore, despite the fact that FDs are capable to administrate tests for glycosylated haemoglobin to diagnose diabetes and to manage glycaemic control, the prescription of these tests is restricted to hospital specialists. These kinds of measures strengthen the over-reliance on hospital specialists (1).

4.2.4 Update and access to clinical protocols

In the past years, the Republic of Moldova has mainly focused on the development of protocols for primary care service delivery, which have recently been developed for several conditions (9). The development of these protocols has been supported by donors such as the United States Agency for International Development, the European Union and the World Bank. Out of 202 clinical protocols recently updated, 113 concern FDs. There is no evidence to what extent these are applied in everyday practice (11).

All clinical protocols are available online, and patient information is in Annex 3 (p. 54) of the clinical protocol for hypertension (18) and in Annex 7 (p. 77) of the clinical protocol for diabetes (19). According to the Ministry of Health, one patient was involved in the development of the patient information in each clinical protocol. However, there are no resources to print out and distribute patient information leaflets. Few PHC centres decided to print and distribute these documents at their own costs.

4.3 Organization of providers

4.3.1 Organization of PHC

PHC in the Republic of Moldova is delivered by FM centres and autonomous PHC centres located in district towns. Other PHC delivering institutes, such as health offices, FDs' offices and health centres, may operate as subdivisions of FM centres, although health centres can also be organized, also as private, independently of the FM centres (11,17). Each FM centre covers a population of 40 000–80 000 within the district, including population from related rural areas. A distinction can be made in the type of PHC services delivered by these organizations. In accordance with the compulsory health insurance, preventive services, treatment and emergency care services are provided to patients who are on the list of the FD. PHC centres mainly provide: (1) primary care services such as medical emergencies; (2) prevention services including immunizations; health promotion and health education; management of chronic diseases; routine consultations for children, adolescents, the elderly, socially vulnerable people and for pregnant and postpartum women; family planning services; and minor surgery; and (3) medical–social services such as home care and palliative care. Each FD has to be supported by two nurses in urban areas and by 2–3 nurses in rural areas (10). Additional health services, such as diagnostics, rehabilitation and pharmaceutical care, are only delivered occasionally by a PHC centre as these services require additional expertise and equipment, which is often not available (17).

4.3.2 Gatekeeping

Health care in the Republic of Moldova operates with a gatekeeping scheme through the FD. Access to specialist care is only reimbursed when a patient has been referred by a FD. If patients decide to visit a specialist directly, i.e., without the FD's referral, they are required to pay for the treatment with the exception of a number of conditions, such as tuberculosis and sexually transmitted infections. For these conditions, patients can go directly to specialized care (11).

OOP payments related to self-referral are most often seen among uninsured and the high socioeconomic status population (17). In 2010, a study on self-referral carried out in the Republic of Moldova indicated that almost 45% of patients directly seek specialized care (1). This is mostly due to a strong preference of patients for receiving specialized care (15). Moreover, urban people tend to call the ambulance (emergency care) more often than the rural population, leading to a higher utilization rate of secondary and tertiary health services (11).

4.3.2.1 Diabetes

For diabetes, FDs confirm the diagnosis with an endocrinologist in accordance with the clinical protocols. The endocrinologist determines the medication. FDs and specialists interviewed for this study do not consider this to be problematic.

4.3.2.2 Hypertension

For hypertension, FDs can perform the diagnosis independent of a specialist. However, in the district of Orhei (and most likely in many other districts as well according to interviewees), it is usual practice that FDs seek approval for their diagnosis with a cardiologist by referring patients even when this is not required by the clinical protocol.

4.3.3 Scope of practice

Regional differences exist in the level of multidisciplinary in PHC. Multidisciplinary refers

to a combination of staff of various disciplines, such as FDs, nurses, midwives, feldshers (medical attendants), dentists, physiotherapists, social workers, psychiatrists, speech therapists, dieticians and pharmacists (12). However, generally only urban areas deliver PHC with a multidisciplinary team of providers that discuss cases on a regular basis. The exact composition of the urban PHC teams is unknown. In contrast, rural practices often consist of one FD and a nurse (12). However, one PHC centre in the Orhei district, consulted during the follow-up country visits for this study, provided several disciplines, including a gynaecologist, a physiotherapist, as well as a dentist practice.

According to the national standard, FDs should be supported by 2–3 mid-level health care providers, such as nurses (1, 11–12). In practice, FDs do not make use of this support. For example, education for patients with diabetes and hypertension is mainly provided by specialists rather than by nurses.

Despite the fact that the majority of the PHC facilities in the Republic of Moldova has introduced a nurse check-in room for triage, the majority of patients is still also visited by FDs.

Stakeholders consulted for this study mentioned that nurses in PHC centres – despite training – are not equipped to individually manage patients with hypertension. Despite the fact that patient education is the responsibility of FDs, many narrow specialists provide information to patients.

Concerning diabetes, stakeholders mentioned a shortage of PHC staff specialized in treating the *complications* from diabetes. Stakeholders called for improved coordination between endocrinologists, eye doctors and FDs to address the complications from diabetes. Similarly to the remarks made for hypertension, case management of diabetic patients should be delegated to nurses, and schooling (for patients) should be improved and increasingly implemented. For a previous WHO study, interviews with 25 PHC nurses were conducted in both rural and urban areas of the Republic of Moldova. All interviewees indicated that there were patient schools in PHC centres

for special patient groups, such as pregnant women. The provision of these schools is currently included as a pay-for-performance indicator for PHC. However, the interviewees were not aware of any relevant schooling programmes for diabetes and hypertension patients such as, for example, activities for people with overweight or who are obese (12).

4.3.4 Using technology to coordinate

Fragmentation exists in health care information systems used in PHC and hospital care (i.e., each health care organization is supported by its own type of system). Since 2011, the Government is actively involved in the development of e-health services and registries, such as online appointment systems, which is carried out under the project Governance e-Transformation. Apart from the development of e-health, the Government's main priority is the introduction of an integrated information system for both hospitals and PHC (10–11). In 2014, the integrated information system was introduced as a pilot in about 10 PHC institutions with plans to extend it to the rest of the Republic of Moldova that same year. The plan is to have full implementation of the integrated information system in PHC and implementation of the information system in five hospitals.

An evaluation carried out in 2012 shows that at least 80% of FDs frequently consult one of his/her specialized colleagues (12). Although standard referral forms include biographical patient data, they do not provide information on clinical data. In addition, the lack of electronic prescribing still forces health care providers to use handwritten referral letters (1).

4.4 Performance improvement

4.4.1 Services utilization

In the Republic of Moldova, the age group of 20–49 years does not frequently visit a PHC centre; the age group that has the largest share of PHC uses concern people aged 40–65 years (1).

4.4.2 Waiting times

According to the Health System in Transition report, the waiting times throughout the health system are short (i.e., six months) (10).

An appointment system is only in place within the capital city, Chisinau. In other parts of the country, patients are seen by a FD on a first-come first-served basis. Waiting times appear to be a critical element in the PHC delivery. The WHO Primary Care Evaluation Tool report stated that on average 65% of patients (63% in rural areas, 68% in urban areas, n=23 102) indicated that they could visit the FD on the day of the urgent request (12). In addition, 32% (n=617) of patients surveyed indicated that they needed to wait a long time in the waiting room to see the FD. Other inconvenient factors concern unpleasant waiting areas and the limited access to PHC facilities for disabled people (accessibility of buildings) (16). Thus, while the majority of patients can get PHC services on the day they urgently need it, still one third of patients cannot get access. This impacts the quality of the FD practice and increases the likelihood of visiting an emergency centre.

4.4.3 Length of stay in hospitals

The length of hospital stay during the last 15 years has been reduced and remains constant since the introduction of the MHI (10). However, the length of hospital stay still exceeds the European average length of stay. During the follow-up country visit, key informants interviewed indicated that there are no alternatives to hospital stay, such as rehabilitation centres, to overcome this issue. For example, complications related to hypertension can be severe in nature and are often due to several risk factors. Cardiologists of the Orhei district hospital, interviewed during the follow-up country visit, mentioned that, in general, no adequate rehabilitation care is provided after hospitalizations and, consequently, hospitals allocate part of their capacity to perform rehabilitation. Almost 100% of FDs interviewed for another study indicated that they provide rehabilitative care (12). However, cardiologists and endocrinologists from Orhei district, interviewed during the follow-up country visit, considered that PHC facilities in the Republic of Moldova were not sufficiently

capable of dealing with patients *after* hospitalization, especially with regard to the prescription of appropriate medication.

4.4.4 Pay for performance

PHC is financed through an age-adjusted capitation scheme that distinguishes payments based on three age groups: children under five, children and adults aged 5–49 years and adults aged above 50 (1). Complementary to the age-adjusted capitation scheme, a pay-for-performance system is in place to incentivize health care providers. These incentives are for the entire FD team in addition to their standard salary. The current performance indicators focus on tuberculosis, maternal child care, immunization, referrals to hospitals and NCD control (e.g. regular control of blood pressure and cancer screening). The share of performance-related payments in relation to the total health expenditures has increased from 4% in 2012 to 14.9% in 2013 (10).

There are several specific pay-for-performance indicators for diabetes and hypertension. For diabetes, these are: the number of patients aged over 45 years with blood-sugar level measurements for the first time; the number of patients attending patient education classes (schools) targeted at diabetes; and the number of patients that receive treatment for diabetes at PHC.

For hypertension, the pay-for-performance indicators are: the number of patients diagnosed (aged 18 years and older) with hypertension; the number of patients attending patient education classes (schools) targeted at hypertension; the number of patients who receive treatment for hypertension at PHC; and the number of patients for which cardiac risk factors have been assessed and registered.

These pay-for-performance indicators incentivize a good registration, monitoring and identification of the conditions at the PHC level. The indicators are not, however, focussed on health outcomes, such as the proportion of patients who have complications from their (chronic) condition. Such indicators would incentivize appropriate *treatment* of the conditions after it has been identified and registered.

4.4.5 Retraining FDs

The majority of FDs in the Republic of Moldova regularly undertake a 4–6 month retraining. However, evidence-based medicine training currently provided at medical schools to the undergraduates seems not in line with international standards (1).

High hospital admission rates can be caused by a high number of referrals made by FDs or by self-referral of patients. Regarding the second, referrals can be potentially reduced by providing FDs with additional and more appropriate (re)training (12). Regarding the second, the Republic of Moldova is known to have a very high rate of self-referral of about 45%.

4.4.6 Non-adherence to medication

Despite the countrywide introduction of diabetes and hypertension education on lifestyle management and promoting adherence to treatment, among others, in PHC settings, the number of patients attending such meetings remains variable (1).

4.4.6.1 Diabetes

Concerning diabetes, availability of medication, glucometers and test-strips is a larger problem than adherence, according to doctors interviewed during the follow-up country visit. According to the Ministry of Health, about 75% of diabetes patients who take insulin currently have a glucometer. This is due to the free provision of glucometers to almost all type 1 diabetes patients (see subsection 4.1.1.1). However, key informants interviewed during the follow-up country visit estimated that only about 30% of diabetes patients have glucometers. Outside of Chisinau (Orhei district), there are 2886 diabetes patients, of which 162 are completely insulin dependent. In this district, 300 glucometers were provided for free. In smaller districts, only nurses (and some patients) have glucometers. For example, Teleseu has about 4200 inhabitants, of which 150 have diabetes; 10 patients have type 1 diabetes and only five glucometers were provided.

4.4.6.2 Hypertension

About 30% of patients do not adhere to hypertension treatment according to the key stakeholders interviewed during the follow-up country visit. This is true also after hospitalization. This may be explained by the lack of understanding about the chronic nature of the disease, the fact that symptoms may not be present or disappear, misinformed advice from non-health staff and the financial burden of medication. Since 2013, doctors are required to prescribe the name of the active substance. Patients can then choose brands based also on their ability to pay. In practice, according to the key informants interviewed in the follow-up country visit, the selection of the final brand depends on the pharmacists for those who are unable to elicit their preferences. As a consequence, it appears that in some cases patients – who renew their prescription each month – are often presented with different brand names causing confusion and adherence problems.

4.5 Health services delivery for ACSCs in brief

This section summarizes the opportunities and challenges to adequately address ACSCs in the Republic of Moldova.

4.5.1 Governance and management of health services

Primary and emergency health care services are provided without co-payments in the Republic of Moldova. However, reimbursement of pharmaceutical care is limited. For diabetes, insulin is provided free of charge (not insulin analogs), as well as glucometers. Moreover, there is a shortage of glucometers, and the test strips required for glucose measurement are not reimbursed and are expensive. Medication for chronic complications of hypertension such as nephropathy and retinopathy are only reimbursed when patients are hospitalized. For hypertension, on average, 50% of the cost of drugs is reimbursed. Co-payments to medication are a reason for inhabitants of the Republic of Moldova to postpone or cancel a visit to the FD.

OOP payments still pose a barrier to access health services.

There is a shortage of FDs, especially in rural areas, and of PHC nurses, mostly in urban areas. Both maintaining and attracting the health workforce are challenges.

4.5.2 Model of care

Diagnosis of diabetes requires confirmation by hospital specialists. Diagnosis of hypertension can be made by the FD, but often FDs seek confirmation of the diagnosis by hospital specialists.

FDs are skilled to administrate tests for glycosylated haemoglobin to diagnose diabetes and to manage glycaemic control, but the prescription of these tests is restricted to hospital specialists.

A large set of clinical protocols is available also online. Out of 202 clinical protocols recently updated, 113 concern FDs. The clinical protocols for diabetes and hypertension include a section for patients. However, this section is neither well-known by patients nor distributed.

Adults older than 40 years of age are screened for high blood pressure to identify at-risk patients. Attendance to these screenings is low in rural districts.

4.5.3 Organization of providers

Access to specialist care is only reimbursed when a patient has been referred by a FD, although there is an exemption for several chronic conditions including tuberculosis and sexually transmitted infections, as well as for emergency cases. Nevertheless, approximately 45% of patients seek specialized care directly, i.e. without a referral from the FD.

The urban population attend the emergency care unit more often than the rural population and are often admitted through ambulance services. Diabetes and hypertension hospitalization is higher in rural areas than in Chisinau.

Patient education is often provided by doctors, rather than nurses.

The exchange of patient information is very limited, which causes duplication of examinations. Although discharge information is summarized in an electronic discharge sheet, patients are often expected to provide information about the received treatment and recommendations for follow-up to their FD. The electronic discharge system also does not include ex-ante or ex-post information on patient status from ambulatory settings.

4.5.4 Performance improvement

Length of hospital stay is longer than average in Europe, partly because there are no alternatives to hospital stay, such as rehabilitation centres. PHC centres are also not well equipped to deal with patients after an episode of hospitalization. Especially in rural areas, FDs cannot manage complex NCD cases.

Adherence to medication is a large problem in hypertension patients. Medical doctors interviewed during the follow-up country visit for this study estimate the following: better medication adherence and better lifestyle decisions could reduce hypertension related emergency cases by about 60–70%. Around 40% of diabetes complications could have been avoided by following an appropriate diet. These estimates are conservative compared to relevant figures from Germany and the United Kingdom (see subsection 3.4).

The findings show that health service delivery, especially for diagnosis and treatment of diabetes and hypertension, in the Republic of Moldova could be improved to avoid unnecessary hospitalizations. To achieve this, recommendations are provided in section 5.

5. Policy recommendations

This section provides an overview of the main elements to improve the prevention, diagnosis and treatment of hypertension and diabetes at PHC level in the Republic of Moldova. Actionable policy recommendations are complemented with an indicative timeline (short-term, medium-term or long-term) and suggestion of relevant stakeholders to be engaged in the implementation in policy and practice.

5.1 Availability of FDs and nurses in PHC centres

In addition to a general shortage, the distribution of FDs and nurses varies widely per region. Difficulties in recruiting and maintaining skilled staff, particularly in rural areas are also observed. Relatively low salaries for medical staff and a lack of incentives are the most prominent factors mentioned to affect the quality of health services. The general shortage of staff increases waiting times and decreases the accessibility of PHC. As a consequence, patients may prefer to call an ambulance at home, go directly to specialized services or postpone seeking care at all. Increased hospitalizations may be the result, which ultimately will lead to less appropriate care and increased health care costs (Table 5).

5.2 Expansion of the scope of practice for FDs and nurses

Currently, the diagnosis and management of NCDs such as hypertension, diabetes and asthma carried out by a FD needs to be reconfirmed annually by a hospital specialist according to the relevant national clinical protocols. Although FDs are trained to use glycosylated haemoglobin for diagnosing diabetes and managing glycaemic control, the prescription of this test is restricted to hospital specialists. Such practical limitations decrease the decision-power of the FD, as well as the opportunity to develop the skills to independently manage cases. The obligated reconfirmation of the diagnosis also affirms the belief widely spread among patients that a visit to a specialist, regardless what condition, is to be preferred over a visit to the FD. This leads to an image issue for PHC, weakening PHC and increasing hospitalization.

A potential reduction in referrals can be achieved by providing additional and more appropriate training to FDs and nurses with regard to NCDs such as hypertension and diabetes. Especially in rural areas with shortage of specialists, FDs should extend their competences to manage more severe and complex symptoms associated with NCDs (Table 6).

Table 5. Policy recommendations about the availability of health staff

Recommendation	Timeline	Relevant stakeholders
1. Increase the number of nurses and FDs, recruiting especially in rural areas by providing increased salaries and disbursements. Research into preferences can identify salary thresholds and other priorities required for relocating medical staff.	Long-term	Government of the Republic of Moldova
2. Organize hypertension and diabetes visits at FDs as group ⁴ visits (20) to enable better care for the uninsured against low costs.	Short-term	FDs (association)

⁴ A group visit is led by an FD supported by 1–3 nurses, with about 14–20 patients in a group. The visit can last as long as needed, but generally an hour for group discussions is used. Discussions can be about, for example, eating strategies, foot care, emotional aspects of diabetes, medication use, etc. Group visits can also be used for group foot examinations, laboratory orders, medication adjustment, etc.

Table 6. Policy recommendations about the scope of practice of health staff

Recommendation	Timeline	Relevant stakeholders
3. Review clinical protocols for diabetes and hypertension to ensure they include clear referral criteria for patients needing higher levels of care.	Long-term	Relevant medical associations
4. Train nurses to independently manage hypertension and diabetes in the PHC setting. A prerequisite is to revise training curricula for nurses accordingly, including continuing nursing education modules.	Long-term	Ministry of Health FDs and nurse association
5. Change tasks division and responsibilities of FDs for the treatment of hypertension and diabetes to enable treatment in PHC without the need for (annual) confirmation on treatment decisions from specialists. FDs should be allowed to order glycosylated haemoglobin tests.	Short-term	Ministry of Health in close collaboration with relevant medical associations (medical specialists)
6. Task division between FDs and medical specialists regarding routine follow-up and after-care should be improved in practice. Understanding the barriers to change is the first step. Thereafter, a combination of methods may be used to enhance change, such as roundtable meetings with both specialists and FDs, led by opinion leaders (21).	Short-term	Ministry of Health in close collaboration with relevant medical associations (medical specialists)
7. Improve the quality of care at PHC level for patients after hospitalization for a health complication, in particular, related to the provision of medication, for example, after stroke.	Short-term	Ministry of Health in close collaboration with relevant medical associations (medical specialists) FDs and nurse association
8. Perform a gap analysis of rehabilitative care at PHC level. Currently, there are not enough rehabilitation possibilities. As a consequence, hospitals are themselves reallocating part of their facilities to rehabilitation centres.	Short-term	Ministry of Health
9. Increase FDs' capabilities to manage more severe and complex symptoms associated with hypertension and diabetes. This includes, but is not limited to: independently diagnosing diabetes and feeling sufficiently capable to diagnose hypertension without asking for confirmation of a specialist.	Medium-term	Relevant medical associations and Ministry of Health (with regard to the regulations on diagnosing diabetes in a PHC setting)

5.3 Provision of pharmaceuticals and devices

Hypertension is the leading cause of hospitalizations among ACSCs in the Republic of Moldova. One pull factor for this high rate is that, for the period of hospitalization, medication is free to patients. On average, 50% of each hypertension drug is reimbursed, and the rest is paid OOP

by patients. It is estimated that about 20–25% of patients do not receive the treatment due to low ability to pay. In addition, even though glucometers have been provided free of charge in the Republic of Moldova during 2012–2013, coverage of patients with type 1 diabetes is low and large regional variation exists. The inability to adequately monitor glucose levels causes complications and related hospitalizations (Table 7).

Table 7. Policy recommendations about the provision of pharmaceuticals and devices

Recommendation	Timeline	Relevant stakeholders
10. Assess which medication, through cost-effectiveness analysis, for which patient groups, yields most health benefits per lei and guarantee full reimbursement of these drugs, e.g. hypertension medication. This will increase health outcomes and affordability.	Short-term	Government of the Republic of Moldova CNAM
11. Include the provision of tests for glucometers in the benefit package (i.e., expansion of coverage of services).	Long-term	Government of the Republic of Moldova CNAM

5.4 Pay-for-performance

Since 2013, a pay-for-performance system is in place to incentivize health providers to achieve improvement in health indicators, but the indicators mainly focus on the process of care rather than outcomes (Table 8).

Table 8. Policy recommendations about pay for performance

Recommendation	Timeline	Relevant stakeholders
<p>12. Link performance indicators to health outcomes (e.g. related to the prevention of diabetes and hypertension).</p> <p>Two specific outcome-related indicators are recommended: (1) the proportion of patients treated at the PHC for hypertension with cardiovascular events and (2) the proportion of patients treated at PHC for diabetes with diabetes related complications (e.g. neuropathy, nephropathy, eye complications). A prerequisite is a unified and publicly available health information system, making use of existing systems such as the discharged patient database.</p>	Long-term	Government of the Republic of Moldova CNAM
<p>13. Have CNAM, the national health insurer, stimulate the introduction and maintenance of information systems by including the presence of clinical records as indicator in the pay-for-performance incentive scheme. This would also require setting a nationwide standard for patient-records.</p>	Long-term	Government of the Republic of Moldova CNAM

5.5 Health promotion, health literacy and patients empowerment

In the Republic of Moldova, nurses are well prepared to educate patients as this is part of the curriculum of nurses' training. However, patient schooling attendance and effectiveness are not demonstrated yet. Short leaflets for patients with diabetes and hypertension are not widely available. Education is mainly given by medical doctors, rather than nurses. For chronic conditions such

as diabetes and hypertension, adequate self-management is imperative to avoid complications and/or worsening of the condition. Schooling may be included as a pay-for-performance indicator, but the existence of patient education itself does not guarantee its effectiveness. Ineffective patient education wastes resources, and as the education is often provided by medical doctors rather than nurses, also the time of the FD is not optimally allocated (Table 9).

Table 9. Policy recommendations about health promotion, literacy and patients

Recommendation	Timeline	Relevant stakeholders
<p>14. Revise nurse school curricula to effectively educate patients during consultations and education classes (diabetes and hypertension schools). Train nurses to promote a healthy lifestyle.</p>	Long-term	Government of the Republic of Moldova Nurses association
<p>15. Evaluate the effectiveness of schooling to determine performance. Key questions to address are: was the schooling interactive, or was it more a lecture type schooling; did the schooling address the questions that patients have; how well attended is the schooling? In the case of positive outcome of the evaluation, further disseminate the current schools for patients at PHC level.</p>	Short-term	Ministry of Health Diabetes and hypertension schools

<p>16. Improve adherence to medication by providing medicine boxes to all chronic patients with diabetes and hypertension. Medication should be provided for each day of the month, and the medicine box should be filled by the pharmacist and the patient together when receiving the prescribed medication.</p>	<p>Short-term</p>	<p>Ministry of Health Health providers including pharmacists</p>
<p>17. Introduce innovative systems to help patients remember their medication, for example, through a contract with telecommunication service providers. Patients who receive their prescription provide their telephone number and can opt to receive automated text messages each day at a standard time to help them remember to take their medication.</p>	<p>Long-term</p>	<p>Ministry of Health Telecommunications Service Providers</p>
<p>18. Promote prevention of diabetes and hypertension to the general public, e.g. through providing (subtitled) video messages on healthy lifestyle in public transport/spaces.</p>	<p>Short-term</p>	<p>Ministry of Health Ministry of Transport and Road Infrastructure</p>
<p>19. Increase patient awareness regarding diabetes and hypertension by providing adequate and understandable information and education. This could include: leaflets developed in collaboration with patients/public, which are accessible to patients with different levels of health literacy and answer the most frequently asked questions by patients (which would need to be collected); diet book – a specific booklet for diabetes would contain seven meals for each day of the week that are suitable for a diabetes diet, including the price of the recipe; counselling to redirect inadequate illness perceptions, training of self-management skills, etc. (21).</p>	<p>Short-term</p>	<p>Relevant medical associations (medical specialists) FDs and nurses association Patient association Ministry of Health</p>

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Annex 1. Summary of the analytical framework

The analytical framework draws from existing literature to identify those elements of a health system that are instrumental in strengthening health service delivery to better respond to the challenges of diagnosing and treating ambulatory care sensitive conditions (ACSCs). The analytical framework is intended as a tool for assessing opportunities and challenges of providing the right service in the right place for those patients carrying conditions that could be treated at ambulatory settings.

Forty-four features of health systems influence the hospitalization of patients with ACSCs as identified through literature research. These features have been depicted from a health service delivery perspective as: governance and management of services, model of care, organization of providers and improvement of performance.

The **governance and management of service delivery** refers to the oversight of operations in the delivery of care – ensuring desired outcomes are attained, that departments within a health facility are running smoothly, that the right people are in the right jobs, that people know what is expected of them, that resources are used efficiently and that all partners in the production of services are working together to achieve a common goal. The task of management comprises the thoughtful design and resourcing (encompassing all resources: human, financial, consumables and technologies) to best direct the provision of care, whether it be for an oblast-level tertiary hospital or a singular health house or a polyclinic in a rural area.

The second area of health service delivery calling for attention is the **model of care** – referring more specifically to *what* services are provided and *how* the provision of services is perceived and experienced by the individual. In articulating a pathway for clinical and social care, patient flows are made common and known, and referrals along the full continuum of service delivery can be clarified, for example, the foundation for more coordinated/integrated care that is people-centred rather than illness or disease-specific.

The **organization of providers** refers to the structure and arrangement of the so-called hardware of the system – the *who* and the *where* in the production of services – looking specifically to the mix of providers in the health sector, their scope of practice and how they operate as a collective profession, in both the public and private sector. The organization of providers is a determining factor for ensuring models of care are actualized, and thus, the extent to which needed services are received at the right time and in the right way, optimizing health results and improving the patient experience. To treat a patient's full health care needs, numerous health care providers may be called upon, in different settings – such as primary, secondary and tertiary care – and in different capacities – for consultation in diagnosis, the development of a treatment plan, counselling or rehabilitation. To optimize this process, organizational strategies, like the introduction of multidisciplinary teams and group practices in primary health care, or the expansion of provider profiles and their alignment for shared-care tasks may be called upon. Whichever means to designing the flow of services, these efforts share in their common objective to promote diversity in technical expertise – found in strong association with the ability of the system to respond to the population's increasingly complex health needs.

Mechanisms for **continuous performance improvement** refer to those efforts that aim to safeguard the delivery of services, creating a learning system through the standardized models of care, regular monitoring of the provision of care and feedback loops allowing a continuous critique of the provision of care, with opportunities and resources (skills, time, authority) for improvement. Creating a system of learning calls attention to the principles of collegiality and autonomy, fuelled by a sense of responsibility, peer pressure and a common transformative culture.

Measures to cultivate this may include, for example, the standardization of training and retraining requirements, as well as (re)accreditation and certification schemes for health professionals, each providing systematic incentives for providers to adhere to certain standards of quality and regularly improve their practice.

Summary of the methodology

The study on ACSCs followed certain standard steps.

1. Conduct desk research to retrieve information regarding the indicators of the analytical framework and identify key stakeholders in each country for an online meeting or as survey participants.
2. Analyse hospital admission data to select high potential (i.e. top 10) ACSCs per country.
3. Organize online meeting or hold a survey to introduce the study to relevant stakeholders and invite them to select a limited number (2–4) of ACSCs per country.
4. Hold a local country stakeholder meeting in the form of a workshop to identify challenges and opportunities for strengthening the PHC related to the selected ACSC. Possibly follow-up with additional interviews if the stakeholder meeting in the form of a workshop does not yield sufficient information.
5. Depending on the availability of data, calculate potential savings for the selected ACSCs.
6. Draw relevant lessons and formulate actionable policy recommendations for each selected country.
7. Deliver country reports, including an interpretation of results and actionable policy recommendations for the relevant country.

Annex 2. List of participants

This annex contains the participants to the stakeholder consultation on 21 January 2014 in Chisinau, Republic of Moldova.

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Annex 3. Follow-up visit questionnaire

This study is about ambulatory care sensitive conditions (ACSCs) for which hospital admission could be prevented by addressing them in the primary health care setting. ACSCs are conditions such as hypertension and diabetes, but also asthma, angina, urinary infections, pneumonia, etc.

This study includes several countries, such as Germany, Kazakhstan and the Republic of Moldova.

This study is a collaboration between the WHO Regional Office for Europe, the WHO Country Office, Republic of Moldova and the Moldovan Ministry of Health. Ecorys, an independent research organization based in the Netherlands, conducted the study.

In each of those countries, ACSCs are first selected that are most relevant for a country. In January 2014, a workshop was held in the Republic of Moldova. The stakeholders included representatives from different organizations, such as physicians, the Ministry of Health and the National Health Insurance Company, but also university representatives. It was decided that diabetes and hypertension were conditions that could be treated in primary health care, but are currently often treated in hospitals due to, for example, complications.

The aim of this interview is to explore the issue of addressing ACSCs in the Republic of Moldova in more depth, focusing specifically on diabetes and hypertension (complications).

The outcomes of this interview will be used to finalize the country profile for the Republic of Moldova. This will be a report that describes the challenges and opportunities to effectively prevent, diagnose and treat (ACSCs) in primary health care and present contextualized and actionable policy recommendations for health service delivery transformation in the short and long term.

Questions for general practitioners (GPs)/specialists

First we will discuss diabetes: *[repeat for hypertension]*

1. Could you please tell me what the treatment of diabetes patients in primary care/hospital looks like in your primary health care facility/hospital?
2. Which percentage of diabetes patients has complications, approximately? [Is this percentage documented?]
3. Could you describe how the complaints of patients that are referred to the hospital differ from those that can be treated in the primary health care setting (and are not referred)?
4. Which percentage of diabetes patients do you refer/are referred to the hospital, approximately? [Is this percentage documented?]
5. You mention xx%. Let us imagine those as 100 patients. Which part of this referral could have been avoided when the Republic of Moldova would strengthen its primary health care system?
6. What are, according to you, the most crucial improvements for diabetes care in the primary health care setting? [Try to be specific in how this improvement can be achieved.]
 - a. Division of tasks between specialists and family doctors (FDs) including cooperation: consult each other?
 - b. Clinical protocols including referral criteria
 - c. Medication (allowed to order?)
 - d. Education of FDs/specialists
 - e. Nurse schools: What would nurses have to learn to better assist FDs in the treatment of diabetes?

- f. Compliance to medication/guidance
 - g. Reimbursement (of health personnel/of medication/pay for performance, etc.)
 - h. During the workshop, it was mentioned that the decision-making skills of doctors in rural areas need to be improved. Do you agree? If so, what particular skills need to be improved?
7. A very important issue is *how* we can achieve the desired improvements. For example, who should
 8. What are the improvements that GPs *themselves* (or in collaboration with....) can implement?
 9. Do you feel that a multidisciplinary workshop between FDs and specialists would help to better demarcate the task division in the treatment of diabetes?
 10. Is all of the treatment in the primary health care insured care? Which part is out of pocket?
 11. Any additional remarks?

Questions for the Ministry of Health (and health insurers)

1. I first would like to ask you if there are particular aspects concerning of the treatment of diabetes and hypertension in the Republic of Moldova that fall under the auspices of the Ministry of Health?
2. The Ministry of Health has supported the development of treatment/clinical guidelines for many conditions. Are you aware to what extent the clinical protocols are applied in practice (adherence rate)? In the workshop, several issues were mentioned, including:
 - a. three nurses should support one FD, which does not happen
 - b. FDs are not allowed to order medication.
3. We have been informed that approximately 45% of patients go directly to the hospital and not to the GP (even though GP visits are reimbursed, and specialist care is only free after referral).
 - a. Are you aware of the reasons for this situation?
 - b. What could the Ministry of Health do to organize care in such a way that the GP should be visited first? (Improving the gatekeeping system?)
4. What are ways in which the interaction between FDs and specialists could be improved in the Republic of Moldova? Who would be responsible for these actions?
5. There are relatively high out-of-pocket payments in the Republic of Moldova, despite health insurance. Please could you inform me about the reasons for this? What measures could be taken to lower the out-of-pocket payments? By whom?
6. Is there a national policy regarding after-hours opening times of FD practices?
7. Is there special support for special groups (e.g. low income, farmers) to access health insurance? (extra support, etc.?)
8. There are several elements in the system that impede the power of the GP. For example, diagnosis of hypertension and diabetes has to be confirmed by a specialist. What are the views of the Ministry of Health on this situation?
9. What are your views on the cooperation between primary/secondary and tertiary hospitals? If this is not working well, what could the Ministry of Health do to improve that?

Special questions for health insurers

1. Is access to emergency care a particular problem? (high for these conditions?)
2. Check conditions and ICD-10 codes of conditions – availability of data.
3. Ask about coverage of conditions – benefit package.
4. Ask about information system (electronic patient records).

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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