



Policy Brief № 16

The quality of the treatment and prevention of stroke in the Kyrgyz Republic

1. Introduction

Cardiovascular diseases (CVD) are one of the leading causes of death in Kyrgyzstan. In 2006, CVD contributed 47.5% of all deaths. *Acute Myocardial Infarction (AMI) and Cerebrovascular Accidents (CVA)* are leading causes of death within CVD. AMI and CVA figures in 2003 were 389 and 261 deaths per 100 thousand people, respectively (WHO, 2004). The high burden of disease from CVD motivated this study assessing the quality of prevention, curative services and rehabilitation related to AMI and stroke at primary health care, inpatient services and specialized care at the tertiary level. The study was conducted by the Center for Health System Development. This Policy Brief № 16 presents summary results of the research on stroke. Summary results for AMI are presented in Policy Brief № 15. The full paper can be obtained from the Center for Health System Development.

2. The purpose of the study

The purpose of the study was to provide a comprehensive assessment of the quality of CVD treatment and prevention in Kyrgyzstan in order to determine future directions and recommendations for the strategy "Manas Taalimi National Health Care Reform Program" (2006-2010).

3. Methods

The study used the following methods: a comparative analysis of local and international clinical guidelines and protocols for the treatment of stroke; retrospective analysis of 371 inpatient records and 155 outpatient charts. There have been 25 semi-structured interviews with post-stroke patients and 11 focus group discussions with doctors of territorial, province and tertiary hospitals. The study is carried out in 3 oblasts -- Chuy, Naryn and Jalalabad -- as well as in the city of Bishkek.

4. Results and conclusions

Four phases of stroke prevention and treatment were assessed: primary prevention (4.1), pre-hospitalization phase (4.2), hospital phase (4.3), and secondary prevention and rehabilitation (4.4).

4.1. Primary prevention

The primary prevention aims active identification and elimination of the main modifiable stroke risk factors, such as an increased blood pressure, high blood sugar levels, excessive weight, sedentary lifestyle, smoking, and alcohol abuse. The study also assessed the effectiveness of the risk factors' control at the primary health care level using two indicators:

- **Indicator №1. Identification of modifiable risk factors for stroke, including routine measurements of blood pressure in adults during visits of a family group practitioner.**

Prevention at the primary healthcare level mainly focuses on detection and control of hypertensive disease as the major risk factor.

Blood pressure measurement is performed at the primary level for 72% of adults who visit the clinic, regardless of the nature of the visit (Kyrgyz Integrated Household Survey, 2007). Hypertension is the most frequently noted risk-factor on outpatient cards and other risk factors are not routinely noted. The focus on hypertension is justified since over 30% of the adult population has hypertension but life-styles related risk-factors are important determinants of hypertension and deserve more attention as well.

- **Indicator №2. Effective medical treatment of high blood pressure with medication and counseling about life-style changes**

Results of the Kyrgyz Integrated Household Survey in 2007 showed that only 17% of patients with elevated blood pressure had taken medication for hypertension within the last 24 hours. One of the reasons is their doctor's recommendation to take drugs only during a crisis, and not on a regular basis as is suggested in the clinical guidelines. In addition, patients themselves "thought this was not necessary." This means that patients are not aware of the importance of taking medicines on a regular basis and/or do not have a confidence in the prescribed drugs.

4.2. Providing medical care for stroke patients at pre-hospital stage

Pre-hospital treatment in accordance with clinical guidelines improves recovery for stroke patients. Good quality pre-hospital care is characterized by two markers: timely hospitalization and support of key functions prior to hospitalization.

- **Indicator № 1. Timely hospitalization. To improve outcomes, all stroke patients should be admitted to the hospital, preferably within the first 3-6 hours after symptom onset.**

In Chuy and the city of Bishkek, less than half of the patients (43%) were hospitalized within the first 6 hours. In Naryn and Jalalabad, slightly less than half of the patients (49% and 47% respectively) were hospitalized after 24 hours. Doctors explain the facts of delayed hospitalizations (after 24 hours) by a low awareness among people about stroke symptoms. Besides, many of the interviewed patients typically believe that a stroke patient should not be moved, while his/her relatives fear transporting the patient to the hospital. According to the stroke register only 39% of stroke patients are hospitalized in Bishkek. Some of the interviewed patients explained that they personally or their relatives refused hospitalization, in particular because *"we already had an experience, when my mother was in a hospital. We ourselves provided a complete care. So when my mother-in-law had a stroke the decision was to leave her at home and to look after her under a doctor's supervision. We think this way she would get well quickly..."*.

- **Indicator № 2. The application of emergency treatment measures by the ambulance services to maintain adequate breathing and stable systemic hemodynamics, and to rapidly relieve convulsive syndrome. The ambulance service is to be the leading method of referring patients to an inpatient care.**

Ambulance services transported 65% of stroke patients in Naryn, 33% in Chuy, and 27% in Jalalabad province. The highest percentage of self-referrals was found in Jalalabad (47%), while the lowest percentage was in Naryn (2%). Doctors explain low percentage of hospitalizations by ambulance service in some regions by the fact that, in recent years, this service has been poorly equipped, lacking qualified staff, and serving

essentially as a means of transportation. For that reason, urgent care by ambulance service is difficult to provide and it has a limited scope.

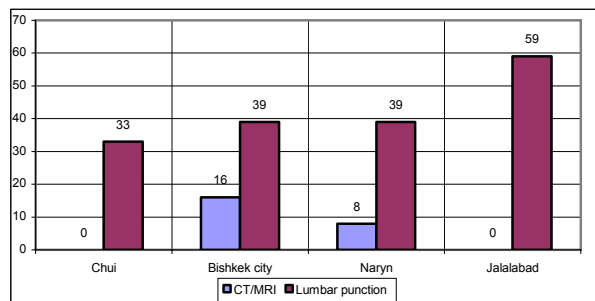
4.3. Providing medical care to stroke patients at the inpatient level

The main condition for selecting adequate treatment is differential diagnostics. Diagnosing the type of stroke (ischemic or hemorrhagic), especially at an early stage, is crucial for the choice of the curative tactics (thrombolytic therapy, surgical treatment and other), and this affects recovery.

- **Indicator № 1. Conducting differential diagnostics of the type of the stroke. According to the principles of evidence based medicine, Computerized tomography and Magnet-resonance tomography/imaging (CT/MRT) are the "gold standard" in diagnosing stroke. If these methods are unavailable, lumbar puncture (LP) is carried out. Other diagnostic tests are Carotid transcranial dopplerography, carotid angiography, and examination of the blood coagulation system. Blood sugar and cholesterol levels, as well as ECG are necessary for identifying risk factors.**

In Kyrgyzstan, differential diagnostics of stroke is based mainly on clinical information about the patient and on the doctor's experience as access to modern methods of diagnoses (CT/MRT) remains rare not only in the provinces, but also in Bishkek. Despite its high sensitivity, CT/MRT, "the gold standard" of the stroke diagnostics, takes place only in 9.2% of all cases in the country. It is carried out only in Bishkek, since there is only one MRT machine and 2 CT apparatus in Kyrgyzstan. Moreover, the high cost of carrying out the procedures limits access to receiving the test. Virtually all patients who passed the CT/MRT, receive treatment in Bishkek. They represent 16% of all patients in the studied sample. A small percentage (8%) of patients from Naryn passed the CT/MRT test in Bishkek at a later stage, after the period of acute stroke. Implementation rate for the lumbar puncture (LP) in patients with stroke ranges from 33% in Chui to 59% in Jalalabad (Figure 1).

Figure 1. % of patients who passed CT, MRT, LP, tests to all cases of stroke



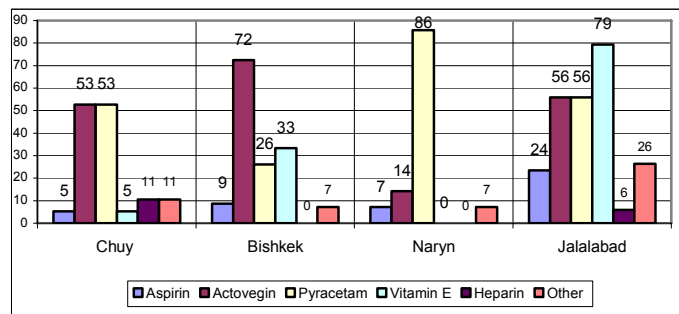
Nevertheless, the percentage of conducting the LP is higher for the patients with a hemorrhagic stroke (compared to an average). This diagnostic method is used in cases of unclear symptoms, when it is difficult to confirm or exclude hemorrhagic stroke. Thus, percentage of cases of hemorrhagic stroke when the LP was performed was 82% in Jalalabad province, 70% in Bishkek, 63% in Chuy province, and 57% in Naryn province. Other diagnostic procedures, such as Carotid angiography and Carotid transcranial dopplerography were performed in an insignificant number of cases due to a lack of necessary equipment. Besides, in order to identify risk factors the following tests were conducted: ECG in 67.7% of cases, blood sugar test in 81.9%, prothrombin index (PTI) in 57.7%, and cholesterol level in 27.5% of cases.

- Indicator № 2. Treatment of a stroke. In accordance with the international experience and evidence based medicine, the treatment of hemorrhagic stroke aims to prevent hemorrhage and secondary complications in forms of cerebral ischemia and cerebral edema. Calcium channels blockers (Nimodipin) are prescribed. At the same time, fibrinolytics and steroids should not be used. It is necessary to prescribe a thrombolytic (streptokinase) and antiplatelet therapy (Aspirin, or Klopido-grel or Dipiridamol) for a treatment of an acute phase of an ischemic stroke.

In Kyrgyzstan, drugs with unproved effectiveness are used when treating stroke, such as Piracetam, Vinpocetine, Actovegin, and others. At the same time, drugs with proven effectiveness are not widely used. For the treatment of a hemorrhagic stroke neuro-protectors (Piracetam, Vinpocetine, vitamin E etc.) are

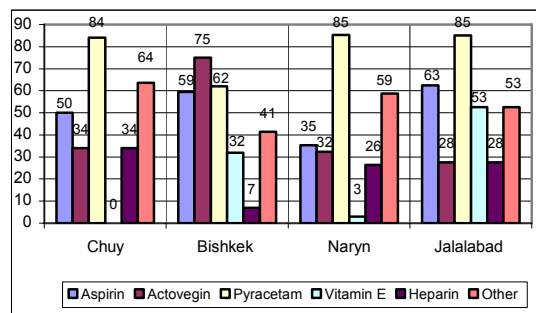
prescribed. Like so, in Naryn province, Piracetam is the most frequently prescribed medicine (86%), in the Jalalabad area it is Vitamin E - 79%, and in the city of Bishkek and the Chui province Actovegin is prescribed in 72% and 53% of cases respectively.

Figure 2. The treatment of hemorrhagic stroke patients in in-patient facilities (%)



In some respects or criteria, approaches to a treatment of ischemic stroke do not differ from these to treating a hemorrhagic stroke. **Drugs with unproved effectiveness (neuro-protectors - Actovegin, Piracetam etc.), are prescribed more often than drugs with proven effectiveness.** In average, Piracetam is prescribed in 80% of cases and, therefore, leads among other drugs prescribed in all regions. In Bishkek, the main drug for the treatment of an ischemic, as well as a hemorrhagic stroke is Actovegin (75%). In most of the regions Aspirin was prescribed in less than half of the cases, and even in Bishkek the figure was only 59% (Figure 3). Thrombolytic therapy was not performed to any patient with an ischemic stroke. This can be explained by the fact, that when an early diagnosis of stroke is not possible, a thrombolytic therapy should not be prescribed, therefore, it may be initiated only if a bleeding is excluded.

Figure 3. Treatment of ischemic stroke patients in in-patient facilities (%)



The principles of home-based treatment are similar to those of an inpatient one. The main prescriptions are group from the group of neuro-protectors (Pyracetam, Vinpocetine, Cinnarisin, Actovegin). At the same time, Aspirin prescription in ischemic stroke patients has a low rate (40.4%).

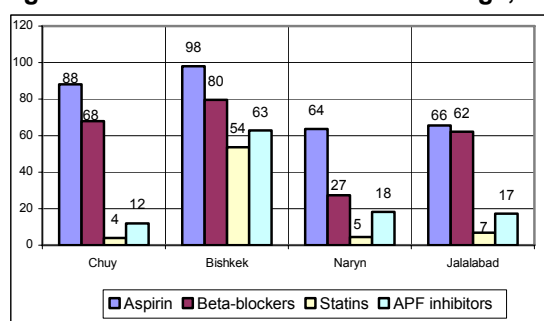
4.4. Secondary prevention and rehabilitation

The concluding and key important stage in treating stroke patients is secondary prevention and rehabilitation. Secondary prevention aims to reduce the occurrence of complication and repeated stroke by prescribing appropriate medication upon discharge and counseling about life-style changes. Rehabilitation aims to support stroke survivors to recover basic physical and social functioning.

- **Indicator №1. Recommendations for at-home medical treatment of discharged patients include the same range of drugs as used for hospital-based treatment.**

Medical treatment prescribed after discharge of patients from hospital is similar to the in-patient treatment. Similar to the results of the appropriateness of care for hospital-based treatment, in Naryn province some groups of drugs (beta-blockers, APF inhibitors) were prescribed in a small percentage of cases (Figure 4). In other regions, the situation is better, especially with the drugs such as Aspirin and beta-blockers. These medicines were prescribed to the majority of patients in Bishkek and Chuy province. A relatively new group of drugs to control hypercholesterolemia - - Statins – appears in discharge recommendations in all regions although it is not widespread with the exception of Bishkek.

Figure 4. Recommendations at discharge, %



- **Indicator №2. Performing rehabilitation. Rehabilitation activities undertaken by a team of professionals and launched during the first seven days affect the recovery of stroke patients.**

The main recommendations made to the patients at their discharge from hospitals, are dieting (in 39% of cases) and adequate physical exercise (10%). Other recommendations are mentioned rarely.

In Kyrgyzstan, the after-stroke rehabilitation comprises physical rehabilitation at home and includes mainly massage and physical exercise aimed at restoring lost functions. Inpatient facilities lack rehabilitation specialists teams. Psychological rehabilitation virtually is not performed. Identification of disability after stroke is a part of social rehabilitation, but in a wider sense the latter is not performed. Patients carry out rehabilitation on their own, drawing on the experiences of their relatives, friends and others.

5. Conclusion

The quality of the preventive and curative care for the patients with CVD, and especially with stroke, varies significantly between regions and has both strengths and weaknesses. **The strengths** of the prevention and treatment include:

- Prevention activities in the primary care facilities focus on the arterial hypertension. Such a focus is justified because of the high prevalence of high blood pressure in the Kyrgyz Republic.
- The clinical content of stroke treatment protocols in Kyrgyzstan is largely in line with international clinical guidelines, with the exception of certain recommendations.

Weaknesses in the prevention and treatment include:

- Not all of the patients are admitted to inpatient facilities, they rather stay at home. In Bishkek, only 39% of patients are hospitalized.
- In half of the oblasts where the study was conducted, patients are hospitalized after 24 hours from the first symptoms' manifestation.
- The ambulance service has a narrow coverage and performs an insufficient range of services for stroke patients in more than a half of the studied oblasts.
- Availability of modern methods of diagnostics of stroke and its subtypes (CT/MRT) in Kyrgyzstan remains low. Mostly, the differential diagnosis of

certain types of stroke in Kyrgyzstan is based on physical examination and doctor's experiences.

- Medicines with unproven effectiveness are used for treating a stroke (Piracetam, Vinpocetine, Actovegin etc.), while the drugs with a proven effectiveness are not widely used.
- Rehabilitation of stroke patients is performed on an inadequate level and comprises fragmented services.

6. Recommendations

- Strengthen primary prevention of CVD including the development of strategies to address risk factors, in particular the "population-based" strategy and the "high-risk strategy" (WHO). *The population-based strategy* should include activities where the target audience is the entire adult population of the KR. Due to the high prevalence of hypertension, the population-based strategy should focus on providing general information about hypertension and its treatment. *The "high-risk" strategy*: identifying individuals with a high risk of AMI and performing activities to reduce risk factors. With regards to this latter, improving control of hypertension in the primary care setting is a key challenge for the future.
- Continue strengthening of the ambulance service in order to increase the coverage of the population and scope of services for the diagnostics and treatment of stroke at the pre-hospital stage.
- Develop clinical guidelines for stroke patients at all levels of medical care in accordance with internationally developed methodologies. Continue using the existing clinical protocols on cerebro-vascular accidents for the primary and secondary levels of the medical care.
- Continue revising and strengthening guidelines and protocols to keep them up to date with international practice.
- Ensure country-wide use of the existing clinical guidelines in order to reduce the gap between the protocols and existing practice particularly in oblasts further from Bishkek. Specialized training programs need to be conducted in order

to strengthen doctors' adherence to clinical guidelines.

- Regularly monitor the quality of care and doctors' adherence to clinical guidelines.
- An important goal is to reduce the differences between the recommended protocols and practice in treatment and secondary prevention, as well as to strengthen doctors' adherence to clinical guidelines. It is necessary to increase the coverage of the specialized training and to regularly monitor the quality and doctors' adherence to clinical guidelines.
- Develop a system of rehabilitation for stroke patients including physical, psychological, and social rehabilitation for their soonest return to a fulfilling life.

In order to obtain detailed information and a full text of the report please refer to Health Policy Analysis Unit of the Center for Health System Development:

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