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# OPTIMIZATION OF HEALTH CARE FINANCIAL RESOURCES IN BULGARIA THROUGH HOME CARE AND ASSISTANCE SERVICES

**Nadezhda Todorovska**[1]

**Abstract:** Health care in Bulgaria is based on hospital care. According to the Euro Health Consumer Index for 2016, our country ranks first in terms of hospital stay. However, in small towns and villages, the cost of hospital care is too high and unviable. This calls for the development of a new type of health services to reduce costs and optimize the inclusion of skilled workforce in the social and health sectors. The main purpose of this paper is to examine and analyse the possibilities to reduce healthcare costs through the introduction of a system of integrated health and social services at home, which necessitates the establishment of middle units – Home Care Centres. It examines and analyses the results from a pilot project of the Bulgarian Red Cross, the Ministry of Health, and the Ministry of Labour and Social Policy, which envisaged the provision of integrated home care services for elderly people with chronic diseases and permanent disabilities in the Vratsa region as from the year 2012.

**Keywords:** home care, integrated services, health sector.
**JEL:** I 13.

## Introduction

In the recent years, the healthcare costs in Bulgaria have been constantly rising, the basic allocation of the healthcare funds being performed by the National Health Insurance Fund (NHIF) which contracts

[1] Deputy Director General of The Bulgarian Red Cross Organization

the terms of provision of these services with the different providers. The existing private health insurance companies perform only complementary functions to the basic health insurance package, offered in Bulgaria. The cost of health and social care increases sharply after the age of 65, and over time this increases the pressure on the social security systems. The demographic situation in Bulgaria and in Europe clearly outlines the need to implement new approaches to the care of the increasingly aging population. In society, there is a growing support for the view that the social and health systems need reorganizing in order to reduce financial costs and to make an effective use of the capacity of the ever-declining skilled workforce in these two areas.

The health care in our country is hospital-oriented. This does not provide for the easy access of the population to health care. It is most obvious in small towns and villages where the provision of hospitalization is not cost-effective and the sick need to travel to the bigger or the district urban area. The lack of well-developed decentralized pre-hospital health care as well as of a sufficient number of qualified medical staff is in the heart of the inability of the NHIF to provide for health services that would adequately meet the needs of the population. Moreover, there is a distinct dissatisfaction in the population with the health services provided on the basis of health insurance contributions and the state budget, covering the costs of the emergency medical care. The change in the latter is related to the introduction of new forms of provision of health care, aimed at facilitating the access to medical services and increasing the quality of their provision. Therefore, the main purpose of this study is to examine and analyse the possibilities for reducing the costs in healthcare, respectively of NHIF, through the introduction of a system of integrated health and social home care services. An important issue related to the achievement of the desired efficiency and effectiveness of this activity, which is new for Bulgaria, is the proper training of the multi-disciplinary team staff.

* * *

The experience in the provision of integrated health care services has singled out the establishment of Home Care Centres as the most

appropriate form. Such a structure allows for the easy management of the processes of providing regular home medical care and social support tailored to the individual needs of the patient. An important principle in their implementation is the territorial coverage of the centre. The mobility of teams is a crucial factor, especially in case there is no public transport and the settlement is quite far from the bigger urban centre.

Integrated care is a concept, which is widely used but in different versions of health systems. Here the focus is on the issue of integrated health and social services in terms of chronic diseases and multiple care needs; however, it is important to note that the concept is much wider, and it is applicable in many other areas, including emergency aid, maternity, child health care and public health.

A key challenge remains the lack of commonly accepted definitions of the core concepts. As a result, extant literature abounds in terms, described in various versions like: „integrated care", „coordinated care", „joint care", „managed care", „disease management", „case management", „health/social care/services", „centres for health care for beneficiaries", „chronic care", „continuity of care", „continuous care" и and other. These terms may differ conceptually, but the boundaries between them are often blurred. (Kodner, Spreeuwenberg, 2002). Basically, there is no clear analytic framework for studying the integration processes (Goodwin et al., 2004; Goodwin, 2010). The latter reflects the polymorphic nature of the concept to a high degree, applied with different disciplinary and professional perspectives and is associated with different goals. (Nolte & McKee, 2008b). At the same time, due to the unclear boundaries between the different stages in the process of the "production" of health care, of the route of the beneficiaries of the services through the system and the often-probable nature of the treatment process, the providers are to address unspecified requests at each stage (Simoens & Scott, 1999). Thus, integration into health care would rather not follow a single path.

In an attempt to develop a typology of the integration into health care that would allow for the systematic evaluation of the structures and the processes therein, the antecedents and their impact on the health care organization, provision of services and the respective outcomes, the different analysts find a different degree of integration, most often

differentiating between the type, the breadth, the degree and the process of integration (Nolte & McKee, 2008b).

Considering the types of the integration first, we can outline four basic forms (Shortell, Gillies & Anderson, 1994; Simoens & Scott, 1999; Delnoij, Klazinga & Glasgow, 2002):

- *Functional*: integration of key support functions and activities such as financial management, strategic planning and human resource management;
- *Organizational*: for example, building networks, mergers, contractors;
- *Professional*: e.g. joint ventures, group practices, contract or strategic alliances of health care specialists in the institutions and between them and organizations;
- *Clinical:* integration of the different components of the clinical processes, such as coordination of the care for the individual beneficiaries of the health care service or paths.

These forms are defined as horizontal or vertical integration (as well as *breadth* of integration) (Shortell, Gillies & Anderson, 1994; Simoens & Scott, 1999). Horizontal integration comprises the services at the same level in the health care process, e.g. general practitioners, nurses and social assistance, which facilitates the cooperation and the coordination of the providers. Vertical integration brings together organizations at different levels of the hierarchical structure under one management umbrella, e.g. primary and secondary care and specialized care.

In addition, integrated care can be understood as continuity of integration, defined as *degree* of integration (Leutz, 1999; Goodwin et al., 2004; Ahgren & Axelsson, 2005). The degree can vary from full integration, where the integrated organization is in charge of the full continuity of care, including funding, to collaborative work, involving separate structure, in which organizations retain their own service responsibilities and funding criteria.

In an attempt to structure the field of integrated care research, *The International Journal of Integrated Care* has described four broad categories of research activity (Schrijvers & Goodwin, 2010):

- Integration of health care and social services;

- Integration between primary health care and hospital care;
- Integration of care in the same sector (e.g. mental health services);
- Integration between preventive and curative care.

The categorization attempts to provide important tools for assessing the integrated services system. However, at present, there is a great variety in the integration terminology used in practice. For this reason, for the purpose of analysing the available impact data, it is crucial to adopt a more pragmatic working definition of integrated care.

In Bulgaria, based on the model for the provision of integrated health and social services developed through the collaborative work of the Bulgarian Red Cross, the Ministry of Health and the Ministry of Labour and Social Policy, the following wording was made in the September 2015 Health Act: "Integrated health and social services are activities whereby medical professionals and social services specialists provide health care and medical supervision and perform social work, including at home, in support of children, pregnant women, people with disabilities and chronic diseases and elderly people who need help in performing daily activities." (Health Act).

The issue of integrated services is to be addressed by the future law on social services in Bulgaria, too. This will ensure once again their sustainable and proper implementation as a multiple service for patients in a home environment rather than a mechanical collection of health care and social services.

In some European countries, such as Germany, Norway, Austria, Switzerland, etc., there already exists a well-organized system of outpatient health care that, on the basis of integrated approaches in a home environment, allows a very high level of consumer satisfaction. At the same time significant savings in financial and human resources are achieved.

According to the Euro Health Consumer Index 66% in 2014, and in 2016 58% of the healthcare spending in Bulgaria was aimed at covering the needs of hospital treatment. This condition is a result of poorly developed outpatient care in our country, mainly based on general practitioners. They, on their behalf, are not able to cover evenly the needs across the country, and many small towns and villages remain under-cared by our health system. The most susceptible to the lack of regular

health service are the people with chronic diseases, the people with permanent disabilities, the elderly people with multiple diseases who live alone and those who have left hospital after active treatment of heart attack, stroke, severe bone fractures, etc. A large part of the retired population, which at the same time has different chronic diseases and permanent disabilities, lives in the smaller settlements of the country. The reduced mobility and the barriers of architectural and socio-economic nature do not allow them to regularly control their health. This often leads to crisis situations involving emergency medical care and hospitalization. This vicious circle could hardly be interrupted unless a middle unit for healthcare is established between hospitals and general practitioner practices. Such units already exist in Bulgaria, established on a project basis by the Bulgarian Red Cross in partnership with the Ministry of Health and the Ministry of Labour and Social Policy.

At present, Centres for Home Care operate in the Vratsa district and more precisely in the municipalities: Vratsa, Byala Slatina, Oryahovo and Krivodol. They are run by nurses specially trained for this role, and the teams are composed of trained social assistants (home helpers) and additionally trained nurses. The multidisciplinary teams work in co-ordination and schedule visits according to the needs of the beneficiaries. Leading in the medical activities is the prescribed by the treating physician who, with the help of the Centre of Home Care, further treats the patient in a home environment. The centres commenced their work in December 2012. Due to the innovative nature of the service and the integrated approach, it took time to gather enough information to properly compare it with other similar health services. This period was needed not only to continue the training and develop routines of the multidisciplinary teams, but also to overcome some negative community responses to this new home care facility.

The fact that the mentioned municipalities are located in the poorest regions of the European Union has made it possible to finance the project on the basis of a project principle aimed at adapting this new approach to the care of patients in the home environment and to provide the necessary basis data for a deeper analysis of the possibilities of reducing the cost of treatment and care of adult patients with chronic

illnesses and lasting disabilities. Establishing a model of Centres of Home Care would allow their multiplication in other areas of the country with similar or better socio-economic indicators.

* * *

The number of employees in the four Centres for Home Care of the Bulgarian Red Cross is as follows: 17 nurses and 33 home helpers. In the course of the project, commenced in 2012, data was collected on the activities performed during the visits of the nurses and home helpers to each individual patient. All the information is input daily by the teams and processed by software specially developed for the purpose.

For the purpose of the present research I will present, in general terms, the data collected and processed at the centres for the last two years. (2015 and 2016). On their basis, various quantitative indicators can be calculated, such as:

- Relative share of direct and indirect annual costs;
- Average monthly number of users of health and social services;
- Hourly rate per unit of personnel for the provision of health and social services;
- The value of the annual costs of providing health and social services per user.

To determine the proportion of direct and indirect costs of operating activity is of paramount importance in assessing the effectiveness of the introduction of integrated health and social services in the home environment.

The calculations are based on the following classification;

- The direct costs category includes the costs of: staff remuneration; personnel training; transportation; professional liability insurance; medical consumables; medical equipment.
- The indirect costs category includes the maintenance costs of: the home care centres and the regional offices.

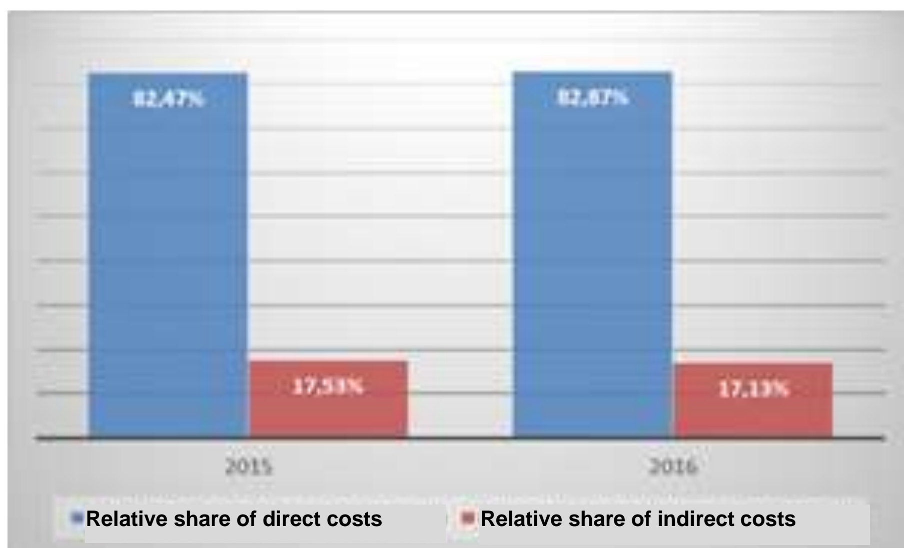


*Figure 1. Relative share of direct and indirect costs.*

The results of the processing of the primary information, illustrated by Figure 1, show a noticeable predominance of direct costs. Their relative share exceeds 80% for both years under review. It is also noteworthy that the cost of remuneration of service personnel is at the forefront of the direct cost structure, with over 94% for the two years reviewed. This ratio is the same for all four home care centres.

To determine the cost per user of the project home centres on annual basis, it necessary to calculate the average monthly number of users of the health and social services they offer. The calculations show that the values of this indicator are as follows:

*Table 1*
*Average monthly number of users for the years 2015 and 2016.*

| Year | Vratsa | Byala Slatina | Krivodol | Oryahovo |
|---|---|---|---|---|
| 2015 | 93,00 | 94,75 | 96,75 | 96,83 |
| 2016 | 104,17 | 101,58 | 104,91 | 107,75 |

It can be easily seen that there is an increase in the average monthly number of users in all municipalities involved in the project, which shows the increasing interest in this new type of integrated care.

The calculation of the hourly rate of staff directly involved in the provision of health-care services under the project is essential in the set of indicators for determining the actual costs for two main reasons: firstly, as already noted, the remuneration of staff accounts for more than 94% of the direct costs, and second, this indicator can be used in a comparative analysis of costs.

When calculating the indicator, two approaches are applicable. The first is based on the employment contracts with the project employees, that is, the calculation is made for an 8-hour working day of a 5-day work week or 252 workdays per year. Based on this condition and on the gross employee remuneration, the hourly rates of the staff are as follows:

- nurses - BGN 6.15;
- home helpers - 4.80.

It can be seen that the hourly rates for the two years under review are the same. This is because of the lack of change in the parameters studied.

The second approach to calculating the hourly rate reflects the cost of labour to provide direct care to the users of the service. The basis for valuation is the actual time spent by employees solely on direct care.
The hourly rates for direct care are listed in the table below:

*Table 2*
*Hourly rate of provided direct care (in BGN.)*

| **Centre** | **Nurses** | | **Home helpers** | | **Annual average** | |
|---|---|---|---|---|---|---|
| | 2015 | 2016 | 2015 | 2016 | Nurses | Home helpers |
| "Home Care" - Vratsa | 12,99 | 10,93 | 7,60 | 7,30 | 11,96 | 7,45 |
| "Home Care" – Byala Slatina | 13,62 | 12,41 | 10,09 | 9,33 | 13,01 | 9,71 |
| "Home Care " - Krivodol | 13,39 | 13,29 | 6,52 | 7,14 | 13,34 | 6,83 |
| "Home Care" - Oryahovo | 15,15 | 15,12 | 11,01 | 8,65 | 15,13 | 9,83 |
| Total | 13,79 | 12,94 | 8,80 | 8,10 | 13,36 | 8,45 |

It should be noted that with the increase in the share of direct care in the total duration of the service provided, the absolute amount of unit labour costs for direct care diminishes. It is mostly due to the fact that the amount of the remuneration is determined on the basis of the working hours as per labour contracts, which does not reflect the changes in the direct and indirect care ratios.

The last indicator we will consider is the value of the annual cost of providing health and social services. The final results are presented in the following table:

*Table 3*
*Annual costs for health and care services per user (in BGN.)*

| **Annual costs per user** | **Vratsa** | **Byala Slatina** | **Krivodol** | **Oryahovo** | **Total** |
|---|---|---|---|---|---|
| For 2015 | 1 813,82 | 1 529,93 | 1 645,66 | 1 693,27 | 1 667,54 |
| For 2016 | 1 661,38 | 1 567,49 | 1 530,70 | 1 535,20 | 1 573,32 |
| Average for 2 years | 1 737,60 | 1 548,71 | 1 588,18 | 1 614,23 | **1 620,43** |

From the results thus obtained, it is evident that the annual maintenance per unit of health and social services in the Home Care Centres of the Bulgarian Red Cross, is, on average for the four centres, BGN **1 620.43**. It can also be noted that the average cost per user has decreased over the period considered. This decrease is reported in all centres, the total average decrease, registered in 2016, compared to the previous 2015 being 5.65%, or from 1667.54 BGN to 1573.32 BGN. This is mainly due to the increased number of consumers in 2016 and it infers that the system of centres providing integrated health and social services at home has potential for development.

The table below presents data only in terms of direct costs for the annual maintenance cost per user of health and social services:

*Table 4*
*Annual direct costs for the provision of health and social services per user (in BGN.)*

| Annual direct costs per user | Vratsa | Byala Slatina | Krivodol | Oryahovo | Total |
|---|---|---|---|---|---|
| For 2015 | 1 510,95 | 1 255,37 | 1 330,19 | 1 415,31 | 1 375,15 |
| For 2016 | 1 392,98 | 1 293,73 | 1 240,16 | 1 288,91 | 1 303,77 |
| Average for 2 years | 1 451,96 | 1 274,55 | 1 285,17 | 1 352,11 | **1 339,46** |

There is also a tendency to reduce the direct costs for providing health and social services. The reduction is 5,19%, which is comparable with the reduction in total costs per user.

* * *

On the basis of the collected data and the results of the calculations, the activities and the costs of the Home Care Centres of the Bulgarian Red Cross can be compared with similar services offered and financed from different sources. Thus, the place and importance of the integrated health and social services provided in a home environment can be determined.

Let us make this comparison with similar services:

- With public funding:

- in *outpatient care;*
*- in hospital care.*

- With partial financing.

General practitioners (in person or via a nurse) provide, through the compulsory health insurance, services in home environment, similar to the ones, provided by the Home Care centres of the Bulgarian Red Cross. These activities are included in the basic medical care package, guaranteed by the NHIF budget in its part for outpatient medical care and are provided in home environment at the discretion of the physician. The general practitioners and the home care centres are not in competition and can complement each other in providing for the full care for the patient. In the general context of cost optimization in the health-care system, this will

save a substantial financial resource as home care also contributes to prevention of hospitalization.

Medical care in a home environment, paid from a public source (in this case, from the state budget), is also provided by the Emergency Medical Care Centres (EMCC). This type of medical service cannot be compared directly with the health care provided by the Centres for Home Care. The latter, however, have an impact on reducing the frequency of calls to EMCCs and, respectively, result in savings of public funds.

In theory, hospital care cannot be an alternative or a substitute for any outpatient medical service, which is why a direct comparison between the costs of the Home Care Centres of the Bulgarian Red Cross and the public spending on hospitalizations for the purpose of calculating the cost of these services is inappropriate. However, the consideration of public spending on hospital care would be relevant to assessing the possible effect that the integrated service may have as a result of better meeting health needs in a home environment and preventing hospitalizations by social indications. According to the NCPHA data for 2015, the average cost for a bed in the general hospitals for active treatment is 126.80 BGN. This is the average cost for one day of hospital stay. If we multiply this figure by the number of working days (252) in the year for the household care service, we will obtain the amount of BGN 31,953.60. Despite the fact that hospital services are not comparable to those provided by the Home Care Centres of the Bulgarian Red Cross, the huge difference between the annual cost per user per person shown in Table 3 (BGN 1620.43) and the cost of bedding on an annual basis (BGN 31 953.60 BGN) gives the amount of public funds that would be saved if unnecessary hospitalizations were avoided by way of the integrated service in a home environment. This means that if people receive adequate social and health services at home, significant public funds which can be used to improve the quality of hospital services, will be saved.

The private costs of medical services provided in the home environment are the cost of the service paid by the patient. General practitioners, in addition to the services funded by the NHIF, also provide services against payment to people who are not insured or at the patient's request (the discretion of a home visit is the physician’s, which means that

even in case of a home visit to a patient included in the general practitioner's patient list, s/he may ask the patient to pay for the service).

However, a direct comparison between the costs of the Home Care Centres at a patient's home and the prices that general practitioners have reported on home visits cannot be made due to the incomparability of the data. In the first case, the costs are determined on the basis of general or direct cost per user, while the cost to the general practitioner is based on the price for a particular medical service.

A comparative analysis of the costs of the Home Care Centres of the BRC with the costs (the price for the patient) of other providers can be made in the cases when the evaluation of the services is made on the basis of the time required for providing the service. Such a pricing method (along with the service charge) is applied by privately practicing nurses, carers and personal assistants.

*Table 5*
*Prices of health services, provided by private organizations*

| **Services** | **Duration** | **Price** | **Organization** |
|---|---|---|---|
| Nursing care | 4 hours per day | 20-25 BGN | Mobile hospice Nursing care at home (elderly people care at home in Sofia, Plovdiv and Varna) |
| | 8 hours per day | 25-40 BGN | |
| **Average** | **Per 1 hour** | **3,80-5,40 BGN** | |
| Carer | 4 hours per day | 15-25 BGN | |
| | 8 hours per day | 25-30 BGN | |
| Personal assistant | 4 hours per day | 20 BGN | |
| | 8 hours per day | 25 BGN | |
| Nursing care | 4 hours per day | 25 BGN | Organization of private nurses on the territory of the city of Sofia |
| | 8 hours per day | 35 BGN | |
| | 12 hours per day | 48 BGN | |
| | 24 hours per day | 70 BGN | |
| **Average** | **Per 1 hour** | **3,70 BGN** | |
| Carer | 4 hours per day | 20 BGN | |
| | 8 hours per day | 30 BGN | |
| | 12 hours per day | 40 BGN | |
| | 24 hours per day | 55 BGN | |

*Source:(https://mobilenhospis.com/ceni/;https://mobilenhospis.com/ceni/)*

To ensure comparability of data with the activities performed by the same category of BRC staff, the table presents only the average hourly rates for nurses.

The paid single-parent nursing services that require less than 4 hours per day are paid at a fixed service charge, which, depending on the service, varies between 10-15 BGN (for example, for a subcutaneous injection or aseptic dressing) to 30 -35 BGN (for more complex manipulations).

At first sight, the cost of medical staff under the project (calculated on the basis of a gross wage of BGN 6.15 per hour per nurse) is higher than that of private providers (BGN 3.80-5.40). It should be noted, however, that the cost of private suppliers does not include the cost of materials and consumables (for some providers transport costs are also not included in the price if the home of the patient is reached by using more than one means of transportation). At the same time, the actual cost of nursing care per patient should be determined on a daily basis for private providers. The average daily cost of the BRC for one user of the integrated service, calculated on the basis of the annual costs indicated in Table 3, amounts to BGN 6.43 (BGN 1620.43 / 252 days). It is several times lower than the lowest price per day (at 4 hours of service), that the patient would pay to private-practice nurses.

The main alternative to the integrated health and social service provided by the Home Care Centres of the Bulgarian Red Cross is the institutionalized care (not at home) offered by hospices and similar private homes for the elderly with chronic diseases and permanent disabilities. Here the comparison is most relevant because the services are identical. According to the National Statistical Institute, the number of registered hospices in Bulgaria has been constantly changing over the past few years. From 54, in 2010, this figure reaches 44, in 2015. Despite the declining number of these establishments for the period 2010-2015, the number of beds is steadily increasing. From 716, in 2010, it reached 965, in 2015. This can be explained by the aging of the population and the ever-increasing need to care for the elderly in Bulgaria.

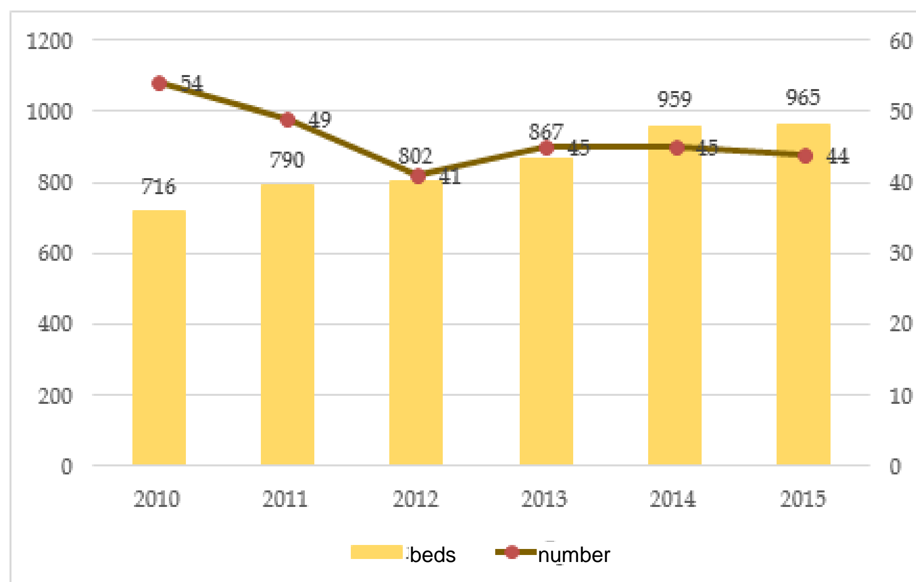


*Figure 2. Dynamics in the number of hospices and beds in them in Bulgaria for 2010-2015.*

Hospice accommodation is usually paid per day or per month. Some hospices also offer daily care. Prices vary depending on the condition of the patient (in some cases and on the length of stay) from 20 to 70 BGN per day. This means that if we multiply the daily rates of the hospices by the number of working days in the year of the staff from the home care centres we will obtain annual expenses in the range of BGN 5040 to BGN 17 640.

The numbers show that even at the lowest daily rate in the hospices, the annual costs for the integrated health and social service in the home environment of the Bulgarian Red Cross, at an average rate of BGN 1620.43 for the period under review, are significantly lower than the similar services provided in the hospices. This strongly supports the widespread introduction of integrated health and social services at home.

## Conclusion

The small number of general practitioners working in smaller and more remote towns and villages is a prerequisite the people there to experience dire need for middle units in the healthcare system that can meet the growing health care needs. As the need for medical services for more elderly people aged over 65 grows and the number of health care professionals declines, the need to develop models that provide integrated services will be growingly pressing.

The integrated health and social services at home provided by the Home Care Centres of the BRC fill a critical niche of needs that remain unmet by the health insurance system due to a lack of similar services. At the same time, their cost is considerably lower than the costs that the patients would have if they received care from alternative private providers (privately-practicing nurses and hospices).

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BUSINESS management

D. A. Tsenov Academy of Economics, Svishtov

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# BUSINESS management

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## TO THE READERS AND AUTHORS OF "BUSINESS MANAGEMENT"

The journal of "Business Management" publishes research articles, methodological articles and studies, review articles, book reviews, commentaries and good practices reports.

**1. Volume:**

- Articles: between 12 – 20 pages;
- Other publications (review articles; book reviews, etc.): between 5 – 10 pages.

**2. Submission of materials:**

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**3. Technical requirements** (the article template is can be downloaded from the webpage of the journal):

- Format – Word for Windows 2003 (at least);
- Font – Times New Roman, size 14 pt, line spacing 1,5 lines;
- Page size – A4, 29–31 lines and 60–65 characters per line;
- Line spacing 1,5 lines (at least 22 pt);
- Margins – Top – 2.54 cm; Bottom – 2.54 cm; Left – 3.17 cm; Right – 3.17 cm;
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- Title of article title; name, scientific degree and scientific title of author – font: Times New Roman, 14 pt, capital letters, Bold – centered;

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- Abstract – up to 30 lines; Key words – from three to five;

- **JEL** classification code for papers in Economics (http://ideas.repec.org/j/index.html);

- Introduction – it should be from half a page to a page long. It should state the main ideas and/or objectives of the study and justify the relevance of the discussed issue.

- The main body of the paper – it should contain discussion questions, an outline of the study and research findings/main conclusions; bibliographical citation and additional notes, explanations and comments written in the footnotes.

- Conclusion – it should provide a summary of the main research points supported by sufficient arguments.

- References – authors should list first references written in Cyrillic alphabet, then references written in Latin alphabet.

- Graphs and figures – Word 2003 or Power Point; the tables, graphs and figures must be embedded in the text (to facilitate language correction and English translation); Font for numbers and inside text – Times New Roman, 12 pt;

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**6. Contacts:**

Editor in chief: tel.: (++359) 631-66-397
Co-editor in chief: tel.: (++359) 631-66-299
Proofreader: tel.: (++359) 631-66-335
E-mail: bm@uni-svishtov.bg; zh.tananeeva@uni-svishtov.bg;
Web: bm.uni-svishtov.bg
Address: "D. A. Tsenov" Academy of Economics, 2, Em. Chakarov Str., Svishtov, Bulgaria