

## THE FORGOTTEN TERTIARY PREVENTION AFTER STROKE

**Darina Mineva**

Headquarters of the National Health Insurance Fund Sofia, Bulgaria, dariamineva@abv.bg

**Abstract:** This article aims to present the outcome of the low range of tertiary prophylaxis - physical therapy and rehabilitation for patients who have experienced a stroke in the last two years. To point out a "gap" in health policies and an opportunity to improve health outcomes. Used database from the World Health Organization, the report on the implementation of the CINDI program and the National Health Insurance Fund in Bulgaria in recent years.

The statistics show unequivocally lasting for high mortality rates from Brain Vascular Disease in Bulgaria, which is four times higher than the most developed economy of the European Union - Germany. Efforts to improve the data through the introduction of new technologies such as thrombolysis and interventional treatment and the inclusion of the healthcare system in international prevention projects - CINDI are mentioned.

Research in the European Union and the US concludes that half of the positive effects on reducing mortality from cerebrovascular disease are due to the limitation of the main risk factors - diet, smoking and physical activity. The other half is due to advances in medical science and practice, invasive and non-invasive methods, new medicines and operating techniques.

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The tertiary prevention of cerebrovascular disease has been "forgotten" by the health system due to directing the scientific and intellectual potential to invasive methods of treating strokes where recovery is without residual effects. The greater proportion of patients are treated in the classic way, which requires a period of rehabilitation. The lack of such, reflects as a problem for the whole health system with many aspects: personal, social, organizational, financial, political. There is no balance between the types of prevention. The rate of tertiary prevention in stroke survivors is limited to a very small percentage, which is one of the reasons for the high mortality rate in Bulgaria.

In Bulgaria's health care system, tertiary prevention is defined as: "Measures in a disease state, the course of which can only be affected by the degree and frequency of manifestations, and not in principle (eg: reduction of asthma attacks in Bronchial asthma)." Both aspects - the frequency and extent of the manifestations are linked to the strategic goals of the health system - apart from medical content, they also bear economic content - reducing costs in the health and social sectors. There is no regulation to carry out tertiary prevention for stroke and a standard that is updated periodically.

The organization of the health care system lacks a "buffer" (author's note) to identify long-term treatment and rehabilitation of stroke survivors. A solution could be an approach called "Deploying management function - regulation", with the regulator being this buffer - compulsory rehabilitation after stroke, "absorbing" the negative effects of disability, through physical therapy and rehabilitation of survivors of survivors, to reduce mortality.

**Keywords:** rehabilitation, tertiary prevention, cerebrovascular disease, mortality

### 1. INTRODUCTION

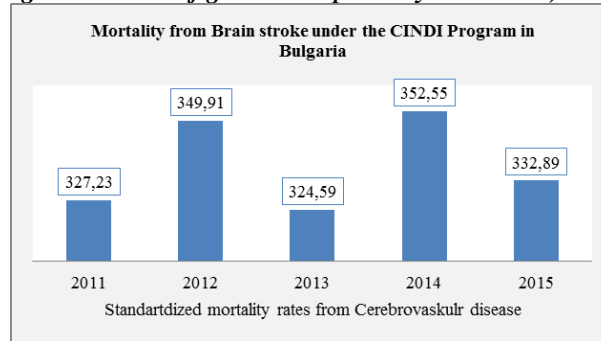
To prevent deaths from chronic non-specific diseases, health systems around the world are creating programs that focus on patterns of behavior, lifestyle, and lifestyle. Efforts are being made to change these models through promotion and prevention programs. However, mortality and disability data due to Brain Disease remain globally high, leading to increasing health and social costs. The effectiveness of prevention programs and the optimal balance between different types of prevention. Various health policy documents have little concern about the presence, place and role of tertiary prevention, to reduce the impact of environmental risk factors after a disease episode (including cerebrovascular disease). **The aim of the study** is to present the scope of tertiary prophylaxis - physical therapy and rehabilitation for patients who have experienced a stroke in 2017 and 2018 in Bulgaria. To point out a "gap" in health policies and the opportunity to improve health indicators.

### 2. BRAIN VASCULAR DISEASE – MORTALITY IN BULGARIA AND EUROPE

A database from several independent sources was used for the analysis: a World Health Organization report, a report on the implementation of the CINDI program, and treated health insurers along clinical pathways to the National Health Insurance Fund in Bulgaria (NHIF). Data were processed using Microsoft Excel 2010.

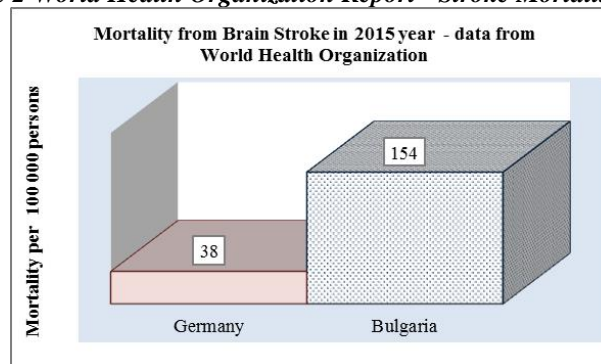
**The CINDI Program** is one of Europe's largest integrated action projects for the prevention of chronic non-communicable diseases and health promotion in the World Health Organization's European region. In 2015, positive results from the implementation of the program were reported in Bulgaria, but three years later, the country's health indicators remain poor and unchanged compared to previous years [2]. Figure 1 presents the movement of data on mortality from Cerebral Vascular Disease over the five-year period during which this prophylactic program was implemented in Bulgaria.

**Figure 1 Mortality in Bulgaria of Brain Disease for a Five-Year Period (Source: Eurostat Database, August 2018. The figure is composed by the author)**



Mortality from cerebrovascular disease has been reported to remain at a relatively constant level, although in 2013 and 2015 there has been a corresponding decline and a jump in the data. According to the Epidemiological Report of the World Health Organization [5] shows that in 2015 in Germany the death rate from stroke was 38 per 100,000 people and in Bulgaria - 154 per 100,000 people, or four times higher (Figure 2) .

**Figure 2 World Health Organization Report - Stroke Mortality - 2015**



The finding of the **scientific community in Bulgaria** [5] is that the country is one of the first places in stroke disease and mortality, and the delayed differentiation of risk factors such as hypertension and atrial fibrillation is a major factor. The recommendations are: quick medical contact in the first minutes of stroke, and control of risk factors: tobacco use, alcohol, stress, nutrition, blood sugar, lipid profile, blood pressure and quality of life.

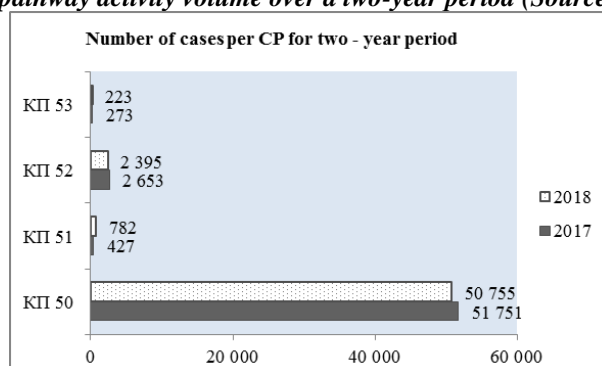
**The State Health Insurance Fund of Bulgaria** provides the treatment of different types of diseases through the clinical pathway method, adopted through a political decision, as an "integrated approach of behavior of different types of medical specialists in the treatment of patients with certain health problems and as an instrument for internal quality management" [4]. Stroke treatment is included in four clinical pathways (CP), depending on the type of stroke, according to the pathologic anatomical changes of the affected brain tissue and therapeutic approach: ischemic stroke without thrombolysis, ischemic stroke with thrombolysis, and interventional therapy hemorrhage, designated respectively: CP 50, CP 51.1 CP 51.2, CP 53. Table 1 presents the volume of activity and mortality in these clinical pathways for health insured persons to the State Health Insurance Fund in Bulgaria.

**Table 1** Paid number of clinical pathway cases over a two-year period (Source: author)

Nr	Kind of activity	2017	Mortality 2017	%	Patients for Rehabilitation	2018	Mortality 2018	%	Patients for Rehabilitation
1	CP 50	51 751	3 797	7.3	47 954	50 755	3 703	7.3	47 358
2	CP 51	427	56	13.2	371	782	111	14.2	671
3	CP 52	2 653	1 028	38.8	1 625	2 395	913	38.1	1 482
4	CP 53	273	82	30.0	191	223	70	31.4	153
5	CP 254	1 064	227	21.3	50 141	1 699	272	16	49 664

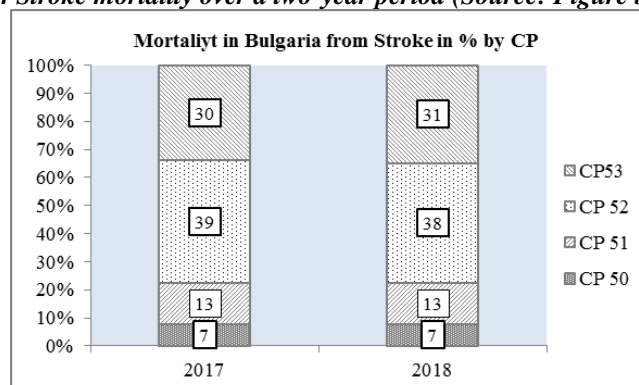
A comparative image of the volume of clinical pathway activity for 2017 and 2018 demonstrates stability in the incidence and the medical activity provided by the NHIF in the acute phase of cerebrovascular disease (Figure 3).

**Figure 3** Clinical pathway activity volume over a two-year period (Source: Figure by author)



Over the period considered, the mortality rate for these diseases remained stable (Figure 4).

**Figure 4** Stroke mortality over a two-year period (Source: Figure by author)



### 3. DISCUSSION OF THE RESULTS

Outside the two - year period under review, from 1992 to the present it has been established that Bulgaria is one of the countries with the highest mortality rate for cardiovascular disease in the European Region, as well as its rejuvenation. For the period 1981 - 1992. mortality from Brain and Soda Disease increased from 21 to 24 years from 1.6 to 2.4 per 100,000 people. Ages 25-29 - from 1.8 to 5.8; for ages 30-34 - from 6.0 to 7.3 for ages 35-39 from 10.8 to 13.3 per 100,000 [3]. These data and the data for the period 2011 - 2015 show a tendency to be the main risk factor and with the greatest weight.

The World Health Organization epidemiological report gives a quantitative statement of the stroke mortality rate between two countries in the European Union: the most developed economy - Germany and the least developed - Bulgaria. The large difference in the indicator of about four times higher mortality in Bulgaria draws attention to

several major unresolved problems of the health system, such as: (1) organization of health care in relation to prevention in all its forms; (2) ineffectiveness of innovative treatment approaches introduced - interventional treatment due to concomitant high mortality (CP 51 of Table 1).

In 2018, there is an increase in cases of ischemic stroke with thrombolysis. The reason is the introduction of innovative therapy for ischemic stroke such as thrombolysis and interventional treatment. But this is accompanied by twice the mortality rate. Possible reasons are the lack of qualifications of doctors, the presence of counter indications, underlying diseases.

**The overall conclusion from the above statistics of all studies show, over a twenty-seven year period (since 1992), an unequivocally and lasting increase in the incidence and long-term and high mortality rates of Brain Vascular Disease in Bulgaria, four times higher than the most developed economy of the European Union - Germany.**

**There is an inefficiency in efforts to improve health / data through the introduction of new technologies such as thrombolysis and interventional treatment and the inclusion of the healthcare system in international prevention projects such as the CINDI program.**

**The provided health care services for prevention by the State Health Insurance Fund in Bulgaria are of insufficient scope and effectiveness.**

#### 4. AN EMPTY IN HEALTH POLICY

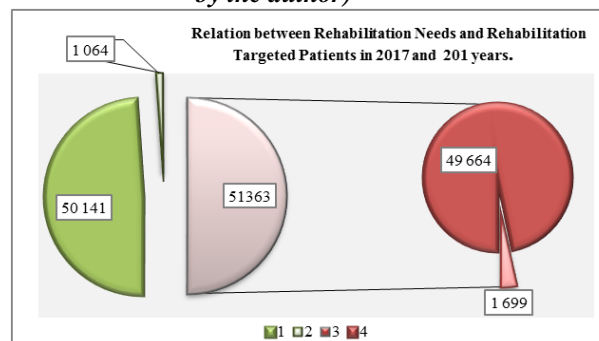
Scientific studies examining the causes of cardiovascular mortality in the European Union conclude that half of the effects are due to the limitation of major risk factors: diet, smoking and physical activity. The other half is due to advances in medical science and practice: invasive and non-invasive new methods and operating techniques, new drugs.

The content of this effect has also changed: shifting the burden to a higher level in the age range and the negative risk factors among the younger generation, and people of economically active age, as the social security system takes over the burden of cardiovascular diseases. The trend is also present in Bulgaria, but with the difference that the mortality rate remains many times higher than in the EU countries.

In search of the cause of the discrepancies between the "good" health policy, expressed through the reported positive results of the implementation of the program, CINDI regarding the limitation of risk factors, the provision of health insured persons with out-of-hospital and hospital services, **it was suggested that there is probably another a factor in healthcare organization that maintains high mortality rates.**

The statistics for the period 2017 and 2018 of the ratio between, the need for rehabilitation of patients with cerebrovascular disease and those targeted for rehabilitation were monitored (Figure 5).

**Figure 5: 1.) 2017 Patients in need of rehabilitation; 2.) 2017 Patients referred for rehabilitation; 3.) 2018. Patients referred for rehabilitation; 4.) 2018. Patients in need of rehabilitation. (Source: The figure is composed by the author)**



According to Table 1, the total number of 99 805 stroke survivors treated in 2017 and 2018 in the clinical trajectories of stroke survivors, of which only 2 763 were referred for rehabilitation under CP 254 "Long-term continuing treatment and early rehabilitation stage of ischemic and hemorrhagic stroke with residual health problems, "representing 3% of survivors of cerebrovascular disease. In 2017, patients in need of physical therapy and rehabilitation were 50,114, with only 1,064 of them being rehabilitated in hospital (under CP 254), representing 2.1%. In 2018, patients in need of physical therapy and rehabilitation were 49,664, with only 1,699 of them being

rehabilitated in hospital settings (under CP 254) or 3.4% (Figure 5). **Therefore, there is a lack of tertiary prevention, with the consequences of disability and a burden on the social and financial systems.**

In Bulgaria's health care system, tertiary prevention is defined as: "Measures in a disease state, the course of which can be affected only by the degree and frequency of manifestations, and not in principle (for example: reduction of asthma attacks in Bronchial asthma)" [11]. With this definition in mind, the focus on managerial impact should be on the content of the degree and frequency of disease manifestations. Interpretation of frequency should be in both aspects - relative to the individual as a stroke or recurrent stroke and to society as a mortality rate (statistical indicator) over a given period.

The interpretation of "degree of manifestation" should indicate to what extent, or what goals for improving health, tertiary prevention should be pursued. Both aspects - the frequency and extent of the manifestations are linked to the strategic goals of the health system - apart from medical content, they also bear economic content - reducing costs in the health and social sectors. There is no regulation to carry out tertiary prevention for stroke and a standard that is updated periodically.

There are no quality standards for hospital processes in Bulgaria. For example, the UK Guidance NICE standards define these processes as - quality statements. The Declaration of Quality 2, Stroke Intensity Rehabilitation, states that "Adults who have stroke rehabilitation in hospital or in the community are subjected to at least 45 minutes of each relevant therapy for a minimum of five days per week. [2010. updated 2016] [12]

The assessment is performed by calculating the proportion of adult patients - in the numerator, patients who actually receive at least forty-five minutes of each relevant therapy for a minimum of five days per week, and in the denominator - the number of adults who have rehabilitation. . Data collection is done using the National Audit Program (SSNAP) questions.

## COSEQUENCE

1. Health policy interventions in the European Union, Bulgaria and the rest of the world focus mainly on premorbid, primary and secondary prevention. The problem of tertiary prevention remains unresolved;
2. The diagnostic treatment process is methodologically interrupted, which implies the provision of part of the medical service to the insured persons.
3. The quality of the medical service provided has been compromised;
4. Methodologically, the compromise of the quality of the medical activity is envisaged at the entrance to the diagnostic and therapeutic process.
5. There is a regulatory gap in the regulation of tertiary prevention in Bulgaria.

## CONCLUSION

Tertiary prevention of cerebrovascular disease has been "forgotten" by the health system due to directing the scientific and intellectual potential to invasive methods of treating strokes where recovery is without residual effects. The greater proportion of patients are treated in the classic way, which requires a period of rehabilitation. The lack of such, reflects as a problem for the whole health system with many aspects: personal, social, organizational, financial, political.

*There is no balance between the types of prevention. The extent of tertiary prevention in stroke survivors is narrowed to a very small percentage, which is one of the reasons for the high mortality rate in Bulgaria.*

*The organization of the health care system lacks a "buffer" (author's note) to identify long-term treatment and rehabilitation of stroke survivors. A solution could be an approach called "Deploying management function - regulation", with the regulator being this buffer - compulsory rehabilitation after stroke, "absorbing" the negative effects of disability, through physical therapy and rehabilitation of survivors of survivors, to reduce mortality.*

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