HISTORY AND FUTURE OF DRG IN BULGARIA

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Abstract

It is useful to know the experience of Bulgaria in terms of case-mix and DRG in view of guidelines for possible future activities on pilot implementation of DRG for a new payment and budgeting system. Since the mid-1990s, DRG research has been conducted in the country and a number of projects have been implemented.

At the end of 1993 Robert Fetter, one of the people who developed DRGs in the United States, was invited to Bulgaria. He was the first to present to experts from the Bulgarian health institutions the main provisions of the case-mix approach and DRG.

The overview of the current state of the information systems for health management, information technologies and the infrastructure for the management of the information systems of the hospitals, as well as the information systems of NCPHA, NHIF and MH, regarding the implementation of DRG, show the following: coding of clinical morbidity; - the current state of the IT infrastructure and systems of the ISMS, the hospitals, the NHIF, the NHIF and the Ministry of Health, as well as their capacity to implement DRGs.

There are two issues that need to be addressed before implementing a DRG-based payment system: - procedures and diagnoses in hospital systems and XML files should be encoded with AKMP 7.0 to eliminate the need to use mapping tables .; - special processing of the lists of diagnoses when exporting codes to the DRG group and removal of unusual coding rules for CP during the annual CP update.

Keywords: *clinical paths, case mix, diagnostically related groups*

Introduction:

HISTORY: It is useful to know the experience of Bulgaria in terms of case-mix and DRG in view of guidelines for possible future activities on pilot implementation of DRG for a new system of payment and budgeting. From the mid-1990s until now, DRG research has been conducted in the country and a number of projects have been implemented. At the end of 1993 Robert Fetter, one of the people who developed DRGs in the United States, has been invited to Bulgaria. He was the first to present to experts from Bulgarian health institutions with the basics of the case-mix approach and DRG.

In 1994 and 1995. The US HHS and the United States Agency for International Development (USAID) have commissioned a technical assistance project from Solon Consulting and 3M-HIS. The aim is to introduce a case-mix approach in selected Eastern European countries, including and Bulgaria. In the course of the project, local experts have developed a software product for collecting clinical data, implemented in selected hospitals, in order to start the collection of basic data.

Hospital staff are trained to collect and report information related to the registration of patients in the clinic. Additional software systems have been developed and improved over the years. For example, a program for an automated top-down cost accounting process, or through a step-down cost accounting process and determining the cost of hospitalized cases at the patient level.

In the period 1996-1998. A Bulgarian pilot study of DRG was conducted in 11 hospitals.

In the period 1996-1999. Bulgaria is one of the four countries that have received technical assistance. In an attempt to provide information to the Ministry of Health on DRG, another software tool for collecting clinical data was created, installed on 20 computers and one server in 11 municipal hospitals. Minimum basic data were collected to be used to group stationary cases in

DRGs. The diagnostic and procedural coding system ICD9-CM has been translated into Bulgarian, training and certification in ICD9-CM coding has been carried out. The determination of forms and the minimum data required for collection has also been completed.

Accounting and expenditure data are collected using MS Excel. The project economic team used this data to model the costing from the top down and to calculate the relative expenditures based on the data collected for Bulgaria. This is our first created array with relative costs. The project included other activities, but the main focus was on providing DRG education and training, their use and the main technical steps required to implement such a system. A case-mix office has also been established, as a separate unit in the Ministry of Health, consisting of experts working on the technical assistance project. Due to the lack of an approved budget for this unit, after 2000. the team was transferred to the NHIF to organize its work.

2000 Another simple software has been created to automate the top-down cost accounting process and to more widely determine stationary costing. A total of 21 hospitals participated in the pilot project.

2000-2001 The political situation in the country changed dramatically in 2001 and most of the staff with experience in DRG, both in the Ministry of Health and in the National Health Insurance Fund has been replaced. At that time most of the work on DRGs was stopped, including the study of new concepts related to reimbursement. Against this background, the NHIF continues to create more and more CPs.

2001 At the beginning of 2001 Experts from the Ministry of Health and the National Health Insurance Fund make a pilot test introduction of DRG for the purposes of payments. The results of the project include the evaluation of different grouping options and contracting models. After precise consideration, Australian classification standards have been selected; determining procedure codes, grouping and coding. The NHIF must decide how to start reimbursing hospital care. All data from over 500,000 cases since 1996. are collected and re-grouped, with the preparation of appropriate analyzes.

Dr. Don Hindle, an Australian consultant from the Faculty of Medicine at the University of New South Wales, has been invited to Bulgaria to present clinical pathways (CP). With the strong support of the Minister of Health and the National Health Insurance Fund, the clinical pathways have been selected to organize the reimbursement of hospitals. Although CPs were not designed for use in this way, there were misconceptions about whether DRGs were suitable for contractual purposes, which influenced the preference for CPs. There was also a misconception that DRGs required the collection of more data with admission and discharge information, as well as the capacity to encode and report cases, and none of this was well developed in Bulgaria at the time. The first 30 CPs were established by the NHIF on the basis of a list of diagnoses and procedures, which came from a small list of DRG groups.

2001-2003 Coding training for doctors, coding specialists and economists has been planned and provided. The then existing project for cost accounting and collection of electronic data from hospitals was stopped.

2003-2004 A second Bulgarian DRG study is being conducted in 40 hospitals. Three international refined DRG classification systems were evaluated: HICFA-12.0; AR-DRG4.7 and 3M. Based on this activity, the Bulgarian Ministry of Health decided to implement infrastructure and software information technologies (IT), which creates a capacity for electronic reporting of clinical data; cost data and DRG implementation. The existing coding system for ICD-9 and ICD-9-CM diagnoses has been replaced by the WHO ICD-10. A new collection of clinical and cost data has been launched, involving approximately 40 hospitals. 3M is working with its Bulgarian counterparts to group approximately 1 million cases with both the 3M Advanced Grouper and the

Australian Grouper. A meeting was held between the Bulgarian specialists and the Australian company for production of the grouping software in order to discuss the conditions for obtaining a permit for the grouper software. After careful assessment and analysis of the cost-benefit ratio for different groups, the Bulgarian experts chose the Australian classification, coding procedure, grouper and coding standards. The Ministry of Health is conducting a tender for the provision of specialized hospital software (SHS); the system is required to have hospital software for collecting clinical data and cost data, an interface with data collection activities, and an interface with DRG grouping analyzes.

2004-2005 The Bulgarian and Australian governments have signed an agreement to obtain a research permit. At the same time, we are working on a Bearing Point project in Bulgaria, through which the main author of this report, Ms. Jugna Shah, works with technical experts and senior officials of the Ministry of Health and the National Health Insurance Fund to conduct a pilot DRG test to finance hospital care. This project focused on the following activities:

- Work with the head of the National Health Insurance Fund to expand the technical capacity within the case-mix unit;
- Preparation of the software for grouping and selection of criteria and evaluation of the different group options;
- Discussion of policy-related decisions, implementation of DRG options and negotiation of models with the Deputy Minister of Health and the head of the NHIF;
- Preparation for discussion of guidelines for defining the roles and responsibilities of the institutions;
- Preparation for implementation of a timeline plan with the required political and technical solutions.

2005 The Ministry of Health buys servers, network switches and personal computers for 154 hospitals. Assigns the development of the system "Specialized Hospital Software" (SHS), which will be used for electronic reporting by hospitals and to support the introduction of DRG.

2006 Software for collecting clinical data and cost data is installed in Bulgarian hospitals and provides training to approximately 1,200 people. The collection of clinical and cost data begins with the Specialized Hospital Software (SHS) system.

2007 Gamma Consult creates data validation software to be used in the NHIF. A free version of this software, but without validation checks, has been delivered to hospitals. In 2007, approximately 248 hospitals that received the software collected data with a total workforce of more than 1,500 people. Some of the hospitals were expected to be closed, so they were not included in the initial application of the original software. But the forecast results are not achieved and later, hospitals began to report data. By March clinical and cost data are reported from all hospitals that have received the software. Private hospitals are also given the opportunity to participate.

2008 By the end of the year, approximately 92% of all stationary clinical data had been collected and roughened into DRGs using version 4.5 of the Australian Grouping Mechanism (AGM).

2008-2010 The NHIF assigns the BULL SIVECO consortium to develop an integrated information system. During this process, it was decided that the "Specialized Hospital Software" would be the subsystem in which the reports of the medical institutions for hospital care will be sent, to be integrated with the large information system of the NHIF. In parallel, an interface is being developed to import MS Excel files containing clinical pathway reports.

2009 The contract between Gamma Consult and the National Health Insurance Fund, which started in 2005 is complete. Ms. Jugna Shah was invited to give a lecture at the Vth National

Conference "ICT in Healthcare, the Challenge of the 21st Century" in Sofia, Bulgaria, on October 15, 2009.

2010 The Department of Health is working to obtain approval to use DRGs, as well as to obtain a licensing agreement from the Australian government on grouper software. The Council of Ministers of Bulgaria approves the guidelines, conditions and time frame for the implementation of a new model for financing hospitals with the help of DRG and authorizes the Minister of Health and the head of the NHIF to prepare a draft agreement to serve as a basis for negotiations with the Australian government classification system.

2011 The NHIF has not made much progress in investigating DRGs as a funding tool, but has led hospitals to continue to report clinical and cost data using the software provided. Gamma Consult continued to make minimal pro bono software updates. The data continued to be grouped in DRGs, but its quality was not checked and no efforts were made to improve its collection. The Minister of Health signed a licensing agreement between Australia and the Bulgarian Ministry of Health, which confirms the right to use the classification system APDSG version 6, until June 2016 effective from 1 February 2012. This agreement was ratified by a legislative act of the 41st National Assembly on 14 December 2011, SG № 102/2011. There were problems with the new management team of theand the case-mix department in the National Health Insurance Fund. The new director of the National Health Insurance Fund wanted to merge the case-mix unit with the IT department and stated that they did not want to pay for the grouper software that was initially provided free of charge.

2012 The Minister of Health was replaced all together with the Director of NCPHA. The newly nominated DRG expert remains in charge of the case-mix department continues data collection, grouping and analysis activities. A commission is set up to monitor the introduction of the DRG. It includes representatives of the Ministry of Health, the Ministry of Finance, the National Health Insurance Fund and NCPHA. In April the Ministry of Health provided the classification system and the grouper software to the NCPHA. Unfortunately this transfer abolishes the obligation of hospitals to report their data, as the requirement to provide data is part of the hospital's contract with the NHIF. Although many hospitals have stopped reporting data and data volumes are declining, fortunately more than 200 hospitals are still reporting.

2013 NCPHA groups the data for 2012 and prepared several analyzes on the use of DRG - published in the Bulgarian Journal of Public Health. The articles discuss DRG and CP, the differences in their functioning, key issues and possible next steps for Bulgaria in the implementation of DRG-based financing. In February, an XML format was introduced for reporting the day-to-day activities of hospital care facilities.

2014-2015 In the first quarter, the Head of the case mix department was asked to leave the NCPHA. Despite this change the work continued on data collection and grouping. In addition, the case-mix team of the NCPHA translated the Australian procedural coding system in preparation for its implementation in 2014. Hospitals reported their data using MS Excel but the implementation date was postponed to 2015.

In 2015, the former Head of the case-mix department was invited to return to the NCPHA and to work on the implementation of the funding system.

At that moment with the available data from the territory for the whole country, Bulgarian experts collected and analyzed the clinical and cost data, which they used to determine the relative costs specific to the country. The database with more than one million hospitalized cases was grouped into DRGs.

There are many experts in Bulgaria with significant technical knowledge about how to use DRGs and how to pay for hospitals. Over the last 20 years, much of the necessary preparatory work

and data planning and analysis activities have been carried out to support the pilot introduction of a DRG payment system.

Goal:

The aim of our study is to analyze the method of DRG as an alternative tool for the financing of hospital medical care in the Republic of Bulgaria. It is based on a historical reference to what has been achieved so far and what still needs to be done.

Materials and methods:

The study uses the method of analysis of healthcare financing arrangements in Bulgaria and other countries; international benchmark, benchmark and analysis of trends
in input data, results and functioning of health care financing in Bulgaria.

Results:

CURRENT: The general review of the current state of the information systems for health management, information technologies and infrastructure for the management of the information systems of the hospitals, as well as the information systems of NCPHA, NHIF and MH, regarding the implementation of DRG, show the following:

1. The standardized method for coding the clinical morbidity of patients is one of the first steps in the preparation of the Bulgarian hospitals and the National Health Insurance Fund for the implementation of DRG from an infrastructural point of view. The system includes two subsystems at the hospital and HQ levels.

1.1. The hospital subsystem is provided to medical institutions free of charge and includes two modules: module "Hospital registration and clinical pathways" and module "Determination of costs and financial analysis".

1.2. The second module of the central subsystem includes three sub-modules and functions: module "Interfaces to the network and e-mail"; module "Interface to DRG group"; and the Analytical Software module.

2. The current state of IT infrastructure, hospital systems and their capacity to implement DRGs. After 2000 there is a growing initiative on the part of hospitals to implement information systems, especially rapidly after the year 2006. Currently about 12,500 workplaces are used in around 350 hospitals. Hospitals have IT infrastructure and systems that far exceed the minimum functionality required for the implementation of DRG reporting and cost. The adaptation of the systems that has to be done in the process of introducing DRGs is negligible compared to the current capabilities of the system.

3. Status of the NHIF IT systems in terms of data exchange with other hospitals and the capacity for DRG implementation. All necessary data for grouping DRG of inpatients are transferred and available in the NHIF, through the existing hospital and the NHIF systems.

4. The system "Specialized hospital software" SHS was transferred from the NHIF to the NCPHA in December 2011. Since then many adjustments and updates have been made to the system to keep it operational, to ensure its compliance with changes in the reporting requirements of the NHIF and the National Social Security Institute (NSSI), and to preserve its collection and processing functions of medical and cost data for DRG purposes. No further investment has been made.

5. Status of the IT systems of the Ministry of Health regarding the introduction of DRG. Currently the Ministry of Health does not support databases and systems related to DRG software, except those in the NCPHA.

FUTURE: There are two main problems that need to be resolved before implementing a DRG-based payment system. This can be easily done and include:

1. Procedures and diagnoses in hospital systems and XML files are coded according to ICD-9 and WHO ICD-10 version from 2004, but AR-DRG Grouper v. 6.0 uses ICD-10-AM 7.0 and AKMP 7.0. The problem can be solved by using mapping tables that have already been created by the NCPHA. By replacing the coding procedure from WHO ICD-9/ICD-10 with AKMP 7.0 the usage need of mapping tables will be eliminated.

2. Some CPs impose certain requirements when coding diagnoses and procedures that may be unusual for DRGs. That can be solved by special processing of the lists of these diagnoses when exporting codes to the DRG group and by removing the unusual coding rules for CP during the annual CP update.

Necessary activities for implementation of DRG from an IT point of view based on an analysis of previous initiatives and the current state of IT systems in: hospitals, NCPHA and NHIF, related to the implementation of a potential pilot test:

1. There are enough hospitals with IT infrastructure and HMIS system that can produce and report inpatient clinical and cost data to proceed with a pilot test.

2. The NCPHA IT system and the "Specialized Hospital Software" SHS system are functioning and can easily service the DRG pilot test process, with minimal modernization and maintenance.

3. It is reasonable and very useful in the pilot implementation to overcome the formal barriers and to give the NCPHA access to stationary clinical data, which have been available in the NHIF since 2013, for the purposes of the DRG grouping. These data could support the pilot implementation by facilitating accurate mathematical modeling of DRG-base for all hospitals in the country.

Conclusion:

Improvements from the IT point of view, for the pilot implementation of DRGs:

1. Training and continuity:

a) To plan, determine and announce a date after which AKMP 7.0 will replace ICD9-CM and to prepare a new version of software for data collection and central system;

b) Preparation of conditions for e-distance learning:

- Preparation and publication of training courses with test materials for preparation for coding systems for ICD-10-AM diagnoses and AKMP 7.0 procedures, on the basis of which a continuous training process can be conducted;
- Preparation and implementation of refresh courses for coding procedures and diagnoses;
- Preparation and conducting of training courses for determining the costs.
- Organize a public discussion in the news network, publications, questions and answers related to changes in coding requirements and costing.

2. Clinical data collection, coding and classification:

a) Development and provision to pilot hospitals of new data collection software and a new interface to simplify data transmission to the central locations NHIF; NCPH and MH;

b) Development of a module from the software for data of analytical reports related to the quality of coding by the encoding person, hospital, CP, DRG, etc. for feedback of the hospitals;

c) Defining and developing analytical reports in the software for data collection related to the DRG grouping - by hospital and encoding person;

d) Modernization of the data collection software with functionality for analysis of the homogeneity / distribution of cases grouped by the same DRG and assessment of the need to define new groups;

e) By decision for deployment on a national scale after the pilot implementation to develop a Bulgarian grouper;

3. Cost data collection and analysis:

a) Central data collection and processing software for hospital cost determination:

- Improving the functionality of relative expenses based on data on collected costs;
- Allowing import of relative costs borrowed from other countries;
- The functionality for calculating and analyzing the indicators of the case mix using different sets of costs and their mixes;

b) Development of a contracting system; migration to DRG-based contracting model. Modernization of the software with functionality for calculation of hospital budgets with the options for mathematical modeling based on different choices for combining basic prices, cases outside the system, adjustments, etc., including calculation of adjustments of payments within the risk corridors during of the system test in the pilot hospitals.

4. Auditing and monitoring: Modernization of the central system over time with the functionality for auditing clinical data and data on collected costs, which relates the DRG data with the indicators for the quality and operation of the system, defining and calculating sanctions and non-payment for poor quality or forged data and developing feedback, through reports to hospitals.

5. Help Desk for the period of the pilot implementation and continuous updates of the software according to the changes of the normative base.

References:

1. Vaklinov I., Necessity for the Change of Hospital Sector Financing Change. Diagnosis-related Groups. A Presentation on a Seminar in the town of Sandanski, 2011
2. Delcheva, E. The History of Diagnosis-related Group Projects in Bulgaria. “Social Medicine“ Journal , issue.1, 2011, p. 31-32
3. Komitov G., Genev S., "Clinical pathways in Bulgarian healthcare - expectations and realities", Medical Meridian Magazine, issue 1, volume I, 2010
4. Prokopov D. Diagnostic-related groups – nature and approach in implementation in "Specialized hospital software". Presentation, October 15, 2009, Sofia.
5. Hristov, G., "Are the clinical pathways" clinical pathways "in Bulgaria?", Health Management, 2007;
6. Rankovic, A, Rancic, N, Jovanovic, M. Impact of imaging diagnostics on the budget—are we spending too much? Vojnosanit Pregl. 2013;70(7):709–711.