

Assessment of system for monitoring occurrence of diabetes mellitus and its complications in the republic of SRPSKA

Abstract

Policy-makers need information about the main diseases affecting the population to be able to adequately plan. The objective of the paper is to assess existing system for monitoring of occurrence of diabetes mellitus and its complications in the Republic of Srpska, in order to identify opportunities for improvement. Based on the Republic of Srpska's example, it can be concluded that the stages in setting up and exploiting the diabetes monitoring system can be used as a framework for identification of opportunities for improvement. Assessment showed that existing monitoring system is not comprehensive; databases are not cross tabulated to verify completeness and accuracy of data; existing data are not appropriately analyzed; and policy makers' decisions related to diabetic care are not based on reliable information and evidence. All the identified deficiencies impact the quality of international reporting on diabetes and its complications. Approach and results of the assessment could be useful to policy-makers in other transitional countries.

Keywords: diabetes mellitus, monitoring, registry, republic of srpska, medico-administrative

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Abbreviations: HIF, health insurance fund; ICT, information and communication technologies; MHSW, ministry of health and social welfare in the government of the republic of srpska; NCDs, non communicable diseases; PHI RS, public health institute of the republic of srpska; RS, republic of srpska; UCC RS, university clinical center of the republic of srpska

Introduction

Policy-makers need continuous, accurate and timely information about the main diseases affecting the population, to be able to adequately plan.¹ The information should include data coming from different sources, administrative databases being one of them. Surveillance of diabetes mellitus is traditionally conducted using costly methods, such as surveys or disease registries.² Routine medico-administrative data are increasingly accessible and could be used to assess diabetes trends.

In Bosnia and Herzegovina, diabetes was the fourth leading cause of disability-adjusted life years in 2013.³ It had the greatest increase among all causes of disability-adjusted life years (124%) in period 1990-2013. Diabetes was a fifth leading cause of years of life lost to premature deaths in 2013, whereas in comparison to year 1990 its ranking increased for eight places (increase of 206%). It ranked fifth among leading causes of years lived with disabilities in 2013. As a cause of premature mortality, diabetes was significantly higher in Bosnia and Herzegovina than in comparable countries.

According to the Constitution of Bosnia and Herzegovina, the country consists of two entities: the Republic of Srpska and the Federation of Bosnia and Herzegovina. The Republic of Srpska (RS) is a unique and inseparable constitutional entity, which, on its own, performs constitutional, legal, executive and judicial functions. The functions and jurisdiction belonging to the RS include those related

to healthcare. It has population of about 1.3 million. Government of its health system is centralized, with planning, regulation and management functions held by the Ministry of Health and Social Welfare in the Government of the Republic of Srpska (MHSW). The Policy for Improvement of Health of the Population in the Republic of Srpska by the Year 2020⁴ is currently the key health policy document in the RS.

The objective of the paper is to assess existing system for monitoring of occurrence of diabetes and its complications in the Republic of Srpska, in order to identify opportunities for improvement. Approach and results of the assessment could be useful to policy-makers in other transitional countries.

Conclusion

To identify strengths and weaknesses of existing system for monitoring occurrence of diabetes and its complications, five stages in setting up and exploiting the system need to be analyzed (Figure 1). Overall assessment of the existing system is based on separate review of each stage, allowing for identification of improvement opportunities.

The legal framework for monitoring of diabetes occurrence and complications was established by adoption of the appropriate Rulebook⁵ by the MHSW. The Rulebook set out format of population-based registry and clinical registry, responsibilities for their keeping, registration forms and procedure for registration of diabetes cases. The population-based registry of diabetes for RS is kept at the Public Health Institute of the Republic of Srpska (PHI RS), while the Clinical Registry is kept at the University Clinical Center of the RS (UCC RS). The Rulebook was adopted in 2002, when there were fewer opportunities for wider use of information and communication technologies (ICT) in health system of the RS. Existing Rulebook

is outdated, as it does not foresee possibility of electronic reporting on diabetic cases by healthcare providers. Reporting system is based on printed reporting forms, which need to be submitted by primary healthcare and hospital care providers. No compulsory reporting was foreseen for diabetic foot cases. Untapped potential for use of ICT in monitoring of population health can also be recognized in the Law on Health Records and Statistical Surveys,⁶ which is not based on the electronic data exchange. There is a need to modernize the legal framework for monitoring of diabetes occurrence and complications in the RS.

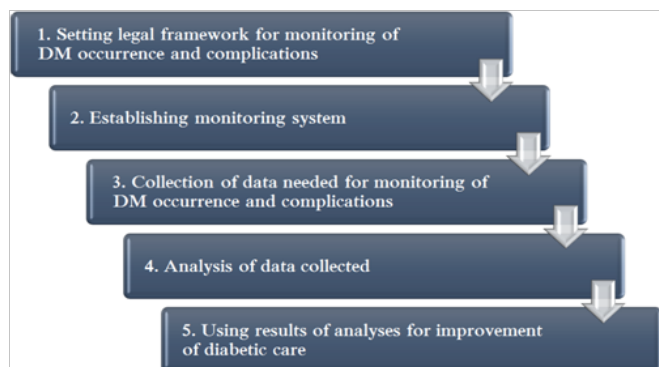


Figure 1 Stages in setting up and exploiting monitoring system.

The monitoring system had been initially established as a paper-based one. As part of the primary healthcare reform, the Web Medic application for primary healthcare centers was developed. Majority of the family medicine teams use the application for keeping electronic patient records. There is a function in the Web Medic that allows for electronic (not automatized) generation of the diabetes case report.

When completed, the reporting form is printed and submitted to the PHI RS, which enters it into population-based registry. Electronic version of the reporting form is also available to the PHI RS, through the direct connection to the data center with electronic patient records kept by primary healthcare providers. However, the population-based registry still cannot be fully based on electronic exchange of data, as

- a. Not all of the family medicine and pediatric teams keep electronic patient records,
- b. The Web Medic is not the only software used by the family medicine teams in public healthcare facilities and
- c. Use of the Web Medic is not mandatory for private family medicine practices and pediatric practices.

Consequently, both electronic data and printed reporting forms are used in parallel in maintaining population-based registry of diabetes. It decreases the registry's accuracy and reliability. It also limits use of routine medico-administrative data for assessment of diabetes trends (Figure 2).

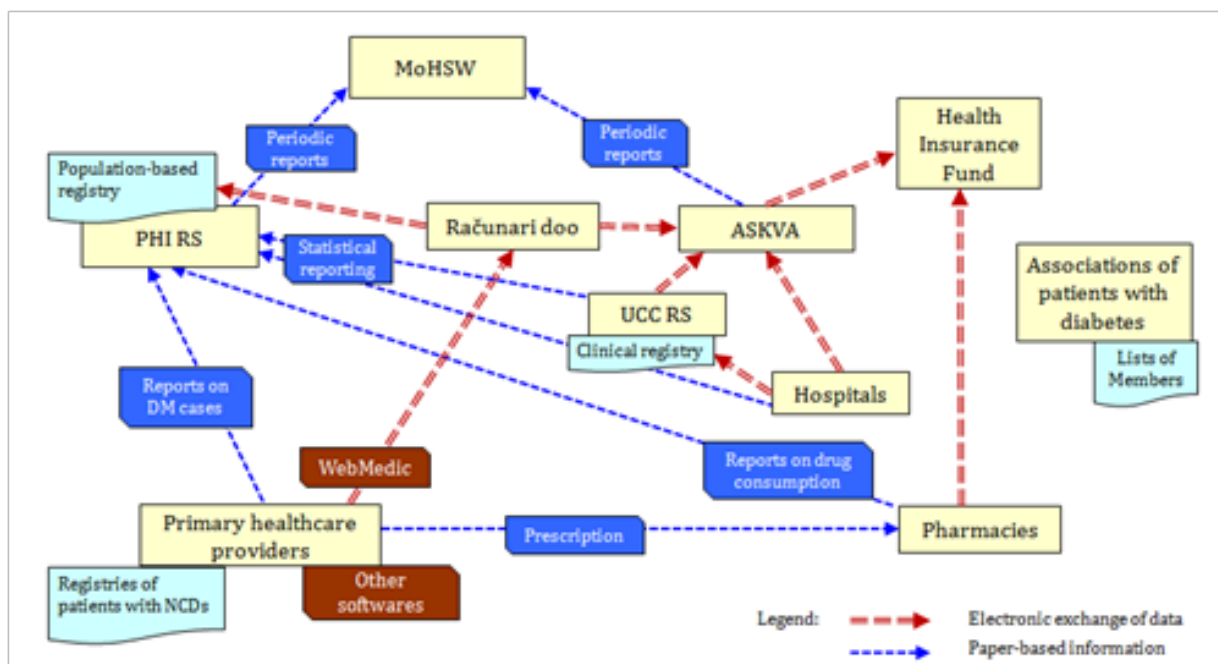


Figure 2 Current system for monitoring of diabetes and its complications in RS.

The electronic form of Clinical Registry for diabetes is established at the Endocrinology Department of the UCC RS. Other hospitals should generate and submit to the UCC RS reports on hospital treatment of patients with diabetes and its complications, but they do not do it on a regular basis.⁷ The administrative burden of manually filling in a lengthy reporting form seems to be one of the main reasons for the hospitals not complying with the legal requirements. Secondly, the hospitals have two additional reporting systems for

admitted patients (including those with diabetes). Printed notification on admitted hospital patients is submitted to the PHI RS, while the information needed for payment of services is submitted to the Health Insurance Fund of RS (HIF) through the web-based application at the Agency for Certification, Accreditation and Health Care Quality Improvement (ASKVA). Consequently, the Clinical Registry for diabetes is incomplete and unreliable source of data for monitoring.

There are two additional databases in the RS health system that can be used in monitoring of diabetes occurrence and complications. The Health Insurance Fund of RS collects data from pharmacies on consumption of insulin and other medications used in treatment of diabetes. The ASKVA uses its own database, but also connects to databases of other organizations, to generate information on quality of care for patients with diabetes. In lack of reliable population-based and Clinical Registry for diabetes, the additional sources have become important.

Regular input of data is necessary for functioning of the monitoring system. Family medicine teams, hospitals, the PHI RS, pharmacies and the HIF are the key participants in data collection process in the RS. One of the issues in reporting on diabetes cases by family medicine teams in primary healthcare is inability of software to automatically generate full reporting format. Part of the data needs to be entered manually. As a result, only 18% of patients diagnosed with diabetes are reported to the population-based registry.⁷ Lack of healthcare provider's awareness on importance of reporting on diabetes and its complications, overload with different types of reporting and lack of financial incentives for reporting seems to be the main causes of irregular reporting by family medicine teams. Family medicine teams are able to generate a list of registered patients with diabetes from the Web Medic. However, they are not able to automatically generate registries of patients with non communicable diseases (NCDs), including the registry of patients with diabetes required for the accreditation of the team by the ASKVA. The registries of patients with NCDs are kept manual, by accredited family medicine teams only, allowing them to monitor diabetes occurrence in the registered population.

Data on diabetes and its complications should be analyzed at different levels. However, the analysis is not done by all the stakeholders in the RS who have the mandate and responsibility to do so (healthcare providers, the PHI RS, the ASKVA and the HIF). It is common misperception among both the primary healthcare centers and the hospitals that the PHI RS should analyze their data and provide feedback to them. The family medicine teams can use the Web Medic to generate selected diabetes related indicators for registered population. However, the software provides only value of indicators at a specific point in time, not allowing for observation of changes over time or comparison of performance among family medicine teams. These functions are available in ASKVA's application, developed for monitoring of healthcare quality and safety, but still not being operational. Lack of legal framework for monitoring of quality indicators, lack of financial incentives for monitoring quality of services provided by family medicine teams, lack of awareness on importance of quality monitoring among healthcare managers and lack of interconnectivity with other applications seems to be hindering wider use of the ASKVA's applications for monitoring quality of primary healthcare and hospital care. The PHI RS does not fully use potentials of electronic population-based registry, as not all responsible staff is adequately trained in keeping and use of the registry.

Regular periodic reports from the PHI RS to the MoHSW have recently been generated mainly on the bases of printed reporting forms collected by the PHI RS. Consequently, with incomplete population-based registry, the PHI RS is not able to provide reliable

information on prevalence and incidence of diabetes, which could be used in analyses leading to improvement of diabetic care. Further, none of the organizations in the health system is clearly responsible for comparison of diabetes trends in the RS with trends in other comparable countries. Given the complex administrative structure of Bosnia and Herzegovina, data from the RS are aggregated with data from other parts of the country for the purpose of international reporting. Aggregated data thus do not provide adequate information for the MoHSW to compare diabetes trends to the goals from the current policy framework.⁴

Based on the RS example, it can be concluded that the stages in setting up and exploiting the diabetes monitoring system can be used as a framework for identification of opportunities for improvement. Assessment showed that existing monitoring system is not comprehensive; databases are not cross tabulated to verify completeness and accuracy of data; existing data are not appropriately analyzed; and policy makers' decisions related to diabetic care are not based on reliable information and evidence. All the identified deficiencies impact the quality of international reporting on diabetes and its complications.

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Conflict of interest

The author declares no conflict of interest.

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