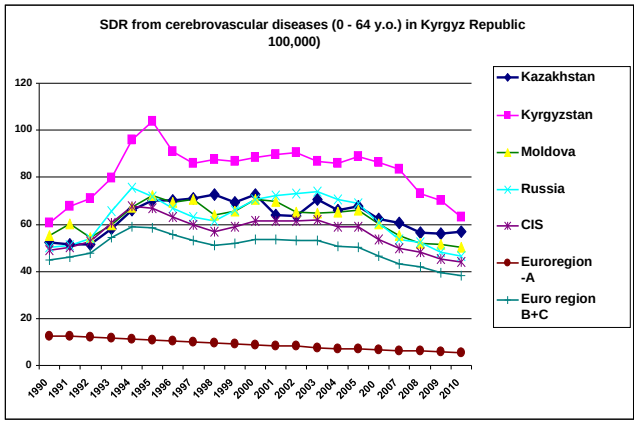
Policy Brief
Analysis of stroke diagnosis verification in home death patients

Background

The Policy Brief outlines findings of the study that analyzed verification of the stroke diagnosis in home death patients based on review of medical documents.

Rate of mortality from cerebrovascular diseases in Kyrgyzstan is the highest among WHO-Euro region countries, with rates exceeding those in Kazakhstan, Russia, Moldova, and CIS by over 10 folds.

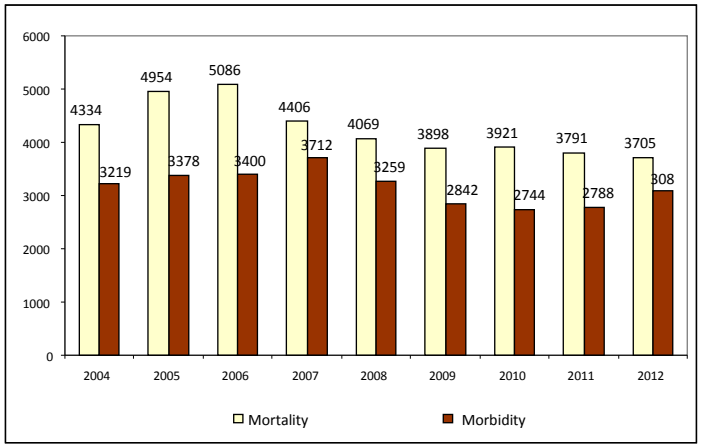
Figure 1. Standardized death rate from cerebrovascular diseases (0-64) in the Kyrgyz Republic (per 100,000)



Source: Database 'Health for all' of WHO-Euro and Kyrgyz National Statistical Committee

Stroke represents one of the leading causes of mortality and is attributed to low life expectancy in the Kyrgyz Republic. The review of statistical data of the Republican Health Information Centre found mortality rates from stroke are higher as compared to morbidity rates (Figure.2).

Figure 2. Number of disease cases and death cases from stroke (absolute numbers)



At the moment the process of diagnosing the stroke is weak, with lacking CT and MRI tests. To illustrate, HPAC (2007) found that stroke patients who underwent CT / MRI in selected regions comprised only 16 %, and most of those patients were receiving treatment in Bishkek city. Therefore, the stroke diagnosis is mainly based on clinical findings and reliant on the doctor's experience.

Methodology

The stroke diagnosis in home death cases was exposed to verification process using medical documents (ambulatory cards), through exclusion of all other diseases / disorders that could cause death.

Verification of the stroke diagnosis was carried out through the following steps:

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1. Exclusion/ rejection of the stroke diagnosis based on exclusion criteria

The following exclusion criteria were used in the study instruments:

- Short timeframe (less than 2 hours) between the outset of symptoms / signs and death;
- Absence of clinical data on the patient's condition before death and absence of autopsy data;
- Lack of clinical records proving the stroke diagnosis

2. Exclusion/ rejection of the stroke diagnosis based on objective assessment of clinical examinations and tests recorded in medical documents.

The study analyzed the utilization of specialized tests (CT, MRI, spinal fluid test) and clinical assessment data (general brain injury symptoms, paresis, speech disturbance, cranial nerve dysfunction, meningeal symptoms, neurological pathology symptoms etc.).

Case selection was carried out through retrospective review of ambulatory cards of home death cases with the stroke being diagnosed (outpatient cases) over the year of 2013.

Inclusion criteria:

- Case meets diagnostic criteria of the stroke
- Patient should be permanently residing in the studied region (rayon) before the death
- Case has been examined by a doctor several hours to 7 days before death.

200 ambulatory cards that meet the study inclusion criteria were randomly selected in every 4 region (Chui, Naryn, Osh, and Jalalabad oblasts). Overall, 783 ambulatory cards were assessed.

Key findings

The verification exercise on home death cases found that 55.4 % of studied cases were not consistent with the 'Stroke' diagnosis.

The findings suggest that the stroke attributed mortality rates in these regions, and in the country accordingly, are inflated.

General findings:

According to reviewed medical documents, the average age of home death patients due to stroke was 72,3.

Patients over 61 y.o. comprised the highest number of home death cases, or 55 % of the studied cases.

The mortality due to stroke was found equally distributed among males and females. It is worth noting that app. 5% of home death cases due to stroke were registered in under 40 y.o. patients.

Clinical examination and tests / investigations:

Diagnostics of acute cerebral circulation disorders (ACCD) is based on clinical examination, laboratory tests, and imaging studies. CT and MRI are the most reliable and informative imaging tests for cerebral pathology. In the reviewed medical cards only 2,7 % had MRI carried out for diagnostic purposes, with spinal fluid tested in 4 % of cases. In 4,1% of cases the autopsy was conducted.

Clinical verification of the 'Stroke' diagnosis was carried out based on assessment of general and localized neurological symptoms using the following parameters: consciousness, cerebral symptoms, paresis of extremities, speech disturbance, cranial nerve symptoms, meningeal symptoms, and neurological pathological tests.

The review of medical records by clinical data suggesting ACCD found that less than 5 % of cases had focal meningeal symptoms and pathological neurologic tests (meningeal irritation signs were noted only in 4,2 % of cases, with pathological tests such as Babinsky, Oppenheim, Scheffer symptoms noted in just 4,5 % of cases).

Verification of the 'Stroke' diagnosis in home death cases based on criteria:

The analysis of medical documents using the above criteria demonstrated that in over half of studied cases – 55,4% (403 cases) - the diagnosis was not consistent with the 'Stroke' diagnosis.

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Of them, the inconsistence with the 'Stroke' diagnosis using one exclusion criteria was found in 3% of home death cases, with 82,6 % of cases found inconsistent using two exclusion criteria, and 14,4 % of cases inconsistent using all three criteria.

Experts who reviewed the medical documents pointed to several diseases and conditions as possible causes of death in patients with non-verified stroke.

By clinical criteria, app. 70% of cases registered as death due to stroke were more consistent with implications of cardiovascular diseases (sudden death due to myocardial infarction, acute cardiac failure, thromboembolism of pulmonary artery, and chronic cardiac failure).

App. 25% of the studied cases could be attributed to other potentially fatal causes, such as chronic alcohol abuse, alcohol other intoxication, terminal stage of cancers, tuberculosis and other infections, sepsis, post-operative complications after brain cancer surgery, head injury, consequences of infantile cerebral paralysis, epilepsy with status epilepticus, endocrine disorders (diabetes and its complications - ketoacidosis and coma).

In app. 5% of reviewed cases it was unfeasible to identify the likely cause of death due to absence of records in medical documents.

Recommendations

- Further implementation of the stroke registration in Bishkek is essential, given the medical and social significance of the stroke and the need to monitor main epidemiological variables
- Consider possibility of extending such practice to regions (oblasts) in order to improve reliability of the stroke diagnosis.
- Develop criteria of post-mortal diagnosis of death due to stroke based on case history, signs and symptoms, including neurological tests, laboratory tests, and imaging studies. Using these criteria, healthcare facilities should consider post-mortal diagnosis of stroke. Accordingly, family practitioners and neurologists should be trained and instructed about use of those criteria
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- It is recommended all family practitioners and neurologists in FMCs to go through specialized trainings on pre-hospital management, diagnostic and treatment of strokes in the Kyrgyz State Medical Institute for Continuous Medical Education.
- Consider regular on the job trainings on clinical guidelines of pre-hospital management, diagnostics and treatment of stroke for ambulance doctors, family practitioners, and neurologists, in premises of Territorial Hospitals and FMCs.
- At PHC level consider strengthening the role and responsibility of neurologists for each death case due to stroke, and consider regulation in PHC facilities on obligatory confirmation of death due to cerebral-vascular diseases (stroke) by neurologist.
- Develop the system of medical care in rural area (Feldsher points, minor and remotely located FGPs), with regular neurologist consultations.
- Strengthen control of death cases due to stroke in healthcare facilities, through mentorship of national level academic departments over each oblast and through appointment of coordinators in neurology at oblast level.
- Develop and introduce educational programs for people on signs of stroke and first aid using mass media, booklets etc.

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