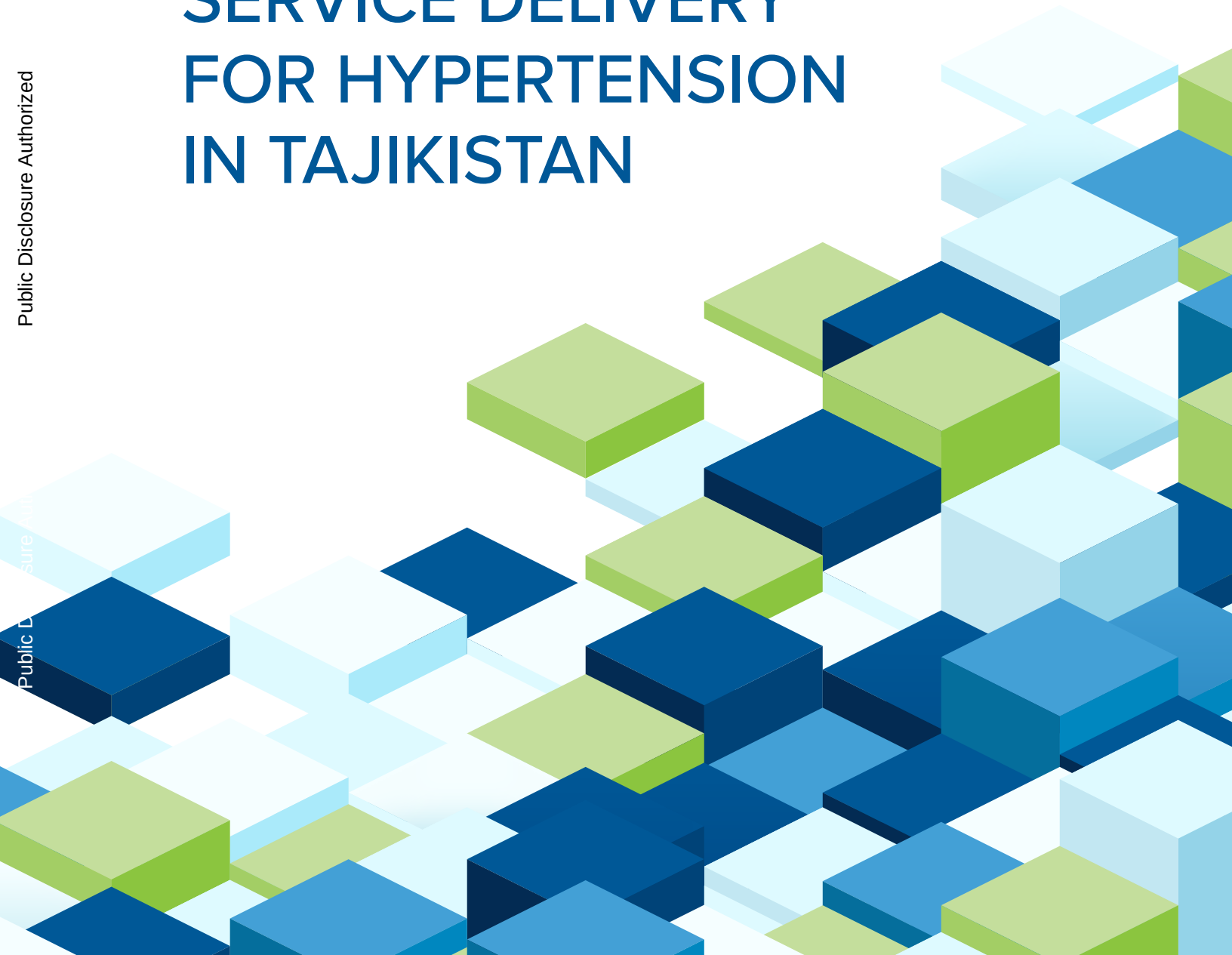
IDENTIFYING OPPORTUNITIES TO STRENGTHEN SERVICE DELIVERY FOR HYPERTENSION IN TAJIKISTAN



1818 H Street NW, Washington, DC 20433, USA.
Telephone: 202-473-1000; Internet: www.worldbank.org.

IDENTIFYING OPPORTUNITIES TO STRENGTHEN SERVICE DELIVERY FOR HYPERTENSION IN TAJIKISTAN

CONTENTS

List of Abbreviations ..... **i**

Preface ..... **vii**

Acknowledgments ..... **v**

Executive Summary ..... **vi**

Chapter 1: Background **1**

Responding to the growing burden of non-communicable diseases in Tajikistan 1

Implementation research as a tool to improve service delivery for hypertension 3

Chapter 2: Identifying drop-offs in service delivery for hypertension **7**

Introducing the cascade of care framework 7

Of the total number of people with hypertension, how many are diagnosed? 8

Of those diagnosed with hypertension, how many start treatment? 11

Of those starting treatment, how many adhere to treatment and follow-up? 12

Of those on hypertension treatment, how many achieve blood pressure control? 13

Identifying drop-offs in the continuum of care for hypertension to prioritize solutions 13

Chapter 3: Understanding drop-offs in service delivery for hypertension 19

Eliciting stakeholder experiences and perceptions through focus group discussions 19

Diagnosing hypertension cases 20

Initiating treatment for hypertension 21

Adherence to clinical management and follow-up 23

Achieving blood pressure control 24

Translating lessons on the perceived causes of drop-offs into service delivery solutions 26

Chapter 4: Fit-for-purpose solutions to challenges in service delivery for hypertension 29

Enabling understanding of hypertension and its therapy among people with hypertension 30

Involvement of peers, families, and communities 31

Reducing the time and monetary costs of care 32

Improving provider understanding and adaptation of guidelines 33

Increasing the supply of trained and equipped health workers 33

An urgent call to strengthen service delivery for hypertension in Tajikistan 35

List of Abbreviations

BMI	Body Mass Index
CQI	Collaborative Quality Improvement
DHC	District Health Centre
DHIS-2	District Health Information System 2
DHS	Demographic and Health Survey
FGD	Focus Group Discussion
GDP	Gross Domestic Product
NCD	Non-Communicable Diseases
PHC	Primary Health Care
RCMSI	Republican Centre for Medical Statistics and Information
RHC	Rural Health Centre
WHO	World Health Organization

Preface

The Ministry of Health and Social Protection of the Population of the Republic of Tajikistan is the state body responsible for the development, implementation and monitoring of public health of the Republic of Tajikistan.

The Ministry of Health and Social Protection works to ensure the health and wellbeing of all citizens of the Republic of Tajikistan. As the prevalence of non-communicable diseases rises, Tajikistan faces a challenge shared among low-, middle-, and high-income countries of tackling hypertension and other risk factors for these diseases.

Over the past two decades, the prevalence of hypertension has increased, which is one of the main causes of cardiovascular diseases. In 2017, the non-communicable disease mortality rate was 760.8 per 100,000 persons, of which 77% were due to cardiovascular diseases. At this time, the incidence of hypertension had risen to 586.1 per 100,000 persons.

Global evidence suggests that a high burden of non-communicable diseases, exacerbated in an aging population, can impede economic growth and even reverse the tremendous health and development gains achieved over the past decades. Therefore, the National Health Strategy of the Republic of Tajikistan 2010-2020 aims to decrease the burden of non-communicable and chronic diseases, placing primary health care at the helm of the service delivery response, in line with global best practice.

Under my leadership as the Minister of Health and Social Protection of the Population of the Republic of Tajikistan, in collaboration with the World Bank, conducted a systematic assessment of service delivery in the field of hypertension. The assessment covered two regions of the country - Sogd and Khatlon Oblasts. The study was conducted to identify opportunities for providing high-performance primary health care for citizens of the Republic of Tajikistan. The proposed measures in this report to overcome the identified barriers are feasible and have been proven to be effective in other countries facing a growing burden of non-communicable diseases. These recommendations will contribute to further implementation of the National Strategy for the Prevention and Control of Non-Communicable Diseases and to strengthening primary health care in Tajikistan in general. I hope that the data reflected in this publication will be of interest both to the organizers of health care in Tajikistan, and

to development partners cooperating with us on the issues of prevention and control of noncommunicable diseases.

I offer my appreciation to the Project Coordination Group of the Tajikistan Health Services Improvement Project (P126130) for their collaboration with the World Bank Health Team to produce this comprehensive report promptly. I also offer appreciation to Tania Dmytraczenko, World Bank Global Practice Manager for Health, Nutrition, and Population; Huihui Wang, Senior Economist; and Kate Mandeville, Health Specialist, of the World Bank Team for their leadership towards facilitating this vital contribution to health sector strategy in the Republic of Tajikistan.

Dr. Nasim Khoja Olimzoda
Minister of Health and Social Protection of Population of the Republic of Tajikistan

World Bank

World Bank

Acknowledgments

This report was jointly produced by the Ministry of Health and Social Protection of the Population of the Republic of Tajikistan and the Health, Nutrition, and Population Global Practice of the World Bank, directed by Dr. Nasim Khoja Olimzoda (Minister of Health and Social Protection) and Dr. Tania Dmytraczenko (Practice Manager, Health, Nutrition, and Population Global Practice, Europe and Central Asia Region) respectively.

The report was authored by Dr. Adanna Chukwuma, Dr. Nicole Fraser-Hurt, Ms. Estelle Gong, Ms. Mutriba Latypova, Dr. Saodat Mirsaburova, Mr. Umed Nazarov and Dr. Firuza Abdullaeva. The study concept was developed by Dr. Adanna Chukwuma, Dr. Massoud Moussavi, and Dr. Nicole Fraser-Hurt. Ms. Shahlo Norova and Ms. Arpine Azaryan provided invaluable program assistance towards implementation of the study and finalization of the report. The Task Team Leaders, Dr. Kate Mandeville and Dr. Huihui Wang, provided excellent comments on the report drafts and led the policy dialogue including the dissemination of study findings.

The team appreciates Dr. Dilorom Sadykova, Advisor of the Minister of Health and Social Protection, and Dr. Adolat Narzullaeva, Head of Cardiology Department, State Medical University of Tajikistan, for reviewing the report draft. Special thanks also go to the staff of the Ministry of Health and Social Protection, including the Project Coordination Group of the Tajikistan Health Services Improvement Project (P126130), for their assistance in data collection for this study. We thank the Asian and Commonwealth of Independent States Congress of Cardiologists and Therapeutics for inviting the team to present the initial findings of this study.

Finally, the authors gratefully acknowledge the Decision and Delivery Science Global Solutions Group of the Health, Nutrition, and Population Global Practice, for the generous funding provided towards this study and for the helpful comments that improved the content and presentation of the final report.

Executive Summary

Using implementation research to improve hypertension service delivery

As life expectancy rises in Tajikistan, the burden of non-communicable diseases (NCDs) is also increasing. The rising burden of NCDs poses considerable economic costs in terms of lost labour productivity and health care expenditure. Hypertension, or high blood pressure, an important risk factor for NCDs, has increased its contribution to the overall disease burden by 41.4% between 2007 and 2017. There is an urgent need to strengthen service delivery systems to respond to the growing burden of high blood pressure in Tajikistan, through early detection, diagnosis, maintenance of therapy, and the attainment of blood pressure control. Therefore, the Ministry of Health and Social Protection and the World Bank undertook an implementation research effort to identify solutions to challenges in service delivery for hypertension in Tajikistan.

Identifying drop-offs in service delivery for hypertension in Tajikistan

Service delivery for chronic conditions often happens over multiple sequential contacts between providers and users. Drop-offs are associated with an increased incidence of complications and poorer health outcomes. The cascade framework provides a systematic way of identifying the points at which drop-offs happen in the continuum of care. We identified if hypertension is diagnosed, appropriate treatment is initiated, the individual is followed up and compliant with care, and blood pressure control is achieved, drawing on surveys conducted in Sogd and Khatlon Oblasts. Approximately one in three adults or half-a-million adults in each Oblast has hypertension. However, only 10% of adults with hypertension are diagnosed and registered in a health facility in Khatlon, and less than 5% in Sogd Oblast. In both Oblasts, 5-10% of individuals diagnosed with hypertension have not initiated treatment. There are also gaps in treatment adherence and follow-up. Up to 70% of people with hypertension, registered in a facility, in both Oblasts do not have regular blood pressure measurements in their file, and over 50% do not take their prescribed treatment regularly. When the entire hypertensive population is considered, the probability of blood pressure control is 1.8% in Sogd Oblast and 0.7% in Khatlon Oblast.

Understanding drop-offs in service delivery for hypertension in Tajikistan

Focus group discussions are useful for studying shared experiences of phenomena in a community and for assessing collective opinions regarding these phenomena. Through 18 focus group discussions with 208 people living with hypertension, health care providers, and heads of provincial health departments in Khatlon and Sogd Oblasts, we identified perceptions of critical barriers to and facilitators of hypertension diagnosis, treatment initiation and follow-up, and blood pressure control. Continuity of care for hypertension in Tajikistan is hindered by wrong understandings of the disease and its therapy by people living with the illness; the high time and monetary costs of seeking care; ambiguous and inappropriate clinical guidelines; shortages of human resource for health and equipment for blood pressure monitoring; and a lack of support from peers, family, providers, and the community for initiation and adherence to hypertension care.

Ensuring effective service delivery for hypertension in Tajikistan

To improve the effectiveness of service delivery for hypertension in Tajikistan, it is essential to implement interventions that address the most critical challenges, including the diagnosis of hypertension cases in the community and the attainment of blood pressure control, by alleviating the barriers and incorporate the facilitators of retention identified by key stakeholders. Solutions to bottlenecks in hypertension service delivery in Tajikistan enable understanding of hypertension and its therapy among people with hypertension; facilitate regular monitoring of blood pressure; ensure the supply of trained and skilled health workers; incorporate support from peers, families, and communities; reduce the time and monetary costs of seeking care; and improve the ease of understanding and relevance of clinical guidelines. Efforts to improve service delivery for hypertension should also address other risk-factors for NCDs including unhealthy diets, physical inactivity, and tobacco use. Tajikistan can strengthen current programs and policies, by adopting the feasible and cost-effective recommendations in this report to strengthen service delivery for hypertension, boosting population health and economic growth in the present and future.

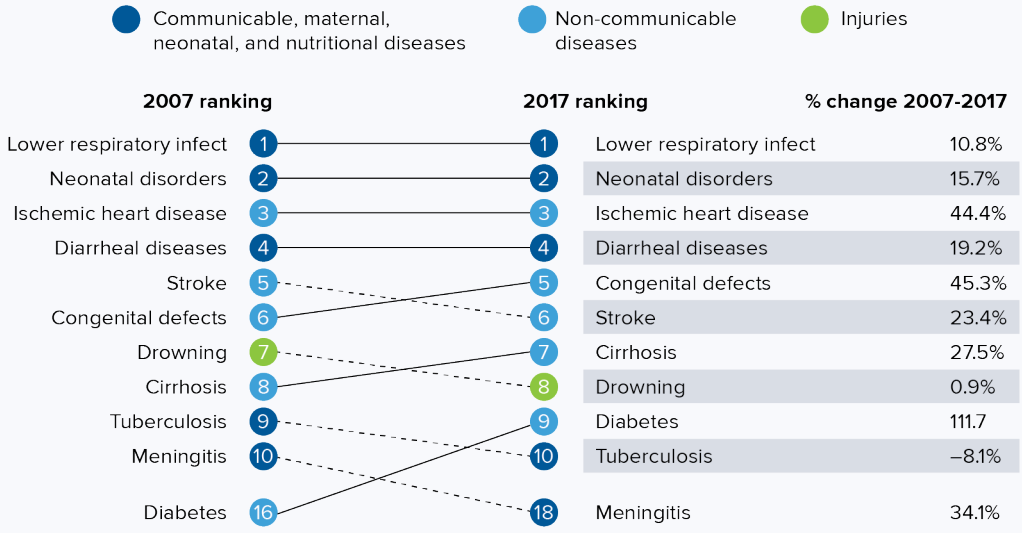
World Bank

Chapter 1: Background

RESPONDING TO THE GROWING BURDEN OF NON-COMMUNICABLE DISEASES IN TAJIKISTAN

Life expectancy has risen in Tajikistan, primarily due to the success in reducing maternal and child mortality. However, the burden of NCDs is also increasing. Between 1990 and 2017, life expectancy at birth increased from 64.7 years in males and 69.0 years in females to 67.7 years in males and 73.3 years in females.[1] At the same time, the under-five mortality rate fell from 65.3 deaths per 1,000 live births to 46.9 deaths per 1,000 live births. However, between 1999 and 2011, according to the Republican Centre for Medical Statistics and Information (RCMSI), the mortality due to cardiovascular diseases increased from 184 to 213 per 100,000 people.[2] By 2017, ischemic heart disease had become the leading cause of death in Tajikistan with an increase in the share of premature mortality by 44.4% compared to 2007.[3] Over the same period, the relative contribution of other NCDs, including stroke and diabetes, to premature mortality has increased (Figure 1).

FIGURE 1 TOP CAUSES OF PREMATURE DEATH IN TAJIKISTAN 2007 & 2017



Source: Institute of Health Metrics and Evaluation

While the burden of disease due to NCDs must be addressed to improve population health, the economic implications of neglecting these illnesses are equally staggering. Premature death, disability, and absenteeism due to NCDs reduces labour productivity. Furthermore, the lifelong need for health care for NCDs increases household expenditure. As the private out-of-pocket costs of treatment weigh most heavily on those least able to afford them, NCDs increase the risk of individual impoverishment. Where those who become sick and die of NCDs are the main income earners, NCDs can also lead to household impoverishment. The combined economic costs of NCDs in terms of lost labour productivity and health care expenditure for Tajikistan are large. For example, in Belarus and Kyrgyz Republic, which have similar rates of premature mortality from NCDs compared to Tajikistan, these costs collectively amounted to an estimated 5.4% and 3.9% of Gross Domestic Product (GDP) respectively in 2015.[4] The burden of NCDs and associated economic costs in Tajikistan may increase. The United Nations predicts that between 2017 and 2050, the proportion of the population aged 60 years and above in Tajikistan will increase from 5.8% to 13.6%.[5] If the risk factors for NCDs are not addressed, population aging will be accompanied by an increase in the prevalence of NCDs, with negative implications for both population health and economic growth.

In Tajikistan, hypertension or high blood pressure is a major risk factor for cardiovascular diseases. Hypertension is the third highest cause of death and disability overall in Tajikistan and has increased its contribution to the disease burden across all ages by 41.4% between 2007 and 2017.[6] In 2017, the incidence of hypertension in Tajikistan in the entire population was 586.1 per 100,000 persons.[7] At least 80% of cardiovascular disease can be prevented by tackling its major risk factors, including hypertension. Early detection of hypertension through blood pressure screening leads to early initiation of long-term management of this illness and reduces the incidence of complications. Where complications of hypertension arise, coordination across multiple health care providers is critical to address them. After complications resolve, follow-up of the individual in outpatient settings reduces the probability of further complications and improves quality of life.[8] Thus, effective service delivery is critical to a successful health system response to hypertension.

A 2013 study of health service delivery in Tajikistan identified gaps in responding to hypertension. For every 100 adults with hypertension in Tajikistan, only 10 cases had been diagnosed.[9] The high levels of undiagnosed hypertension in 2013 were explained in part by screening rates – for every 100 adults in Tajikistan, only 42 had ever had their blood pressure measured.[10] The study also noted challenges in hypertension treatment following diagnosis. For every 100 diagnosed cases of hypertension, only 31 had received any treatment and only 10 had attained blood pressure control.[11] The study showed that for every 100 adults with hypertension in Tajikistan, up to 99 did not achieve blood pressure control and remained at risk of serious complications, that would reduce their quality of life and productivity, with adverse consequences for the health system and the economy. The Demographic and Health Survey (DHS) in 2017 reveals that there is still room for improvement of service delivery for hypertension in Tajikistan. For every 100 adult females between 15 and 49 years with hypertension, only 17 are aware of their diagnosis and actively manage their blood pressure,

while 60 remain unaware of their hypertensive status.[12] These findings illustrate the urgent need to strengthen service delivery systems to respond to the growing burden of high blood pressure in Tajikistan, through early detection, diagnosis, maintenance of therapy, and the attainment of blood pressure control.

IMPLEMENTATION RESEARCH AS A TOOL TO IMPROVE SERVICE DELIVERY FOR HYPERTENSION

In recognition of the need to strengthen service delivery systems to respond to NCDs and hypertension, the Government of Tajikistan has implemented a series of policies and programmes. In Tajikistan's National Health Strategy for 2010-2020, decreasing the burden of NCDs is one of four target areas, with a call on family medicine providers to focus on chronic disease prevention and management.[13] The 2013-2023 NCD Strategy aims to reduce the prevalence of hypertension by 3 - 5%. There are also national strategies to promote healthy diets and physical activity, both necessary for primary and secondary prevention of hypertension, as well as national programs focused on ischemic heart diseases and other complications of hypertension. Finally, the Ministry of Health and Social Protection has developed clinical protocols to guide evidence-based hypertension management at the primary health care (PHC) and other levels (Box 1).[14, 15]

Since 2013, through a performance-based financing project, supported by the World Bank, the Ministry of Health and Social Protection has implemented initiatives that support improvements in service delivery for hypertension. Project activities in eight rayons in Khatlon and Sogd Oblasts are focused on 400 PHC facilities. The ongoing project rewards health workers with financial incentives for providing services for hypertension in line with clinical protocols and is implementing collaborative quality improvement (CQI), a systematic process at the facility level for diagnosing and addressing bottlenecks in service delivery. These interventions have led to the introduction of flowsheets to facilitate hypertension diagnosis, electronic medical records to monitor care, monthly reviews of disease management and opportunities for improvement, and tools to aggregate service user data to inform health decision-making. However, as noted in the 2017 DHS above, there is still room to improve service delivery for hypertension in Tajikistan.

Implementation research embeds systematic methods for assessing service delivery bottlenecks within existing programs and policies. Systematically assessing service delivery provides an opportunity to understand and address challenges in these programs and policies. Implementation research is also essential to ensuring that lessons from successful programs and policies are intentionally documented and incorporated into future strategies. As implementation research involves local practitioners, it enables us to ask the right questions about service delivery, clarify the causes of success and failure, and support the process of iterative refinement of program and policy design to ensure successful adaptation. By jointly creating solutions to current service delivery bottlenecks with practitioners, implementation

research also helps key stakeholders in health systems build skills in addressing challenges that may emerge in the future.[16]

This report summarizes findings from an implementation research effort by the Ministry of Health and Social Protection and the World Bank to identify solutions to bottlenecks in service delivery for hypertension in Tajikistan. The report may also provide lessons for stakeholders in similar contexts on the utility of implementation research for diagnosing and resolving challenges in ongoing programs. The report is structured as follows. In Chapter 2, we introduce the cascade framework, which provides the lens through which we identify challenges in service delivery for hypertension. Drawing on focus group discussions with people with hypertension, health care providers, and administrators, we then explore collective opinions on the causes of these service delivery challenges in Chapter 3. In Chapter 4, we conclude with reflections on the urgent need to implement feasible and effective interventions for improving service delivery for hypertension, to promote population health and boost economic growth in Tajikistan.

BOX 1 SUMMARY OF CLINICAL GUIDELINES FOR HYPERTENSION MANAGEMENT IN TAJIKISTAN

Detection of hypertension

Hypertension should be detected as early as possible through blood pressure screening. Individuals found with a systolic blood pressure of 140 mm Hg or higher or a diastolic blood pressure of 90 mmHg or higher have a “positive screen”. They should receive further blood pressure checks to assess if they have hypertension. The diagnosis of hypertension is made through at least two measurements of blood pressure on two or more health visits. The measurements need to be done in the correct position and use well-calibrated equipment. Arterial hypertension is present if there is consistently increased systolic blood pressure of 140 mm Hg or above or diastolic blood pressure of 90 mmHg or above (140/90 mmHg). During the diagnosis, other risk factors must be evaluated especially smoking status, obesity, dyslipidemia using cholesterol tests, and family history of early cardiovascular disease.

	Degree (Category)	Systolic blood pressure	Diastolic blood pressure
if **>220/120 mmHg:** Treat immediately!	I (mild)	140-159 mmHg and/or	90-99 mmHg
	II (modearate)	160-179 mmHg and/or	100-109 mmHg
	III (severe)	≥ 180 mmHg and/or	≥ 110 mmHg

Initiation of hypertension therapy

The goal of treatment is to lower blood pressure to below 140/90 mmHg. When prescribing medication, the indications and contraindications for the drugs need to be considered. For cost

reasons, generic drugs should be prescribed whenever possible, as branded drugs are more expensive. Lifestyle interventions should be recommended to all individuals living with hypertension as this reduces the need for drugs and increases their effectiveness. These are: limiting the consumption of table salt, saturated fatty acids and alcohol, giving up smoking, reducing body weight, and increasing physical activity and fruit/vegetable intake.

Monitoring of hypertension therapy

Upon prescription, people with hypertension should be re-examined within 4 weeks to assess the tolerability, efficacy and safety of treatment, as well as to monitor the implementation of the advised lifestyle changes. Achieving and maintaining target blood pressure levels requires regular monitoring of compliance with recommendations on lifestyle changes and adherence to prescribed drugs, as well as correction of therapy depending on the effectiveness, safety and tolerability. If the target blood pressure is achieved, follow-up visits should be planned with an interval of 3 months for individuals with high risk and 6 months for individuals with medium-low risk. If the antihypertensive therapy is not sufficiently effective, the drug regimen should be reviewed and changed with a follow-up exam after one month. If blood pressure is very unstable, a repeated examination should be done in 3 days, and in case of deterioration, immediate examination is required.

Blood pressure control

The target blood pressure is the optimal level that ensures the highest survival rate for individuals with hypertension. In general, the target is <140/90 mmHg, but it is lower for some more complex cases: in hypertension with diabetes without proteinuria: <130/85 mmHg; in hypertension and diabetes with proteinuria: <125/75 mmHg; and in hypertension with chronic renal failure: <125/75 mmHg.

Referral

Most people with hypertension can be examined, treated and monitored at PHC level. Some service users will require referral to secondary level for additional examinations or inpatient treatment for complications. If an individual can again be down-referred to PHC level, information should be provided by the specialist doctor on how the person should be managed.

Source: Clinical Guidelines for Prevention, Diagnostics and Treatment of Arterial Hypertension in Adults at Primary Health Care Level.

World Bank

Chapter 2: Identifying drop-offs in service delivery for hypertension

INTRODUCING THE CASCADE OF CARE FRAMEWORK

Service delivery for chronic conditions often happens over multiple contacts between providers and users. When continuity is maintained across these contacts, health outcomes improve, and user satisfaction is higher. However, discontinuing care for chronic conditions is associated with an increased incidence of complications and poorer health outcomes. Therefore, identifying drop-offs, that is discontinuation of care recommended for evidence-based management of chronic conditions, is an essential step towards improving service delivery.

FIGURE 2 OVERVIEW OF THE CASCADE FRAMEWORK

Source: World Bank Delivery and Decision Science Global Solutions Group

The cascade framework provides a systematic way of identifying the points at which drop-offs happen in the continuum of care. For hypertension, the cascade framework begins with identifying undiagnosed individuals in the community, as illustrated in Figure 2. The framework provides a lens to examine if hypertension is diagnosed, appropriate treatment is initiated, the individual is followed up and compliant with care, and blood pressure control is achieved. In line with the cascade framework, we sought to answer the following questions:

1. Of the total number of people with hypertension, how many are diagnosed?
2. Of those diagnosed with hypertension, how many start treatment?
3. Of those starting treatment, how many adhere to treatment and follow-up?
4. Of those on hypertension treatment, how many achieve blood pressure control?

BOX 2 OVERVIEW OF CASCADE DATA AND MAPPING

To describe each stage in the framework, we used data from four sources: 1) a 2018 World Bank Household Survey of all adults over 18 years of age in households with members over 40 years or with a female member that had been pregnant in the past two years - 8443 adults in Khatlon and 3701 adults in Sogd Oblasts; 2) the CQI database which covered 198 health facilities from 2015, providing data on the 237,501 adults in Khatlon and 78,518 in Sogd Oblasts respectively, aged 20 years and above, who live in the facility catchment areas; 3) the District Health Information System-2 (DHIS-2), the national health information system, which provided population estimates for both Oblasts; and 4) the 2017 DHS which studied 10718 women aged, 15 to 49 years.

To estimate the number of hypertensive individuals in the CQI catchment areas, we multiplied the proportion of non-pregnant surveyed individuals with hypertension from the 2018 World Bank Household Survey and the population in each catchment area. At the Oblast level, the proportion of hypertensive individuals was multiplied with the oblast population in the DHIS-2. Estimates for diagnosis, follow-up, and blood pressure control were limited to the CQI database and were unavailable for the larger population. The probability of a hypertension diagnosis was estimated by dividing the number of registered cases in the CQI database with the number of individuals estimated to be hypertensive. The CQI database also documented the number of registered hypertensives who were prescribed treatment, had their blood pressure monitored ever, had their blood pressure monitored in the past 3 months, and had achieved blood pressure control.

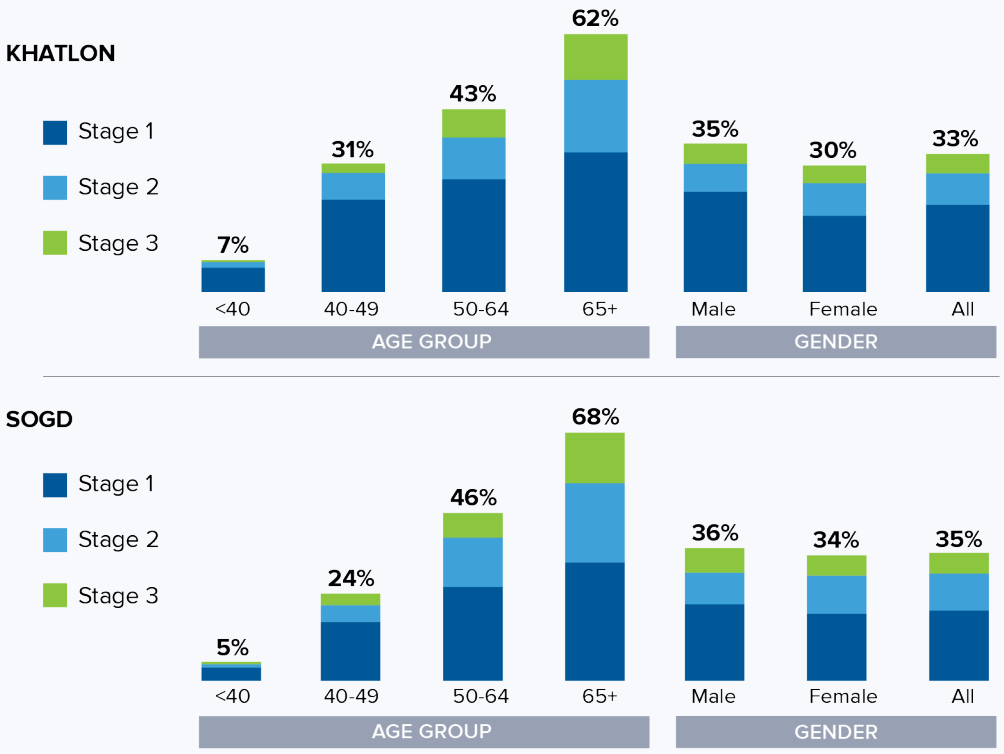
OF THE TOTAL NUMBER OF PEOPLE WITH HYPERTENSION, HOW MANY ARE DIAGNOSED?

Diagnosis following blood pressure measurement (or screening) and registration of hypertensive individuals in the health facility, is the first stage of the cascade framework for hypertension, and an essential step towards initiating treatment.

One in three adults in Khatlon and Sogd Oblasts are hypertensive. Therefore, the burden of hypertension in Khatlon and Sogd Oblast is considerable. In each Oblast, there are

approximately half a million hypertensive adults. Hypertension is more common in adults above 65 years of age, with a prevalence of 62% in Khatlon and 68% in Sogd in this age group. Older individuals are also more likely to have moderate to severe hypertension in both Oblasts. For instance, in Sogd Oblasts, while 36% of adults above 65 years of age have moderate to severe hypertension, this prevalence falls to 1% for individuals below 40 years of age. In addition, across all age groups, individuals with hypertension in Khatlon Oblasts are more likely to have moderate to severe hypertension compared to Sogd Oblast (Figure 3). These differences in severity of hypertension across Oblasts are statistically significant at the 5% level ($p < 0.001$). Hypertension is also slightly more prevalent among males than females in both Oblasts. In Khatlon Oblast, 35% of adult males are hypertensive compared to 30% of females, while in Sogd Oblast, 36% of adult males are hypertensive compared to 30% of females. These differences by gender are also statistically significant at the 5% level ($p <0.001$). The prevalence of hypertension is higher among individuals with obesity. Obese women aged 15 to 49 years are five times more likely to be hypertensive than women with a normal body mass index (BMI).

FIGURE 3 PREVALENCE OF HYPERTENSION BY POPULATION GROUP AND STAGE



Source: World Bank 2018 Household survey.
Note: Percentage labels show total hypertension prevalence by age/gender group. Stage 1= SBP 140-159 or DBP 90-99; Stage 2 = SBP 160-179 or DBP 100-109; Stage 3 = SBP ≥180 or DBP ≥ 110 (all in mmHg)

Of the estimated half a million people with hypertension in each Oblast, only 10% have been diagnosed and registered in Khatlon Oblast while 5% have been diagnosed and registered in Sogd Oblast. Per the guidelines, cases were diagnosed and registered following two blood pressure checks in different visits. The rates of diagnosis and registration of hypertension are low across all sub-groups defined by age and gender (Table 1). Within the catchment areas of CQI facilities, which were selected from underserved areas of the country, diagnosis rates are even lower: 6% of the estimated total number of hypertension cases in Khatlon Oblast and 4% of cases in Sogd Oblast have received a diagnosis and are registered with the facility.[17] In Khatlon, people with stages 2 and 3 of hypertension are more likely to be diagnosed and registered than people with stage 1 of hypertension. However, in Sogd, the severity of hypertension does not seem to influence diagnosis and registration rates in females, but it does among males.

Higher screening rates in Khatlon have contributed to higher rates of diagnosis of hypertension. A positive screen required at least one other blood pressure check to ascertain a hypertension diagnosis, a necessary step for initiating treatment. While 52% of males were screened for hypertension in Khatlon in 2018, only 43% were screened in Sogd. Also, while 75% of non-pregnant females were screened for hypertension in Khatlon, only 65% were screened in Sogd. Accordingly, diagnosis rates for hypertension have increased in Khatlon relative to Sogd. Between 2016 and 2017, there was a 43% increase in new hypertension cases diagnosed in Khatlon, relative to a 5% increase in Sogd, where diagnosis rates fell among people aged 65 years and above. Comorbidity also increases screening rates on average. The coverage of screening for hypertension among obese women aged between 15 to 49 years is 16 percentage points higher than in women with a normal BMI.

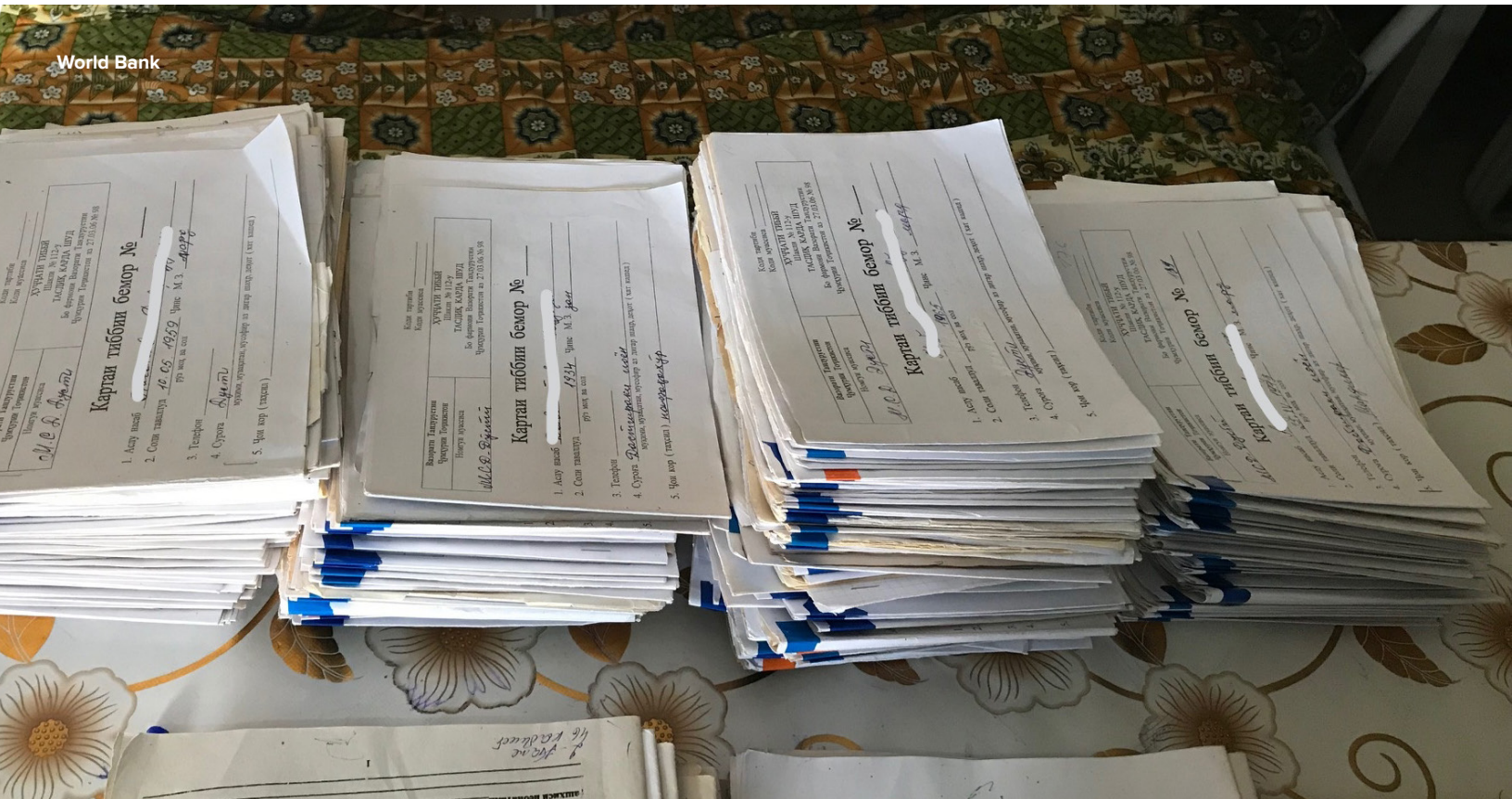


TABLE 1 ESTIMATED NUMBER OF HYPERTENSIVE PERSONS AND HYPERTENSION CASES DIAGNOSED IN THE OBLASTS AND CQI CATCHMENT AREAS

	KHATLON			SOGD		
	Estimated prevalence	Estimated number hypertensive	Number diagnosed (%)*	Estimated prevalence	Estimated number hypertensive	Number diagnosed (%)*
	OBLAST					
Males ≥20 yrs	35%	266,000	19,968 (7.5%)	36%	262,000	10,156 (3.9%)
Females ≥20 yrs	30%	232,000	31,292 (13.5%)	34%	293,000	15,401 (5.3%)
Total ≥20 yrs	33%	498,000	51,260 (10.3%)	35%	555,000	25,557 (4.6%)
	CQI CATCHMENT					
Males ≥20 yrs	35%	42,000	1,716 (4.1%)	36%	14,000	383 (2.7%)
Females ≥20 yrs	30%	36,000	2,773 (7.7%)	34%	13,000	606 (4.7%)
Total ≥20 yrs	33%	78,000	4,489 (5.8%)	35%	28,000	989 (3.5%)

Souce: World Bank 2018 Household survey (HTN prevalence), DHIS2 for Oblast population numbers, CQI database for CQI catchment populations.

Notes: Hypertension = Elevated blood pressure (SBP ≥140 mmHg or DBP ≥90 mmHg)

*For Oblast, registered in DHIS2 in 2017; for CQI catchment, registered in CQI database

OF THOSE DIAGNOSED WITH HYPERTENSION, HOW MANY START TREATMENT?

The second stage in the cascade framework examines the proportion of individuals diagnosed with hypertension who commence clinical management. We identified if the individual diagnosed with hypertension was prescribed medication and had at least one blood pressure measurement on file.

In both Sogd and Khatlon Oblasts, over 90% of individuals diagnosed with hypertension receive a prescription and have at least one blood pressure measurement on file. Among non-pregnant females with a diagnosis of hypertension, 92% were prescribed medication in Khatlon Oblast, and 96% in Sogd Oblast. Males with a hypertension diagnosis in both Oblasts were less likely to be prescribed medication than females (Table 2). This implies that in both Oblasts, 5-10% of individuals diagnosed with hypertension are not prescribed any treatment. The higher rates of prescription following a diagnosis of hypertension in Sogd Oblast compared to Khatlon Oblast were statistically significant at the 5% level (p=0.003). There were differences in treatment initiation rates across age group and gender. When an individual with hypertension was below 50 years of age, they were less likely to be prescribed medication, particularly in Khatlon Oblast. Comorbidity also led to higher rates of initiating treatment.

While hypertensive women of normal weight, aged 15 to 49 years, were prescribed medication 63.1% of the time, this rate increased to 84.5% among obese women in the same age group.

TABLE 2 TREATMENT PRESCRIBED TO INDIVIDUALS WITH HYPERTENSION

		KHATLON	SOGD
AGE GROUP	40-49	85%	93%
	50-64	93%	96%
	65+	91%	95%
GENDER	Male	89%	94%
	Female *(no recent pregnancy)*	92%	96%
	TOTAL	**91%**	**95%**

Souce: CQI database

OF THOSE STARTING TREATMENT, HOW MANY ADHERE TO TREATMENT AND FOLLOW-UP?

A clinical diagnosis of hypertension requires adherence to lifelong therapy with antihypertensive medication and regular blood pressure monitoring. The different types of antihypertensive medications are prescribed solely or in combination based on the needs of the individual.

However, a high proportion of people with hypertension in Khatlon and Sogd Oblasts, report being unable to take their prescribed medication regularly. Among females aged 15 to 49 years diagnosed with hypertension and prescribed treatment, 43% in Khatlon and 48% in Sogd did not take their medication regularly. The median number of types of hypertension medication that individuals were required to take was 2.9 in Khatlon and 2.2 in Sogd Oblast, across all patients. However, older individuals had a higher number of hypertension drugs. In Sogd Oblast, while individuals aged 20 to 49 years took an average of 1.9 drug types, those aged 65 years and above took an average of 2.3 drug types. Only 0.6% of individuals were required to take 5 or more drug types for hypertension.

Up to 70 percent of people with hypertension, registered in a facility, in both Oblasts do not have regular blood pressure measurements in their file. In Khatlon Oblast, only 26 to 27% of individuals with hypertension registered in the facility have had their blood pressure monitored within the last three months, while in Sogd Oblast, 25 to 28% of individuals with hypertension had their blood pressure monitored. The differences across gender and Oblasts in blood pressure monitoring rates were not statistically significant at the 5% level

(p=0.36). There were significant differences in blood pressure monitoring by age group. In Khatlon Oblast, while 73% of individuals with hypertension aged 65 years and above had at least one blood pressure measurement over the past year, only 54% of people with hypertension aged less than 50 years had any blood pressure measurement over the same period. There was a similar picture in Sogd Oblast, where the percentage of individuals diagnosed with hypertension that have had blood pressure measurements over the past year was 68% among those aged 65 years and above compared to 41% among those less than 50 years of age.

OF THOSE ON HYPERTENSION TREATMENT, HOW MANY ACHIEVE BLOOD PRESSURE CONTROL?

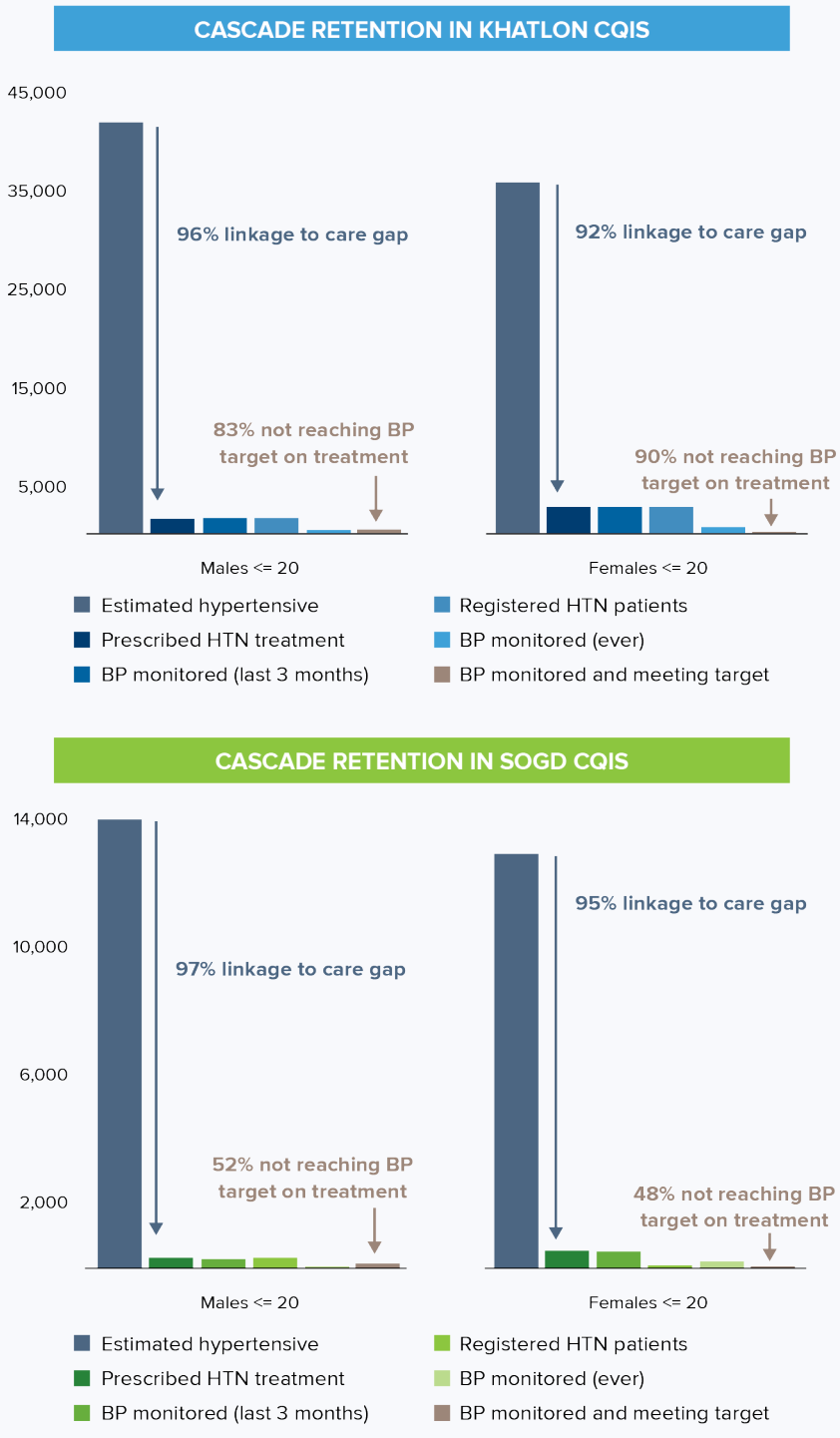
Blood pressure control, the last stage of the cascade framework for hypertension care, is the cumulative result of the prior steps of diagnosis, treatment initiation, and compliance with care, achieved when blood pressure levels return to the normal range. Achieving blood pressure control reduces the probability of complications, including ischemic heart disease, stroke, chronic kidney diseases, and retinopathy.

Only 12% of people on hypertension treatment in Khatlon achieved blood pressure control, compared to 50% of people on hypertension treatment in Sogd oblast. The probability of achieving blood pressure control was higher among males (17%) than females (10%) in Khatlon Oblast (p<0.001). In Sogd Oblast, females (52%) were more likely to achieve blood pressure control than males (48%) – the difference in blood pressure control rates were not significant at the 5% level (p=0.31). However, the key population to consider are all people with hypertension in either oblast, as in the absence of blood pressure control, these individuals face the risk of the above complications. When the entire hypertensive population is considered, the probability of blood pressure control falls to 1.8% in Sogd Oblast and 0.7% in Khatlon Oblast.

IDENTIFYING DROP-OFFS IN THE CONTINUUM OF CARE FOR HYPERTENSION TO PRIORITIZE SOLUTIONS

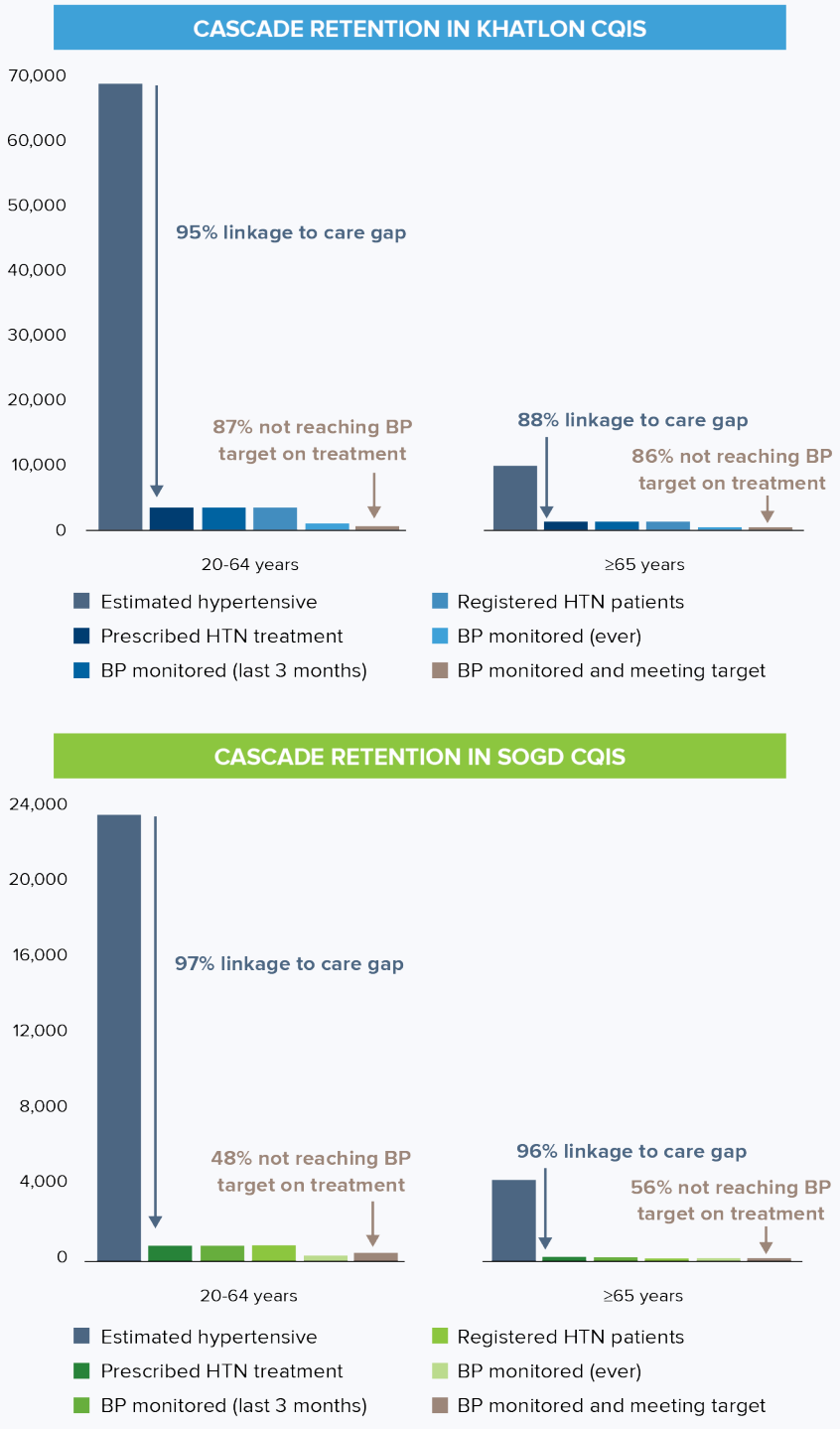
Hence, a large proportion of the estimated one million cases in both Oblasts have not been diagnosed, particularly in Sogd Oblast. The major cause of drop-offs along the continuum of care for hypertension is thus the low rates of diagnosis of people with hypertension in the community, which is an important focus of solutions to improve retention in care. Furthermore, while most individuals diagnosed with hypertension are prescribed medication, a considerable proportion is not able to maintain their treatment, do not receive regular follow-up, and ultimately fail to achieve blood pressure control, regardless of gender or age (Figure 4 and Figure 5).

FIGURE 4 HYPERTENSION CARE CASCADE IN KHATLON AND SOGD CQI CATCHMENT AREAS, BY GENDER



Souce: World Bank 2018 survey, District Health Information System-2, and CQI database

FIGURE 5 HYPERTENSION CARE CASCADE IN KHATLON AND SOGD CQI CATCHMENT AREAS, BY AGE GROUP



Souce: World Bank 2018 survey, District Health Information System-2, and CQI database

While our analysis provides useful information on retention of patients in care, data limitations prevented a more extensive description of the cascade. For example, there was no data available at the Oblast level on the prescription of and adherence to lifestyle changes for management of hypertension; indicators of cardiovascular risk including lipid profiles and kidney function tests; or on self-monitoring of blood pressure control.

While the Tajikistan DHS provides nationally-representative findings for women of reproductive age, the findings from the other surveys may apply to specific households in the Oblasts. For example, it may be that rural households with members over 40 years, a female member who has been pregnant in the past two years, or within the catchment of facilities implementing CQI for hypertension care, are different from the average household in Khatlon and Sogd Oblast. However, the similarity in hypertension prevalence across data sources suggests that the three groups are comparable (Table 1).

There is an important implication of these drop-offs in the hypertension care continuum identified through the cascade framework. Both Khatlon and Sogd Oblasts may continue to see a rise in morbidity and mortality linked to uncontrolled hypertension, in the absence of evidence-based interventions to address the causes of drop-offs. In Chapter 3, we discuss the perceptions of key stakeholders on the causes of bottlenecks in service delivery for hypertension.


ШИРИ МОДАР
Нави-нави!
World Bank


БАРНОМАИ МИЛЛИИ ИММУНОПРОФИЛАКТИКА
ИММУНИЗАТСИЯИ БЕХАТАР
World Bank

Chapter 3: Understanding drop-offs in service delivery for hypertension

ELICITING STAKEHOLDER EXPERIENCES AND PERCEPTIONS THROUGH FOCUS GROUP DISCUSSIONS

Focus group discussions are useful for studying shared experiences of phenomena in a community and for assessing collective opinions regarding these phenomena. These discussions can also facilitate the identification of feasible interventions to address public health problems. We conducted 18 focus group discussions with 208 people living with hypertension, health care providers, and heads of provincial health departments in Khatlon and Sogd Oblasts (Table 3). We briefly discuss the main themes from these discussions on the factors that influence retention and drop-offs in hypertension care in Sogd and Khatlon Oblasts below.

TABLE 3 CHARACTERISTICS OF FOCUS GROUP DISCUSSION PARTICIPANTS

Participant Type	Oblast	CQI site type	Number of participants	Type of PHC	Location
Adult males in hypertension care	Khatlon	Intervention	11	RHC	Balkhi
	Khatlon	Control	7	RHC	Jaihun
	Sogd	Intervention	12	RHC	Jabbor Rasulov
	Sogd	Control	11	RHC	Kanibadam
	Total		**41**		
Adult non-pregnant female in hypertension care	Khatlon	Intervention	11	RHC	Balkhi
	Khatlon	Control	12	RHC	Jaihun
	Sogd	Intervention	12	RHC	Jabbor Rasulov
	Sogd	Control	12	RHC	Kanibadam
	Total		**47**		

TABLE 3 CONT.

Participant Type	Oblast	CQI site type	Number of participants	Type of PHC	Location
Pregnant women in hypertension care	Khatlon	Intervention	12	DHC	Balkhi
	Khatlon	Control	12	DHC	Jaihun
	Sogd	Intervention	12	DHC	Jabbor Rasulov
	Sogd	Control	12	DHC	Kanibadam
	Total		**48**		
Health care providers	Khatlon	Intervention	12		Balkhi
	Khatlon	Control	12		Jaihun
	Sogd	Intervention	12		Jabbor Rasulov
	Sogd	Control	12		Kanibadam
	Total		**48**		
Heads of Oblast health departments	Khatlon		12		Bokhtar
	Sogd		12		Khujand
	Total		**24**		

RHC: Rural Health Centre; DHC: District Health Centre

DIAGNOSING HYPERTENSION CASES

As discussed in Chapter 2, an estimated 90 to 95% of cases of hypertension in Sogd and Khatlon Oblasts remain undiagnosed. Addressing bottlenecks related to early detection of hypertension is an essential part of a coherent health system response in Tajikistan. The discussions revealed that screening and diagnosis rates are negatively affected by a general lack of understanding of hypertension in the general population; ambiguous clinical protocols; the low priority given to hypertension screening; and the limited service delivery capacity to reach rural and remote communities. Prenatal care and community screening were identified as avenues that have been successful at identifying undiagnosed cases. We discuss these themes below.

Providers and service users discussed the lack of understanding of hypertension, particularly its asymptomatic nature, in the general population. It is common for hypertensive individuals to be unaware of their condition and for the first encounter with the health facility to occur following complications of chronic hypertension. The connection between high blood pressure and these complications, including cardiovascular diseases, is also not well understood by individuals with hypertension. As most service users learn about the consequences and care of hypertension following diagnosis, information continues to pose a barrier to initial contact with the health system among undiagnosed individuals.

> *"Patients do not come for screening because they don't know the risks and negative consequences of hypertension"*
> *(Participant 5, Health Administrator, Khatlon Oblast)*

A lack of understanding of hypertension fuels dangerous myths and attitudes. Among young females, hypertension is not considered a socially-acceptable condition and attracts stigma. Young women who are diagnosed with hypertension and other chronic conditions are often stigmatized and face difficulty getting married. The resulting high social and private costs of hypertension, including anxiety of complications of high blood pressure and frequent hospital contact, reduce the acceptability of screening. Individuals younger than 40 years, aside from pregnant women, generally do not consider themselves at risk for hypertension, which in turn makes uptake of screening low in this age group.

> *"Young people with high blood pressure face stigma, especially girls. They would probably try to hide this fact as it will be difficult for them to find a marriage partner."*
> *(Participant 7, Health Provider, Khatlon Oblast)*

Even in the absence of information barriers, communities face costs in terms of money and time to obtaining a screen for hypertension in the health facility or at home. Households in remote areas are often also located a far distance from the nearest health centre and may find the facility difficult to reach. These locations are also more difficult to access with community screening. Among rural populations that may not be remote, farm work during the day may prevent individuals from being screened by healthcare workers, even at home. Following screenings by health workers in health houses, the diagnosis of hypertension is often confirmed by referral to the rural health centre (RHC). These referrals to confirm a hypertension diagnoses pose additional transportation and consultation costs to the service user that may be prohibitive in some cases.

Insufficient supply of equipment and human resources has limited the ability of service providers to screen their catchment population for hypertension, at home or in the facility. Sphygmomanometers are not replaced and calibrated regularly, reducing their accuracy in measuring blood pressure. A high caseload for limited health workers implies that routine screening in the community and facility is de-prioritized. Hence, service providers respond to complications of chronic hypertension rather than actively detecting cases before clinical manifestations occur. The constraints in human resources are particularly dire in remote areas, which further limits the availability of screening in these locations.[18]

> *"Many requirements mentioned in the national protocols are impossible to fulfill at the PHC level due to the lack of equipment and human resources"*
>
> *(Participant 2, Health Administrator, Khatlon Oblast)*

Where health workers are available and have adequate equipment, ambiguity in the existing clinical protocols for hypertension negatively affect efforts to diagnose the disease. Despite having received training on national clinical protocols for hypertension, providers noted that the current protocols could be challenging to use. Current protocols have an unclear scope of work for each health care level, lack clear guidance for service delivery in remote and rural areas, provide insufficient information on case finding and treatment adherence, and do not consider the perspectives of providers and service user. There are also no readily-available guides that providers could refer to when needed. In addition to family doctors, paramedics and trained volunteers can also screen people for hypertension. However, the level of understanding of hypertension and clinical protocols varies by provider type.

> *"Clinical protocols are available for the medical workers, but the language in the protocols are not easy to understand, and not adapted to existing conditions. When national protocols are being developed, they should consider realistic conditions at rural areas and geographic landscapes"*
>
> *(Participant 4, Health Care Provider, Sogd Oblast)*

A higher priority needs to be given to hypertension management and control to address service delivery gaps in screening. Health administrators were unaware of the high hypertension burden, and the levels of under-diagnosis. As analysis related to the burden of hypertension, diagnosis and management of cases, was not routinely done, these statistics could not inform strategic plans for the health sector. More broadly, health does not receive priority in government spending in Tajikistan, at 6% of the government budget, 86% of which is spent on health worker salaries, further restricting fiscal space for service delivery. The current NCD strategy identifies the prevalence of hypertension and programmatic targets but does not include specific recommendations to improve service delivery.

> *"The Chief cardiologist collects data on hypertension from the districts. However, we do not analyze the data on hypertension closely. I think we should".*
>
> *(Participant 7, Health Administrator, Sogd Oblast)*

Antenatal care and community screening are effective at facilitating the early detection of hypertension. Most cases of hypertension are detected when blood pressure is measured in service users above 40 years of age who visit health facilities. However, all pregnant women currently undergo blood pressure checks during routine antenatal care visits, regardless of age. This allows for cases of hypertension to be identified early and managed proactively during pregnancy. Through the "caravan of health," an outreach campaign in which health care providers visit remote areas for one-time health consultations, screening for hypertension has been provided by the Ministry of Health and Social Protection, and Provincial Health Administrators. However, these outreach campaigns are not regular and are not always targeted at remote areas with less access to health facilities.

INITIATING TREATMENT FOR HYPERTENSION

In both Khatlon and Sogd Oblasts, 5-10% of individuals with diagnosed hypertension are not prescribed any treatment, particularly males and individuals under 40 years of age. The initiation of clinical management for hypertension is delayed by the time needed to complete diagnostic tests, the cost of prescribed medication and diagnostic tests, and the lack of understanding among service users of the need for treatment in asymptomatic cases. Treatment initiation was more likely to be successful where people with hypertension had social support and in pregnancy as antenatal care and diagnostic tests are offered free-of-charge. We discuss these themes below.

There is an approximately two-week period, following diagnosis of hypertension, needed to conduct tests of organ function. During this lag, a person diagnosed with hypertension may implement non-pharmacologic treatment, which includes diet, physical activity, and smoking cessation consultations. However, pharmacologic therapy is prescribed as soon as the diagnostic tests are completed.

The cost of hypertension medication is the main barrier to beginning treatment across all groups of service users. Pharmacies often provide brand name drugs rather than generics to fill prescriptions, which increases the cost of medication. As service users may not be able to cover these costs, where available, they resort to shared earnings from family members who work, or pension funds if they are not employed.

> ***"I have to provide for the costs of my treatment from the family budget. I have a small pension, only 250 Somoni, and I am distraught"***
>
> *(Participant 5, Health Administrator, Khatlon Oblast).*

In the absence of time and cost constraints, a lack of understanding of prescribed therapy also prevents the initiation of treatment. Service users attributed lack of treatment initiation to a lack of understanding of treatment aims and side effects of prescribed medication. Pregnant women, mainly, feared that medication may harm their pregnancies. They were often pressured by their families to opt out of treatment. It was often not clear how to act on the lifestyle changes recommended by providers, including reducing salt intake (by how much and which foods), physical activity (what types of exercises and how long), and monitoring metrics such as BMI (how to measure and why it matters).

> *"I don't have enough information about my treatment, about this or that medication and why it is being prescribed, its compatibility with other medications, and for how long I should be taking them. Sometimes, at the drug store, they offer other medications instead of what the doctor has prescribed, I don't know what to do..."*
>
> *(Patient 5, Female, Sogd Oblast)*

> *"Relatives of pregnant women with hypertension are cautious about pregnant women taking medication... They believe that it may hurt the baby"*
>
> *(Participant 8, Health Care Provider, Sogd Oblast).*

Prescribed hypertension treatment was more likely to be initiated where the individual with hypertension received support from their family network and where the costs of diagnostic tests were waived. For pregnant women specifically, a favorable disposition of the mother and mother-in-law to the hypertension medication encouraged them to initiate treatment. Pregnant women who begin antenatal care before 12 weeks of gestation do not pay for laboratory tests. These waivers create incentives for pregnant women to undertake the required diagnostic tests and initiate treatment.

ADHERENCE TO CLINICAL MANAGEMENT AND FOLLOW-UP

In Khatlon and Sogd Oblasts, nearly 1 in 2 individuals living with hypertension do not take their medication regularly, and less than 30% have a regular measurement of their blood pressure. Treatment adherence is hindered by a lack of understanding among people with

hypertension for the need for long-term treatment, the cumulative cost of care, and lack of follow-up between care levels or after pregnancy. Akin to treatment initiation, social and provider support increased the probability of adherence to clinical management.

Insufficient understanding of the need for hypertension treatment and side effects of medication are common reasons for discontinuing therapy. Individuals with hypertension reported feeling temporary relief from initiating medication for hypertensive emergencies and failing to renew their prescriptions when symptoms abated. Thus, most people with hypertension did not understand the dangers of asymptomatic elevations in blood pressure. Even when individuals with hypertension are aware of the need for indefinite medication, they find it tiresome to take pills each day and to refill their medication constantly. The lack of perceived treatment benefit discouraged treatment maintenance. There was also a false belief that regularly taking medication would lead to dependence.

> ***"I took medicines for a month, and when I felt better, I quit treatment and had high blood pressure again. Now, I take pills every day"***
>
> *(Participant 5, Female Patient with Hypertension, Khatlon Oblast).*

The apprehension people with hypertension shared about the inability to pay for medication for treatment initiation is magnified for treatment maintenance. People with hypertension who may have had the funds to begin treatment may not be able to afford recurring prescriptions. Costs of medication and transportation to pharmacies and facilities accumulate, preventing people with hypertension from remaining in care. The prescription of multiple and brand-name drugs further raises treatment costs and complicates pill-taking schedules, reducing adherence. Finally, while services for pregnant women who begin antenatal care before 12 weeks is free, these subsidies do not continue after delivery. These costs also led to women stopping hypertension treatment after delivery

Pregnant women, while closely monitored during pregnancy, do not always transition to adult care services after delivery. Providers were aware of the need to continue management following delivery. However, people with hypertension often became preoccupied with the care of the baby and did not return to the facility. Where hypertension was gestational, physicians were less likely to continue blood pressure monitoring after delivery. Losses to follow-up also occurred between care levels. Where individuals initiate treatment for hypertension in a district health centre (DHC), information was not related to the PHC level for follow-up, reducing the chances of adherence.

Akin to treatment initiation, social support facilitates adherence to hypertension therapy. Home visits by doctors and nurses allowed for people with hypertension and their families

to ask questions about the condition and its management, increasing support within their inner circle. Conversely, where a person with hypertension lacked family support, there were less likely to adhere to hypertension treatment. Older relatives who were uninformed tended to view hypertension in young pregnant females as a sign of weakness, which led to higher drop-off rates from therapy, mainly where the person with hypertension was dependent on these relatives to maintain communication with the provider.

> ***"I don't have a mobile phone. My husband migrated to Russia for a job. I usually get in touch with my doctor using mobile phones of my husbands' relatives. Most often I use my mother-in-law's mobile phone to call my doctor. It is very uncomfortable"***
>
> *(Participant 3, Pregnant Woman, Sogd Oblast).*

ACHIEVING BLOOD PRESSURE CONTROL

Less than 2% of all persons living with hypertension in Khatlon and Sogd Oblast achieve blood pressure control. Blood pressure control can only be achieved if hypertension is diagnosed, therapy is initiated, and clinical management is adhered to. Thus, the factors identified as influencing drop-offs at each prior stage of the cascade are essential contributors to the low level of blood pressure control in both Oblasts. Unsurprisingly, the critical determinants of blood pressure control were linked to the individual's ability to adhere to treatment and to regularly monitor blood pressure. As the determinants of adherence were discussed above, we briefly reflect the role of blood pressure monitoring below.

People with hypertension understood that they should measure their blood pressure daily, but they often lack the equipment to do so. Home visits for blood pressure monitoring by doctors and nurses do occur but at an average frequency of once or twice a month. The national protocol, however, stipulates that home visits for blood pressure monitoring should happen once a week for pregnant women and people with chronic diseases, including hypertension. In the absence of an objective measure of their level of blood pressure control and advice from a health worker, the individual was unable to adjust their lifestyle changes and medication accordingly. Thus, people with hypertension who lacked blood pressure monitoring equipment, had infrequent home visits, and who could not visit health facilities were less likely to achieve blood pressure control.

> ***"It is not enough when a nurse visits us once a month to measure the blood pressure"***
>
> *(Participant 11, Female Patient with Hypertension, Khatlon Oblast).*

In Table 4 below, we summarize the perceived barriers and facilitators to hypertension diagnosis, treatment initiation and follow-up, and attainment of blood pressure control in Khatlon and Sogd Oblasts.

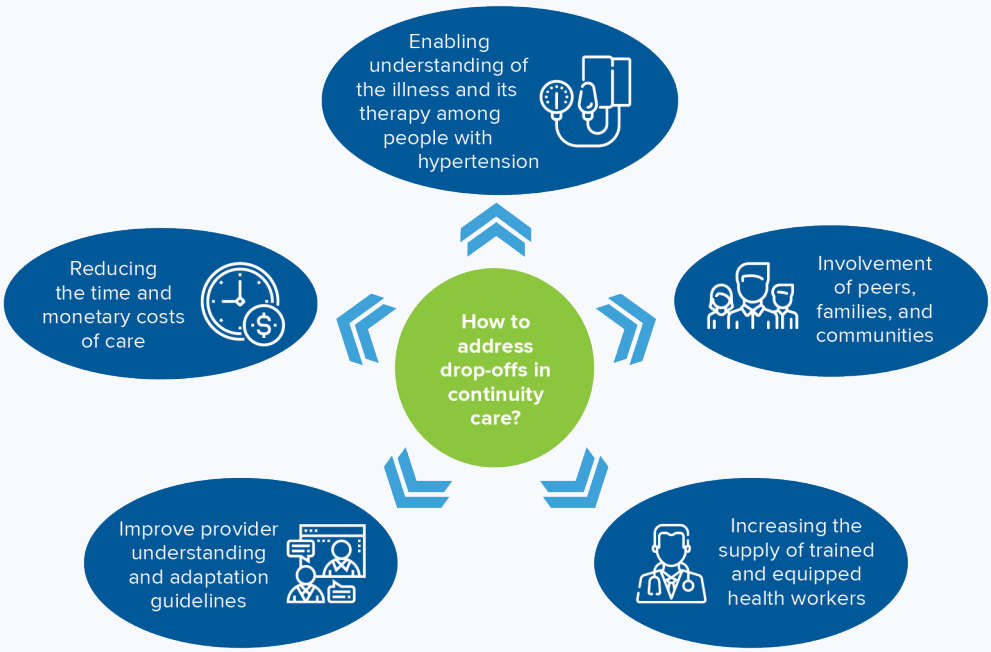
TABLE 4 OVERVIEW OF PERCEIVED BARRIERS AND FACILITATORS TO RETENTION IN HYPERTENSION CARE

Cascade stage	Barriers	Facilitators
Diagnosis	Gaps in understanding of disease among people living with hypertension	Routine and antenatal screening
	Time and distance costs to visit the facility	Community screening
	Lack of equipment and health workers	Positive provider interactions
Treatment Initiation	Ambiguous clinical protocols	Social support
	Diagnosis to treatment delay	Free care for early pregnancy
	Cost of medication and laboratory tests	
	Gaps in understanding of treatment among people with hypertension	
Treatment Adherence	Cost of medication	Social and provider support
	Gaps in understanding of treatment among people with hypertension	
	Loss of follow up post-delivery	
Blood Pressure Control	Barriers to diagnosis, initiation, and adherence	Social and provider support
	Irregular blood pressure monitoring	

TRANSLATING LESSONS ON THE PERCEIVED CAUSES OF DROP-OFFS INTO SERVICE DELIVERY SOLUTIONS

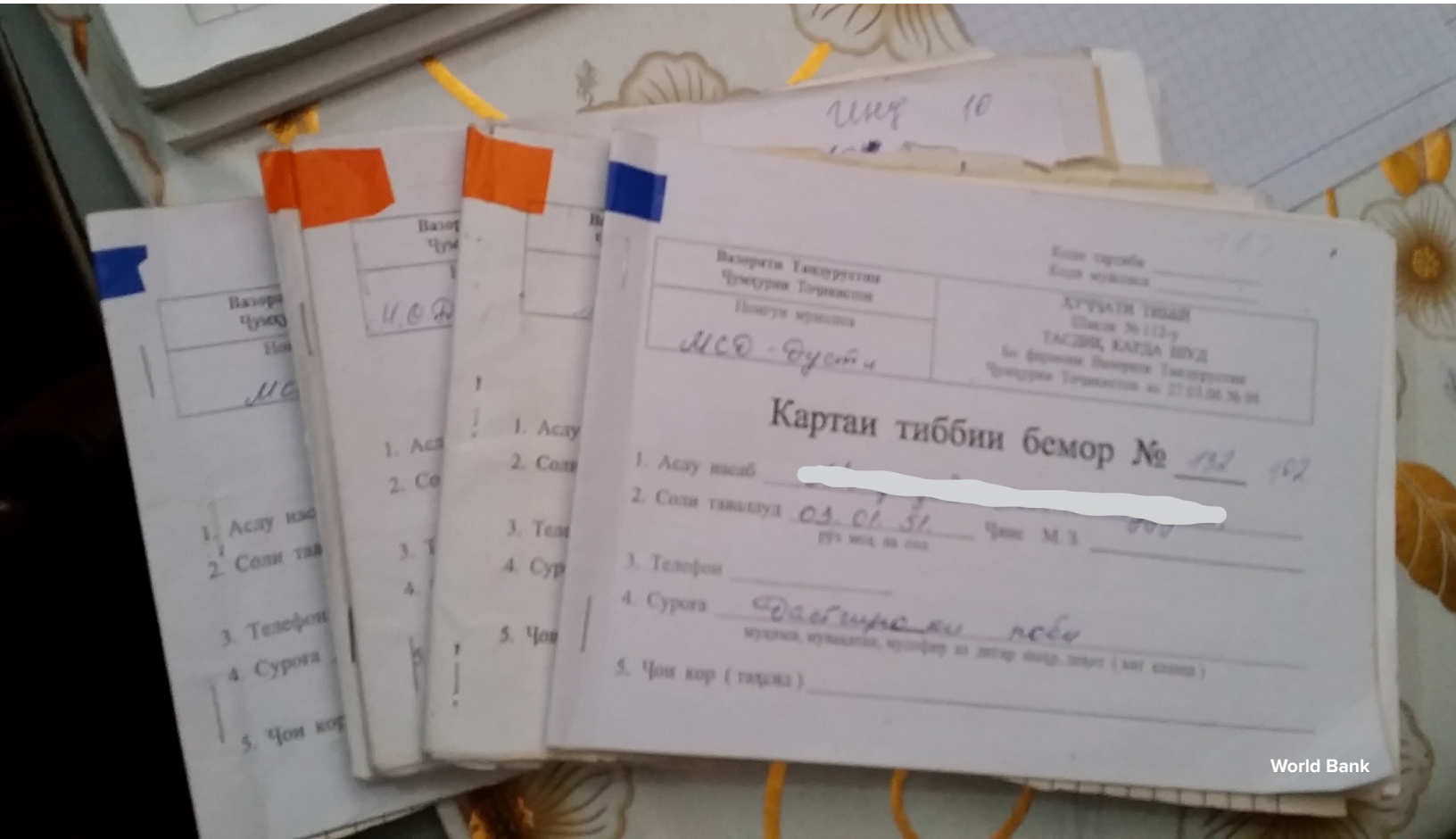
Through focused discussions with stakeholders who have participated in service delivery in Tajikistan, we identified perceived barriers to and facilitators of the initiation of and retention in care for hypertension. Hypertension care is believed to be hindered by wrong understandings of the disease and its therapy by people living with the illness; the high time and monetary costs of seeking care; ambiguous and inappropriate clinical guidelines; shortages of human resource for health and equipment for blood pressure monitoring; and a lack of support from peers, family, providers, and the community for initiation and adherence to hypertension care.

FIGURE 6 ADDRESSING DROP-OFFS IN THE CONTINUITY OF CARE FOR HYPERTENSION



Appropriate service delivery solutions should address the barriers and incorporate the facilitators of retention along the hypertension care cascade in Tajikistan. Solutions to bottlenecks in hypertension service delivery in Tajikistan enable understanding of hypertension and its therapy among people with hypertension; facilitate regular monitoring of blood pressure; ensure the supply of trained and skilled health workers; incorporate support from peers, families, and communities; reduce the time and monetary costs of seeking care; and improve the ease of understanding of clinical guidelines and adapting them to ensure their relevance to the context (Figure 6). Chapter 4 presents solutions to addressing the drop-offs in hypertension care for each of the five areas defined in Figure 6.


012
World Bank


Картаи тиббии бемор №
World Bank

World Bank

Chapter 4: Fit-for-purpose solutions to challenges in service delivery for hypertension

To improve the effectiveness of service delivery for hypertension in Tajikistan, it is essential to implement interventions that address the most critical challenges, including the diagnosis of hypertension cases in the community and the attainment of blood pressure control. The achievement of blood pressure control is also influenced by the initiation of and adherence to hypertension therapy. Fit-for-purpose solutions should be effective at addressing barriers to retention along the hypertension care cascade identified by service users, providers, and administrators, and be implementable within the Tajikistan context.

In a review of the literature, we identified over 150 publications of interventions that may address barriers to hypertension diagnosis, initiation of and adherence to antihypertensive therapy, or achievement of blood pressure control. We focused on interventions that could be implemented at the primary health care level, given global evidence suggesting a central role for the family physician in effective responses to NCDs. Majority of the identified interventions were targeted at improving adherence at the primary health care level, as seen in Table 5.

TABLE 5 OVERVIEW OF RESULTS OF LITERATURE REVIEW

Service level	Diagnosis	Treatment initiation	Treatment adherence	Blood pressure control
Community based	19	19	11	0
Insurance network	0	0	2	0
National policy	0	0	1	0
Pharmacy	3	4	10	0
Primary care	10	10	103	3
Secondary/tertiary care	1	1	5	1
Grand Total	**33**	**34**	**132**	**4**

Through discussions with people living with hypertension, providers, and administrators, we narrowed the initial list of solutions based on the perceived feasibility of applying each intervention within PHC settings in the Tajikistan context. While several of the identified solutions have been implemented successfully in other countries and can be incorporated into existing programs, we also included newer and promising interventions which can be tested on a small scale before scale-up (Table 6). We discuss each group of solutions below.

TABLE 6 FIT-FOR-PURPOSE SOLUTIONS TO CHALLENGES IN HYPERTENSION SERVICE DELIVERY

Type of intervention	Diagnosis	Treatment initiation	Treatment adherence and follow-up	Blood pressure control
User-oriented information		X	X	X
Peer meetings			X	X
Health care navigators		X	X	X
Faith-based organizations	X			
May measurement month	X			
Health caravan	X	X	X	X
Basic benefit package revision		X	X	X
Reducing patient treatment costs		X	X	X
Provider job aids	X	X	X	X
Task-shifting to other health staff	X		X	X
Pharmacy-based care	X		X	X

ENABLING UNDERSTANDING OF HYPERTENSION AND ITS THERAPY AMONG PEOPLE WITH HYPERTENSION

Hypertension, akin to other chronic illnesses, requires considerable enagement of the people living with hypertension in self-management. This may involve monitoring the illness, adhering to therapy, and developing strategies to maintain a satisfactory quality of life. Individuals with hypertension that are more knowledgeable about the condition have better care outcomes, use health care services better, and are more proactive in seeking further assistance. For example, a mobile messaging program in the United States to support treatment adherence and hypertension education resulted in decreased blood pressure and greater odds of blood pressure control.[19]

User-oriented information should be easy-to-understand and practical, focusing on topics relevant for self-management. For information to lead to changes in behavior, it should facilitate the formation of intention to act. There is considerable evidence that intention to act forms when the information available focuses on shaping positive attitudes and beliefs about

the targeted behavior, which are the actions required for self-management in this case.[20] The key elements to consider in designing information to promote positive attitudes and beliefs are the content, messenger, mode of delivery, location, frequency, and duration.[21] To identify the characteristics of these elements necessary to ensure that information is effective at changing behavior, they should be co-developed and pre-tested with people living with hypertension.

INVOLVEMENT OF PEERS, FAMILIES, AND COMMUNITIES

Peers, families, and communities are an important source of support to individuals living with chronic illness. Peers and families can provide emotional support and link people living with hypertension to facility and community resources. Peer support involves other people living with hypertension sharing health stories and other advice on managing the illness. Systematic reviews of peer support interventions for diabetes and hypertension saw improved outcomes for cardiovascular risk factors in low- and high-income countries.[22, 23] A group diabetes education program in South Africa delivered by health promoters saw sustained decreases in blood pressure after one year.[24] Communities can also play an active role in creating awareness to increase service demand, providing social support, and mobilizing resources for health care to support the sustainability of programs.

Peer meetings outside the facility can bring together individuals with similar conditions, to support each other and exchange experiences. Meeting outside the health facility can widen the participation to individuals who are not comfortable in the clinic setting. The meetings could be facilitated by a peer educator and focus on issues that people living with hypertension are struggling with, such as treatment adherence, and advise on how to contain the costs of care. Chaikhana or tea house meetings that focus on hypertension could harness an existing social forum for certain groups, particularly men. Meeting opportunities for women could also be explored.

Health care navigators accompany individuals with hypertension to clinics and have been shown to be effective at facilitating communication with health care providers. Systematic reviews show that navigators can increase adherence to care and completion of appointments.[25] In chronic diseases, navigators help the service user identify and implement the critical steps in their management and can improve care processes.[26] Given the misinformation on the risks associated with hypertension in the target population and apprehension over seeking care, health care navigators are a cost-effective intervention to improve adherence to treatment and attainment of blood pressure control.

Faith-based organizations have unique influence on the population and religious leaders can champion a wide variety of social causes. This influence can be leveraged to promote awareness of hypertension and to facilitate early diagnosis, for instance by locating screening activities around mosques and religious event. Similar interventions have been effective in other contexts. Interventions led by faith-based organizations in the United States have

been associated with increased physical activity among attendees.[27] In Bulgaria, Romania, and Turkey, early diagnosis of tapeworm infection was facilitated in part by screening in mosques.[28] Case detection of tuberculosis in Asia has also been carried out by screening people in mosques.[29] Local experts in Tajikistan have expressed support for the idea of leveraging existing religious institutions to engage the population in the control of chronic diseases.

REDUCING THE TIME AND MONETARY COSTS OF CARE

The cost of care for hypertension in Tajikistan is primarily driven by medication and geographic access to health facilities. Models of care that bring service delivery closer to the individual and community, can reduce financial barriers to health care access. These interventions are particularly relevant for people in informal employment, such as farming, with working hours that overlap with the times the facility is open. In addition, interventions that reduce the costs of purchasing medication, potentially through benefit package redesign and cost sharing, are an essential part of a systems-based approach to increasing compliance with hypertension care in Tajikistan.

May Measurement Month for World Hypertension Day unites stakeholders around the common goal of screening to facilitate the early diagnosis of hypertension. May Measurement Month initiative has been observed in over 90 countries, testing over a million people in a single year, and raising awareness of the importance of blood pressure monitoring and therapy for hypertension.[30] Screening campaigns have been demonstrated to be effective in several studies. Screening in homes, community events, and self-help groups for cardiovascular disease risk factors facilitated referrals of urgent and non-urgent hypertension cases in Bangladesh, Guatemala, Mexico, and South Africa.[31] Door to door screening, newspaper campaigns, and leaflet distribution yielded a 39.6% diagnosis rate in Nepal of which 26% entered further treatment.[32] Finally, in Indonesia, screening by trained community volunteers led to referrals to facilities for diagnosis and initiation of therapy. The program was cost-saving.[33]

Health caravans have been used in Tajikistan since 2009 to improve access to health care in rural and remote areas.[34] While health caravans have been used sporadically for outreach, a systematic approach to using them could facilitate broader awareness of hypertension, screening for early diagnosis, and follow-up of care within the community. There are several examples globally of using mobile clinics to expand access to health services. In the United States, mobile clinics have increased health care access among vulnerable populations, providing a link between the clinic and community.[35] In South Africa, mobile testing units were used to screen individuals for NCDs within taxi parks, business centres, community venues, and work sites, leading to 50% of individuals diagnosed with hypertension initiating their therapy within a month.[36, 37]

Expanding the basic benefit package to include medication for prevalent chronic diseases, such as hypertension, or modifying cost-sharing mechanisms can reduce the financial

burden from lifelong treatment. There is substantial evidence demonstrating that reducing the costs borne by the individual, through insurance or expansion of a benefit package guaranteed through state revenues, increase adherence to care and reduces complications from lack of blood pressure control.[38] A review article estimated that when the patients' share of the cost of a medication increases by 10%, this is associated with a 2-6% decrease in prescription drug use.[39] Most studies assessing the impact of cost sharing on essential drugs such as antihypertensives have reported a 4-28% decrease in use following increase in cost burden on the patient.[40] The cost of taking medication over the long term is a key determinant of non-adherence to hypertension care in Tajikistan. There is an urgent need to address this challenge through policies that reduce costs borne by the individual and household to initiate and maintain treatment, including an increase in public financing of care costs.

IMPROVING PROVIDER UNDERSTANDING AND ADAPTATION OF GUIDELINES

Clinical guidelines for hypertension should be simple and strike a balance between what is desirable and what is feasible. This allows a wider range of providers to be involved in service delivery while reducing risks to service users. Simplification of guidelines would require the standardization of technical terms for diagnostic procedures, drug prescriptions, and treatment monitoring. In the case of Tajikistan, there may be a need to modify existing guidelines to differentiate between areas in the country that have more skilled health workers and those that do not, in terms of assigning responsibility across the hypertension care cascade.

An easy-to-use "job aid" can provide practical and evidence-based guidelines to health workers regarding case finding, treatment initiation, adherence support, and user-oriented information. The job aid could be introduced with a short training of PHC staff. Similar interventions have been implemented for cardiovascular diseases management by the World Health Organization (WHO) with improvements in blood pressure management, including the WHO Package of Essential NCD Interventions for PHC in Low-resource settings.[41, 42] Checklists can also enable providers to systematically assess their adherence to clinical guidelines. The addition of a checklist related to clinical guidelines for providers, in addition to screening and health education, led to large reductions in blood pressure in Asia.[43] A similar checklist approach, of enabling providers to adhere to clinical guidelines, has been used successfully for diabetes management in low- and high-income countries.[44]

INCREASING THE SUPPLY OF TRAINED AND EQUIPPED HEALTH WORKERS

In a context of shortages or an inequitable distribution of highly-skilled healthcare staff, task-shifting strategies can be indispensable in filling service delivery gaps. Task-shifting refers to the reallocation of tasks from the responsibility of one cadre to, where appropriate,

less-specialized cadres. While measures to raise recruitment rates for highly-skilled staff and to expand training facilities are important, waiting for new health workers to graduate through conventional systems will lead to delays in providing urgently-needed services. Alternative and simplified models of transferring the training for simple tasks related to hypertension care can expand the human resource pool very quickly in the short term.[45]

When the health workforce needs to be expanded to meet service delivery needs, health workers outside practicing physicians, can be mobilized as a stop-gap solution. Practicing nurses, retired nurses, medical students, and nurses-in-training can undertake some tasks in hypertension management. In Kenya, the management of individuals with NCDs that were stable was shifted to nurses who had been provided with clinical decision support protocols which they applied successfully.[46] In Singapore, medical student volunteers screened low-income households, made referrals for hypertensive individuals, and conducted follow up. Over half of untreated hypertensives sought treatment.[47] In the United States, a nurse-led home visitation program aided self-management of hypertension and resulted in higher medication adherence.[48]

Nurse-led care models for uncomplicated cases are a core strategy to reduce costs and waiting times. If regulations allow for nurses to be involved in dispensing medication, home visits by nurses may facilitate access to low-cost generic medication in Tajikistan. Dispensing of expensive brand-name drugs by pharmacies is one of the main drivers of the high cost of medication.[49] There is evidence from other countries of the efficiency of nurse-led care. In Ghana, task shifting to nurses for hypertension control, along with health insurance provision, improved blood pressure control that was sustained at 24 months.[50] Compared to usual care, a nurse practitioner model led to improved cardiovascular risk factors after 12 months in the United States.[51] In rural areas, nurses can aid physicians and assume some of their tasks in making home visits for screening and follow-up. In clinic settings, nurses could be trained to take on much of hypertension care management, particularly in situations with high service user volumes.

Through collaboration with physicians and health facilities, pharmacists can serve as important points of contact for care management of people with hypertension. Larger pharmacies have blood pressure monitoring equipment for their mandatory first-aid kit, but this equipment is under-used. If there are clear referral pathways and clinical decision support tools, pharmacies could be harnessed for hypertension case finding and monitoring, in line with global evidence. In Ghana and Iran, pharmacists recruited individuals for voluntary hypertension screenings and referrals to clinics.[52, 53] In Brazil, Canada, and the United States, pharmacists closely monitored people with hypertension for drug adherence and blood pressure control.[54, 55, 56] In the United States, a trial of barber-led health promotion and pharmacist-led medication management in black male barbershops showed blood pressure reduction in patrons within 6 months.[57]

AN URGENT CALL TO STRENGTHEN SERVICE DELIVERY FOR HYPERTENSION IN TAJIKISTAN

Up to 90% of people living with hypertension in Khatlon and Sogd Oblasts, have never been diagnosed. This, and other drop-offs in the continuum of care, represent a lost opportunity to control hypertension and contribute to stemming the rise in the prevalence of NCDs. To address the burden of hypertension, service delivery must be strengthened to increase the rates of diagnosis, treatment initiation and adherence, and disease control.

Therefore, our report proposes fit-for-purpose solutions to close these gaps in diagnosis and management of hypertension. As these interventions are implemented, it would be important to closely track progress towards improving retention in the hypertension care by monitoring the care cascade. Akin to this study, monitoring efforts will be strengthened by periodic systematic assessments of the determinants of drop-offs along the cascade of care to iteratively improve service delivery design and adapt to new challenges. Future research can also draw on the CQI database to develop algorithms that predict retention along the cascade of care.

Hypertension, while an important risk factor for NCDs, should not be addressed in isolation. There should be concerted efforts to prevent the incidence of NCDs by addressing other major modifiable risk factors, including tobacco use, high blood cholesterol, and diabetes; secondary prevention to avert recurrent events and complications in people living with NCDs; and early detection of the acute manifestations or complications of NCDs with prompt referral to the appropriate level of care. To this end, Tajikistan can turn to evidence-based, practical interventions for strengthening the management of risk factors for NCDs in the WHO Package of Essential NCD Interventions for PHC in Low-resource settings.[58]

The cost of inaction, with respect to hypertension care, is potentially enormous. In addition to the negative impacts on morbidity and mortality, a high prevalence of NCDs can also lead to considerable losses in labour productivity, and hence economic growth. Tajikistan can strengthen current programs and policies, by adopting the feasible and cost-effective recommendations in this report to strengthen service delivery for hypertension, boosting population health and economic growth in the present and future.

World Bank

World Bank

Endnotes

1. Institute for Health Metrics and Evaluation. Tajikistan. http://www.healthdata.org/tajikistan. Accessed February 1, 2019.
2. World Health Organization Regional Office for Europe. Better Non-communicable Disease Outcomes: Challenges and Opportunities for Health Systems. Vol 53. Copenhagen; 2013. doi:10.1017/CBO9781107415324.004.
3. Institute of Health Metrics and Evaluation. Tajikistan.
4. Jakab M, Farrington J, Borgermans L, Mantingh F, editors (2018). Health systems respond to NCDs: time for ambition. Copenhagen: World Health Organization Regional Office for Europe.
5. United Nations, Department of Economic and Social Affairs, Population Division (2017). World Population Ageing 2017 - Highlights (ST/ESA/SER.A/397).
6. Institute of Health Metrics and Evaluation. Tajikistan.
7. Rakhimov Z.A., Statistics Agency under the President of the Republic of Tajikistan, 2017.
8. Jakab, Farrington, Borgermans, and Mantingh. Health systems respond to NCDs.
9. Smith O, Nguyen SN. Getting Better: Improving Health System Outcomes in Europe and Central Asia. The World Bank; 2013. doi:10.1596/978-0-8213-9883-8.
10. Smith and Nguyen. Getting Better.
11. Smith and Nguyen. Getting Better.
12. The Demographic and Health Survey Program. Tajikistan 2017 Demographic and Health Survey - Key Findings.; 2018. https://www.dhsprogram.com/publications/publication-SR250-Summary-Reports-Key-Findings.cfm. Accessed February 11, 2019.
13. Ministry of Health and Social Protection of the Republic of Tajikistan. National Health Strategy of the Republic of Tajikistan 2010-2020.; 2010. Accessed February 5, 2019.
14. Ministry of Health and Social Protection of the Republic of Tajikistan. Strategy for prevention and control of non-communicable diseases and injuries in the Republic of Tajikistan for the period of 2013-2023. Accessed March 10, 2019.

15. Khodjamurodov G, Sodiqova D, Akkazieva B, Rechel B. Health Systems in Transition: Tajikistan (Vol. 18 No. 1 2016). Vol 18.; 2016. http://www.euro.who.int/__data/assets/pdf_file/0007/308833/HiT-Tajikistan.pdf. Accessed February 5, 2019.

16. David H. Peters, Nhan T. Tran, Taghreed Adam. Implementation research in health: a practical guide. Alliance for Health Policy and Systems Research, World Health Organization, 2013.

17. World Bank. Tajikistan Health Services Improvement Project. Project Appraisal Document; 2013.

18. According to the Republican Centre for Medical Statistics and Information, in 2017 for every 10, 000 people only 21.2 medical specialists were available, for every 10,000 people only 2.8 family doctors, for every 10,000 population only 58.6 medical staff who have college education (nurses, midwives, feldshers) serving at all levels of health care system (Source: Health Status and Medical Activities Report, 2018).

19. Bobrow K, Farmer AJ, Springer D, et al. Mobile Phone Text Messages to Support Treatment Adherence in Adults With High Blood Pressure (StAR): A Single-Blind, Randomized Trial. Circulation. 2016;133(6):592-600. doi:10.1161/CIRCULATIONAHA.115.017530.

20. Godin, G., & Kok, G. (1995). The theory of planned behavior: A review of its applications to health-related behaviors. American Journal of Health Promotion, 11, 87–98.

21. McCullough, Amanda R., et al. "Behavior change theory, content and delivery of interventions to enhance adherence in chronic respiratory disease: a systematic review." Respiratory medicine 116 (2016): 78-84.

22. Patil SJ, Ruppar T, Koopman RJ, et al. Effect of peer support interventions on cardiovascular disease risk factors in adults with diabetes: a systematic review and meta-analysis. BMC Public Health. 2018;18(1):398. doi:10.1186/s12889-018-5326-8.

23. Krishnamoorthy Y, Sakthivel M, Sarveswaran G, Eliyas SK. Effectiveness of peer led intervention in improvement of clinical outcomes among diabetes mellitus and hypertension patients—A systematic review and meta-analysis. Prim Care Diabetes. December 2018. doi:10.1016/j.pcd.2018.11.007.

24. Mash R, Kroukamp R, Gaziano T, Levitt N. Cost-effectiveness of a diabetes group education program delivered by health promoters with a guiding style in underserved communities in Cape Town, South Africa. Patient Educ Couns. 2015;98(5):622-626. doi:10.1016/j.pec.2015.01.005.

25. Ali-Faisal SF, Colella TJF, Medina-Jaudes N, Benz Scott L. The effectiveness of patient navigation to improve healthcare utilization outcomes: A meta-analysis of randomized controlled trials. Patient Educ Couns. 2017;100(3):436-448. doi:10.1016/j.pec.2016.10.014.

26. McBrien KA, Ivers N, Barnieh L, et al. Patient navigators for people with chronic disease: A systematic review. van Wouwe JP, ed. PLoS One. 2018;13(2):e0191980. doi:10.1371/journal.pone.0191980.

27. Tristão Parra M, Porfírio GJM, Arredondo EM, Atallah ÁN. Physical Activity Interventions in Faith-Based Organizations: A Systematic Review. Am J Heal Promot. 2018;32(3):677-690. doi:10.1177/0890117116688107.

28. Tamarozzi F, Akhan O, Cretu CM, et al. Prevalence of abdominal cystic echinococcosis in rural Bulgaria, Romania, and Turkey: a cross-sectional, ultrasound-based, population study from the HERACLES project. Lancet Infect Dis. 2018;18(7):769-778. doi:10.1016/S1473-3099(18)30221-4.

29. Rifat M, Rusen ID, Mahmud MH, Nayer I, Islam A, Ahmed F. From mosques to classrooms: mobilizing the community to enhance case detection of tuberculosis. Am J Public Health. 2008;98(9):1550-1552. doi:10.2105/AJPH.2007.117333.

30. Beaney T,Schutte AE, Tomaszewski M et al. "May Measurement Month 2017: an analysis of blood pressure screening results worldwide." The Lancet Global Health 6.7 (2018): e736-e743.

31. Levitt NS, Puoane T, Denman CA, et al. Referral outcomes of individuals identified at high risk of cardiovascular disease by community health workers in Bangladesh, Guatemala, Mexico, and South Africa. Glob Health Action. 2015;8. doi:10.3402/gha.v8.26318.

32. Sharma SK, Dhakal S, Thapa L, et al. Community-based screening for chronic kidney disease, hypertension and diabetes in Dharan. JNMA J Nepal Med Assoc. 2013;52(189):205-212. http://files/2811/Sharma et al. - 2013 - Community-based screening for chronic kidney disea.pdf.

33. Rattanavipapong W, Gonzales Luz AC, Kumluang S et al. 2016. One Step Back, Two Steps Forward: An Economic Evaluation of the PEN Program in Indonesia. Health Systems & Reform, 2(1):84–98.

34. World Health Organization. Economic crisis, health systems and health in Europe; 2015.

35. Yu SWY, Hill C, Ricks ML, Bennet J, Oriol NE. The scope and impact of mobile health clinics in the United States: A literature review. Int J Equity Health. 2017;16(1):178. doi:10.1186/s12939-017-0671-2.

36. Govindasamy D, Kranzer K, van Schaik N, et al. Linkage to HIV, TB and Non-Communicable Disease Care from a Mobile Testing Unit in Cape Town, South Africa. PLoS One. 2013;8(11). doi:10.1371/journal.pone.0080017.

37. Bassett I V, Govindasamy D, Erlwanger AS, et al. Mobile HIV Screening in Cape Town, South Africa: Clinical Impact, Cost and Cost-Effectiveness. PLoS One. 2014;9(1). doi:10.1371/journal.pone.0085197.

38. Lurie, N., N. B. Ward, M. F. Shapiro, and R. H. Brook. 1984. Termination from Medi-Cal—does it affect health? New England Journal of Medicine 311(7):480-484.

39. Goldman, D. P., G. F. Joyce, and Y. Zheng. 2007. Prescription drug cost sharing: Associations with medication and medical utilization and spending and health. Journal of the American Medical Association 298(1):61-69.

40. Institute of Medicine (US) Committee on Public Health Priorities to Reduce and Control Hypertension. A Population-Based Policy and Systems Change Approach to Prevent and Control Hypertension. Washington (DC): National Academies Press (US); 2010.

41. Wangchuk D, Virdi N, Garg R, et al. Package of essential non-communicable disease (PEN) interventions in primary health-care settings of Bhutan: a performance assessment study. WHO South-East Asia J Public Heal. 2014;3(2):154. doi:10.4103/2224-3151.206731.

42. Zhang XH, Lisheng L, Campbell NRC, Niebylski ML, Nilsson P, Lackland DT. Implementation of World Health Organization Package of Essential Non-communicable Disease Interventions (WHO PEN) for Primary Health Care in Low-Resource Settings: A Policy Statement From the World Hypertension League. J Clin Hypertens. 2016;18(1):5-6. doi:10.1111/jch.12749.

43. Jafar TH, Silva A de, Naheed A, et al. Control of blood pressure and risk attenuation: a public health intervention in rural Bangladesh, Pakistan, and Sri Lanka: feasibility trial results. J Hypertens. 2016;34(9):1872-1881. doi:10.1097/HJH.0000000000001014.

44. Lee JD. Alphabet Strategy for diabetes care: A multi-professional, evidence-based, outcome-directed approach to management. World J Diabetes. 2015;6(6):874. doi:10.4239/wjd.v6.i6.874.

45. World Health Organization. Taking stock: Health worker shortages and the response to AIDS; 2006.

46. Some D, Edwards JK, Reid T, Van den Bergh R, Kosgei RJ, Wilkinson E, et al. Task Shifting the Management of Non-Communicable Diseases to Nurses in Kibera, Kenya: Does It Work? PloS one. 2016;11(1):e0145634

47. Wee LE, Wong J, Chin RT, et al. Hypertension management and lifestyle changes following screening for hypertension in an Asian low socioeconomic status community: a prospective study. Ann Acad Med Singapore. 2013;42(9):451-465. http://files/2820/Wee et al. - 2013 - Hypertension management and lifestyle changes foll.pdf.

48. Park E, Kim J. The Impact of a Nurse-Led Home Visitation Program on Hypertension Self-Management among Older Community-Dwelling Koreans. Public Health Nurs. 2016;33(1):42-52. doi:10.1111/phn.12220.

49. Donadel M, Karimova G, Nabiev R, Wyss K. Drug prescribing patterns at primary health

care level and related out-of-pocket expenditures in Tajikistan. BMC Health Services Research (2016) 16:556. DOI 10.1186/s12913-016-1799-2.

50. Ogedegbe G, Plange-Rhule J, Gyamfi J, et al. Health insurance coverage with or without a nurse-led task shifting strategy for hypertension control: A pragmatic cluster randomized trial in Ghana. PLoS Med. 2018;15(5). doi:10.1371/journal.pmed.1002561.

51. COACH Trial: A Randomized Controlled Trial of Nurse Practitioner/Community Health Worker Cardiovascular Disease Risk Reduction in Urban Community Health Centers. October 2018. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3218795/.

52. Marfo AFA, Owusu-Daaku FT. Evaluation of a pharmacist-led hypertension preventative and detection service in the Ghanaian community pharmacy: an exploratory study. Int J Pharm Pract. 2016;24(5):341-348. doi:10.1111/ijpp.12263.

53. Kulchaitanaroaj P, Brooks JM, Chaiyakunapruk N, Goedken AM, Chrischilles EA, Carter BL. Cost-utility analysis of physician-pharmacist collaborative intervention for treating hypertension compared with usual care. J Hypertens. 2017;35(1):178-187. doi:10.1097/HJH.0000000000001126.

54. Obreli-Neto PR, Guidoni CM, de Oliveira Baldoni A, et al. Effect of a 36-month pharmaceutical care program on pharmacotherapy adherence in elderly diabetic and hypertensive patients. Int J Clin Pharm. 2011;33(4):642-649. doi:10.1007/s11096-011-9518-x.

55. Tsuyuki RT, Al Hamarneh YN, Jones CA, Hemmelgarn BR. The Effectiveness of Pharmacist Interventions on Cardiovascular Risk: The Multicenter Randomized Controlled RxEACH Trial. J Am Coll Cardiol. 2016;67(24):2846-2854. doi:10.1016/j.jacc.2016.03.528.

56. Moore JM, Shartle D, Faudskar L, Matlin OS, Brennan TA. Impact of a patient-centered pharmacy program and intervention in a high-risk group. J Manag care Pharm JMCP. 2013;19(3):228-236. doi:10.18553/jmcp.2013.19.3.228.

57. Victor RG, Lynch K, Li N, et al. A Cluster-Randomized Trial of Blood-Pressure Reduction in Black Barbershops. N Engl J Med. 2018;378(14):1291-1301. doi:10.1056/NEJMoa171725.

58. World Health Organization. Hearts: technical package for cardiovascular disease management in primary health care; 2016.


WORLD BANK GROUP