

# SLOVENIAN CIVIL REGISTRATION AND UNIQUE IDENTIFICATION NUMBER SYSTEM FOR UNIVERSAL HEALTH COVERAGE: A CASE STUDY

DISCUSSION PAPER

August 2019

*Martina Zorko Kodelja*

*Samuel Mills*





# **SLOVENIAN CIVIL REGISTRATION AND UNIQUE IDENTIFICATION NUMBER SYSTEM FOR UNIVERSAL HEALTH COVERAGE:**

*A Case Study*

**Martina Zorko Kodelja  
Samuel Mills**

**August 2019**

## **Health, Nutrition and Population (HNP) Discussion Paper**

This series is produced by the Health, Nutrition, and Population Global Practice of the World Bank. The papers in this series aim to provide a vehicle for publishing preliminary results on HNP topics to encourage discussion and debate. The findings, interpretations, and conclusions expressed in this paper are entirely those of the author(s) and should not be attributed in any manner to the World Bank, to its affiliated organizations or to members of its Board of Executive Directors or the countries they represent. Citation and the use of material presented in this series should take into account this provisional character.

The World Bank does not guarantee the accuracy of the data included in this work. The boundaries, colors, denominations, and other information shown on any map in this work do not imply any judgment on the part of the World Bank concerning the legal status of any territory or the endorsement or acceptance of such boundaries.

For information regarding the HNP Discussion Paper Series, please contact the Editor, Martin Lutalo at [mlutalo@worldbank.org](mailto:mlutalo@worldbank.org) or Erika Yanick at [eyanick@worldbank.org](mailto:eyanick@worldbank.org).

### **RIGHTS AND PERMISSIONS**

The material in this work is subject to copyright. Because the World Bank encourages dissemination of its knowledge, this work may be reproduced, in whole or in part, for noncommercial purposes as long as full attribution to this work is given.

Any queries on rights and licenses, including subsidiary rights, should be addressed to World Bank Publications, The World Bank Group, 1818 H Street NW, Washington, DC 20433, USA; fax: 202-522-2625; e-mail: pubrights@worldbank.org.

© 2019 The International Bank for Reconstruction and Development / The World Bank  
1818 H Street, NW Washington, DC 20433  
All rights reserved.

# **Health, Nutrition and Population (HNP) Discussion Paper**

## **Slovenian Civil Registration and Unique Identification Number System for Universal Health Coverage: A Case Study**

Martina Zorko Kodelja,<sup>a</sup> Samuel Mills<sup>b</sup>

<sup>a</sup> Zavod za zdravstveno zavarovanje Slovenije (ZZZS, Health Insurance Institute of Slovenia), Ljubljana, Slovenia

<sup>b</sup> Health, Nutrition and Population, The World Bank, Washington, D.C., United States

Paper part of a series of country case studies that the World Bank Health, Nutrition and Population Global Practice has commissioned.

**Abstract:** A health protection system based on social health insurance has had a long tradition in Slovenia. Several forms of health insurance schemes were implemented from 1896 until 1992, when health care reform legislation was passed, establishing compulsory health insurance (CHI). CHI is provided by a single provider—the Health Insurance Institute of Slovenia (HIIS), which is a public legal entity. Everyone with permanent residency in Slovenia is covered under the unique CHI scheme, either as a mandatory member or as a family dependent. The system is funded through CHI contributions of employees and employers (for the active population), and other required contributions (by the self-employed, farmers, pensioners, etc.). The entire population is insured.

Since the establishment of HIIS in 1992, the implementation of information and communications technologies (ICTs) to support key CHI processes has been a matter of strategic importance.

HIIS has developed an information center to support CHI's key business processes. Infrastructure, applications, data, and security systems in the central public administration are being increasingly integrated to provide citizens with comprehensive services, and to facilitate their access to them.

E-government is the area in which the expectations, needs, and habits of citizens are linked to the business processes of the public sector, as well as to e-business technological solutions. Because e-government projects in Slovenia have been introducing e-business into public administration over the past decade, the exchange of data between institutions has been improved and technologically updated.

This document describes the solutions that have linked the systems for registration of newborns in the maternity hospital and for identifying all residents of Slovenia in various areas; and, above all, the improvements enabled by the unique identification of persons in the field of health insurance and health care.

**Keywords:** Slovenia, civil registration, unique identification number, compulsory health insurance, universal health coverage

**Disclaimer:** The findings, interpretations and conclusions expressed in the paper are entirely those of the authors, and do not represent the views of the World Bank, its Executive Directors, or the countries they represent.

**Correspondence Details:** Samuel Mills, The World Bank, 1818 H Street NW, Washington, D.C., 20433, United States, Telephone: +1-202-473-9100, Fax number: +1-202-477-6391, Email: [smills@worldbank.org](mailto:smills@worldbank.org), Website: <http://www.worldbank.org>

## Table of Contents

<b>RIGHTS AND PERMISSIONS.....</b>	<b>II</b>
<b>LIST OF FIGURES .....</b>	<b>VII</b>
<b>LIST OF TABLES .....</b>	<b>VII</b>
<b>LIST OF ACRONYMS .....</b>	<b>VIII</b>
<b>ACKNOWLEDGMENTS .....</b>	<b>IX</b>
<b>PREFACE.....</b>	<b>X</b>
<b>PART I – INTRODUCTION .....</b>	<b>1</b>
<b>PART II – UNIQUE IDENTIFICATION NUMBERS IN SLOVENIA .....</b>	<b>3</b>
2.1 PERSONAL IDENTIFICATION NUMBER (EMŠO) .....	3
<i>2.1.1. Determination and Composition of the EMŠO.....</i>	<i>3</i>
<i>2.1.2 EMŠO Application.....</i>	<i>4</i>
<i>2.1.3 Legislation .....</i>	<i>5</i>
<i>2.1.4 Central Population Register (CPR).....</i>	<i>5</i>
<i>2.1.5 Registration of Civil Status.....</i>	<i>8</i>
<i>2.1.6 The E-Birth Application.....</i>	<i>10</i>
2.2 TAX NUMBER .....	13
<i>2.2.1 Tax Number Determination and Composition.....</i>	<i>13</i>
<i>2.2.2 Use of the Tax Number .....</i>	<i>13</i>
<i>2.2.3 Legislation .....</i>	<i>13</i>
2.3 HEALTH INSURANCE NUMBER.....	13
<i>2.3.1 Health Insurance Number (HIN) Determination and Composition.....</i>	<i>13</i>
<i>2.3.2 The Use of HIN .....</i>	<i>14</i>
<i>2.3.3 Legislation .....</i>	<i>14</i>
<b>PART III – DATA EXCHANGE BETWEEN THE CPR AND HIIS .....</b>	<b>15</b>
<i>3.1.1 Acquisition of the CPR Link and the HIIS Records.....</i>	<i>16</i>
<b>PART IV – HEALTH INSURANCE CARD (HIC).....</b>	<b>17</b>
4.1 ACQUISITION AND USE OF THE HEALTH INSURANCE CARD (HIC) .....	17
4.2 HIC SYSTEM TECHNICAL COMPONENTS .....	18
<i>4.2.1 The Health Insurance Card (HIC).....</i>	<i>18</i>
<i>4.2.2 The Health Professional Card (HPC) .....</i>	<i>19</i>
<i>4.2.3 Card Readers.....</i>	<i>20</i>
<i>4.2.4 Introduction of the First-Generation Health Insurance Card (HIC) System ...</i>	<i>20</i>
<i>4.2.5 Introduction of the Second-Generation Health Insurance Card (HIC) and the New Online System .....</i>	<i>20</i>
4.3 ADVANTAGES OF THE NEW SYSTEM.....	22
4.4 LEGISLATION: THE HEALTH CARE AND HEALTH INSURANCE ACT (ZZVZZ).....	23

4.5 DATA PROTECTION MEASURES .....	24
4.5.1 <i>Legislative Frameworks of Information Protection</i> .....	24
4.5.2 <i>Protection of Information from the Aspect of Direct Users</i> .....	25
4.5.3 <i>Experience with Security Components in Slovenia</i> .....	25
4.5.4 <i>Safe Transfer of Data in the Online System</i> .....	26
4.5.5 <i>Opt-Out Solutions</i> .....	26
<b>PART V – COMPULSORY HEALTH INSURANCE IN SLOVENIA.....</b>	<b>27</b>
5.1 THE HEALTH INSURANCE INSTITUTE OF SLOVENIA (HIIS).....	27
5.2 CONTRIBUTIONS FOR COMPULSORY HEALTH INSURANCE.....	27
5.3 VALUATION OF THE PROGRAM OF HEALTH CARE SERVICE ACTIVITIES (PARTNER NEGOTIATIONS).....	28
5.4 SYSTEMS FOR FUNDING HEALTH CARE ACTIVITIES .....	29
5.5 RIGHTS OF INSURED PERSONS .....	30
5.6 VOLUNTARY HEALTH INSURANCE (VHI) .....	32
5.6.1 <i>Changes in the Legislation Underway</i> .....	33
5.7 THE INCLUSION OF INSURED PERSONS IN HEALTH INSURANCE .....	33
5.7.1 <i>Coverage of Persons with Insurance</i> .....	34
5.7.2 <i>e-VEM - One-Stop Shop System</i> .....	35
5.7.3 <i>Benefits of the New System</i> .....	37
5.7.4 <i>Procedures for Natural Persons</i> .....	37
5.8 DATABASES ON INSURED PERSONS MANAGED BY HIIS .....	38
<b>PART VI – IMPROVEMENTS IN EHEALTH AND HEALTH INFORMATION SYSTEMS.....</b>	<b>42</b>
6.1 EHEALTH SOLUTIONS .....	42
6.1.1 <i>z-VEM (One-Stop Shop System for Health)</i> .....	42
6.1.2 <i>ePrescription</i> .....	43
6.1.3 <i>eReferral</i> .....	44
6.1.4 <i>eHealth Record</i> .....	45
6.1.5 <i>Legislation in the Field of e-Health</i> .....	46
6.2 BILLING FOR HEALTH CARE SERVICE SOLUTIONS .....	47
6.2.1 <i>Analytical Systems</i> .....	49
6.3 PORTAL FOR INSURED PERSONS .....	51
6.3.1 <i>The SMS Solution</i> .....	52
6.3.2 <i>Anonymous Web Service</i> .....	53
6.3.3 <i>Secure Access to the Personal Information Service</i> .....	53
6.3.4 <i>Online Ordering of Health Insurance Cards</i> .....	55
6.3.5 <i>Ordering the European Health Insurance Card</i> .....	57
6.3.6 <i>Verification of the Validity of an A1 Certificate</i> .....	57
6.3.7 <i>Future Developments</i> .....	57
6.4 THE SVIT SCREENING PROGRAM.....	58
6.5 PREVENTION OF FRAUD .....	60
6.5.1 <i>Legislation: The Criminal Code and the Integrity and Prevention of Corruption Act</i> .....	60
6.5.2 <i>Types of Health Care Fraud</i> .....	61
6.5.3 <i>Supervision by HIIS</i> .....	62

6.5.4 Supervision by Voluntary Health Insurance (VHI) Providers.....	64
6.5.5 The Results.....	64
<b>PART VII – BASIC DEVELOPMENT CHALLENGES IN THE IMPLEMENTATION OF COMPULSORY HEALTH INSURANCE (CHI).....</b>	<b>66</b>
7.1 GENERAL DEVELOPMENT CHALLENGES IN THE FIELD OF ICT IN HEALTH CARE .....	67
<b>PART VIII – LESSONS LEARNED .....</b>	<b>69</b>
<b>REFERENCES.....</b>	<b>72</b>

## LIST OF FIGURES

Figure 1: Composition of Unique Identification Numbers in Slovenia.....	3
Figure 2: Calculation of the Check Digit.....	4
Figure 3: CPR is the Central Hub of Population Data .....	7
Figure 4: CPR Portal: Insight into Personal Data, Using a Personal Qualified Digital Certificate (Screenshot).....	8
Figure 5: eBirth System Data Flow .....	11
Figure 6: Two Generations of the HIC .....	18
Figure 7: Health Professional Card (HPC).....	19
Figure 8: Card Readers in Use.....	20
Figure 9: The New Online System.....	22
Figure 10: Scheme of the Key Databases Managed by HIIS .....	38
Figure 11: Data Exchanges .....	39
Figure 12: Available Services on the Web Portal for Insured Persons (Screenshot) .....	52
Figure 13: Display of Health Insurance Status (Screenshot).....	53

## LIST OF TABLES

Table 1: The number of issued health insurance cards per year .....	19
Table 2: Basic categories of insured persons and CHI contributions .....	28
Table 3: The percentage of health care services prices covered by compulsory health insurance, varies from 10% to 90% .....	32
Table 4: Categories of Insured Persons .....	34
Table 5: Number of uses of the anonymous web service and the number of logins to the secure data access service in 2013 and 2015 .....	55
Table 6: The number of health insurance cards ordered through the web portal .....	57
Table 7: Pathologies discovered through the SVIT screening program in 2017 .....	60
Table 8: Supervisions Carried Out in 2017 .....	64

## **LIST OF ACRONYMS**

CHI	Compulsory Health Insurance
CPC	Commission for the Prevention of Corruption
CPR	Central Population Register
CR	Civil Register
CRPP	Central Register of Patients
CRVS	Civil registration and vital statistics
DRG	Diagnosis Related Group
EU	European Union
e-VEM	One-Stop Shop System
FURS	Financial Administration of the Republic of Slovenia
GA	General Agreement
GP	General practitioner
HIC	Health Insurance Card
HIIS	Health Insurance Institute of Slovenia
HIN	Health Insurance Number
HNP	Health, Nutrition and Population
HPC	Health Professional Card
ICT	information and communication technologies
IT	Information Technology
KZ	Criminal Code
NIJZ	National Institute of Public Health
OECD	Organisation for Economic Cooperation and Development
PPP	Purchasing Power Parity
SMS	Short Message Service (text messaging service on mobile phones)
SOAP	Simple Object Aspect Protocol
SVIT	Colorectal Cancer Screening Program
UHC	Universal Health Coverage
UIN	Unique Identification Number
VHI	Voluntary Health Insurance
WBG	World Bank Group
XML	Extensible Markup Language
ZEPEP	Electronic Business and Electronic Signature Act
ZIntPK	Integrity and Prevention of Corruption Act
ZMatR	Civil Register Act
ZPIZ	Pension and Disability Insurance Institute of Slovenia
ZRSZ	Employment Service of Slovenia
z-VEM	One-Stop Shop System for Health
ZVOP-1	Personal Data Protection Act
ZZDavP-2	Tax Procedure Act
ZZDej	Health Services Act
ZZPPZ	Health Care Database Act
ZZVZZ	Health Care and Health Insurance Act

## **ACKNOWLEDGMENTS**

This report was prepared by Martina Zorko Kodelja (Consultant, HIIS Information Center). Dr. Samuel Mills (WBG) provided technical advice and overall guidance. The report also benefited greatly from the input of many experts and people from many organizations in Slovenia. Boris Kramberger (HIIS) is gratefully acknowledged for his contribution in the area of the CHI system and the prevention of fraud, and Karmen Grom Kenk for her contributions on the Expenditures Project. Other HIIS officials, including Anka Bolka (Field Director for Development and Analysis), Bojan Fele (Director, Information Center) and Marjan Sušelj (Director General) and National Institute of Public Health officials, especially Jana Gaspari and Metka Zaletel, provided a huge amount of data on e-Birth registration that was very useful in the preparation of this report. The Korea-World Bank Partnership Facility, and the Gavi Alliance are gratefully acknowledged for financial support. The authors are grateful to the World Bank for publishing this report as an HNP Discussion Paper.

## PREFACE

The World Bank Group (WBG) Data Council endorsed the 2016–2030 Civil Registration and Vital Statistics (CRVS) Action Plan in December 2015. This plan has a goal of achieving universal civil registration (CR) of births, deaths, and other vital events—including reporting the cause of death and providing access to legal proof of registration—for all individuals by 2030. The WBG has been working closely with development partners to provide the requisite support to countries through three interlinked initiatives: The Strategic Action Program for Addressing Development Data Gaps; Identification for Development; and the Global Financing Facility.

The goal of the WBG’s Health, Nutrition, and Population Global Practice is to contribute to the two WBG goals of ending extreme poverty within a generation and boosting shared prosperity by helping countries improve HNP outcomes and reduce impoverishment due to illness. Enabling countries to achieve universal health coverage (UHC) is the main way to attain this goal, by ensuring that all people have access to the quality, essential HNP services they need without enduring financial hardship. Documentation and dissemination of the CRVS-related country case studies, such as the use of a unique identification number (UIN) for UHC are key to this process.

This report on Slovenia, one of a series of case studies commissioned by the Health, Nutrition, and Population Global Practice, provides a comprehensive view of how the establishment of compulsory health insurance (CHI) in 1992, managed by the Health Insurance Institute of Slovenia (HIIS), along with the use of Health Insurance Number (HIN), has facilitated the achievement of UHC in Slovenia.

## PART I – INTRODUCTION

Slovenia, with a population of around 2 million people, is among the smaller countries within the European Union (EU). Having gained its independence in 1991, it is among the youngest, too. However, a health protection system based on social health insurance has had a long tradition in Slovenia. The first *krankenkasse* in Ljubljana was established in 1896. A series of forms of health insurance schemes were implemented from that time until, after health care reform legislation was passed in 1992, CHI was reestablished. CHI is provided by a single provider – the HIIS, which is a public legal entity. It is typically self-governed by representatives of employees and other insured persons, and employers' associations.

### General Facts about Slovenia

- 2 million inhabitants
- 20,273 square kilometers
- US\$34,063 GDP per capita
- Ljubljana is the capital city (280,000 inhabitants)
- Member of the EU since 2004

### Health Indicators for Slovenia

- Life expectancy – Male: 77.8 years (OECD: 77.9)
- Life expectancy – Female: 83.9 years (OECD: 83.1)
- Infant mortality: 1.9 (OECD: 3.9)
- Population coverage: 100% (OECD: 97.9%)
- Share of out-of-pocket expenditure: 2% (OECD: 3%)

Sources: HIIS Business Report 2017; and OECD, *Health at a Glance 2017*

Everyone with permanent residency in Slovenia is covered under the unique CHI scheme, either as a mandatory member, or as a family dependent. The system is funded through the CHI contributions of employees and employers (for the active population), and other required contributions (by the self-employed, farmers, pensioners, etc.). The entire population (100 percent) is insured.

The CHI system ensures universal health care benefits. It covers up to 100 percent of costs, and copayments for the services that are insured by three voluntary health insurance (VHI) providers. Thus, health care services in Slovenia are financed mainly by HIIS and VHI providers.

Despite an important share of private providers—particularly dentists and general practitioners (GPs) on the primary level, and outpatient specialists on the secondary level—most health care is delivered by state-owned hospitals at the secondary and tertiary levels, and municipality-owned health centers on the primary level. Thus, more than 80 percent of the health care workforce is employed in the public sector and is paid on a salary basis, including doctors. The majority of doctors are civil servants, except dentists, where the share of private providers exceeds 50 percent.

In the year 2014, total health care expenditure in Slovenia was around €3.3 billion, representing a little less than 9.0 percent of GDP, or €2,003 Purchasing Power Parity (PPP) per capita. Public spending<sup>1</sup> reached 6.4 percent of GDP, or €1,432 PPP per capita (72 percent of all sources). Private sources were collected mainly through VHI (for copayments, and for a higher standard of services), and direct payments were at the level of 2.5 percent of GDP, or €571 PPP per capita, representing around 28 percent of all sources for health care services in Slovenia.

Since the establishment of HIIS in 1992, the implementation of information and communication technologies (ICT) to support key CHI processes (inclusion of insured persons, payment of contributions, allocation of resources to providers, accounting methods for services performed, ensuring access to health care services, etc.) has been a matter of strategic importance.

HIIS has developed an information center to support the operations of all of the key business processes of CHI. Infrastructure, application, data, and security systems in the central public administration are being increasingly integrated in order to provide citizens with comprehensive services, and to facilitate access to them.

E-government is the area in which the expectations, needs, and habits of citizens are linked to the business processes of the public sector, as well as e-business technological solutions. With e-government projects in Slovenia, which have been introducing e-business into public administration over the past decade, the exchange of data between institutions has been improved and technologically updated.

This document describes the solutions that have linked the systems for the registration of newborns in the maternity hospital; for identifying all residents of Slovenia in various areas; and, above all, the improvements enabled by the unique identification of persons in the field of health insurance and health care.

---

<sup>1</sup> In addition to CHI as major public financing? there are certain national and local budget funds for national preventive program and capital investments.

## PART II – UNIQUE IDENTIFICATION NUMBERS IN SLOVENIA

In the Republic of Slovenia, three identification numbers are used to identify residents. The primary number, determined immediately at birth, is the EMŠO. Subsequently, tax numbers and HINs are determined based on the EMŠO. Legislation precisely specifies in which area each of the above identifiers may be applied.

**Figure 1: Composition of Unique Identification Numbers in Slovenia**

	1	2	3	4	5	6	7	8	9	10	11	12	13
EMŠO	D	D	M	M	Y	Y	Y	NR	NR	G	S	S	CD
Tax number	R	R	R	R	R	R	R	CD					
Health insurance number	R	R	R	R	R	R	R	R	CD				

D Day of birth  
M Month of birth  
Y Year of birth  
NR Number of the register - 50 for everybody  
G Gender  
S Sequence number of birth on the specific day  
CD Check digit  
R Random number

### 2.1 PERSONAL IDENTIFICATION NUMBER (EMŠO)

The EMŠO is the personal identification number in Slovenia. It is a number that allows the unique identification of an individual, and it is intended to be used for the management and maintenance of databases on the population; integration of data into these databases; and rationalization of the work of state authorities and other users who have a legal basis for use of the EMŠO. The EMŠO is also intended to allow for the fulfillment of the rights and obligations of an individual.

#### 2.1.1. Determination and Composition of the EMŠO

The EMŠO is determined by the administrator of the Central Population Register (CPR), and is assigned uniformly for all residents of Slovenia, including foreign citizens. It was introduced in 1976, in the then Socialist Federal Republic of Yugoslavia, and is still in use in all of the countries that were previously in the territory of the former Yugoslavia. The CPR administrator determines an EMŠO for each individual upon entry into the CPR at the time of birth; resettlement; or entry into the register for an individual for whom an EMŠO has not yet been designated. The EMŠO is determined by the CPR administrator within three days of the receipt of data. For a newborn, the EMŠO is determined immediately upon birth in a maternity hospital.

The EMŠO is determined according to an algorithm that includes module 11 operation (remainder of the division) and is based upon a seven-digit figure that indicates the date of birth and gender. The first seven EMŠO digits are the date of birth: 2-digit day, 2-digit month, and 3-digit year. The eighth and ninth digits are the register number, which is "50" for Slovenia. The tenth, eleventh, and twelfth digits are the sequence number, and the thirteenth is the control number. The sequence number is a combination of gender

indication, and the sequence number for persons born on the same day: 000-499 for men and 500-999 for women. The basis for calculating the sequence number is the record of the specified EMŠOs. The value 1 is added to the sequence number of the last EMŠO, which was determined on the same date of birth and to the same gender. The sum thus obtained is the sequence number for the EMŠO.

Each EMŠO number is then multiplied by an appropriate value of 7 to 2 (explained in figure 2), and the resulting products are added together. The sum is then divided by eleven (and the result of the division is limited to an integer). The remainder of the division is subtracted from the number 11, and the difference is the control number. The control number is one digit and it can have a value from 0 to 9. If the remainder is 0, the control number is 0. When the remainder of the division is 1, the difference is a two-digit number (10) and such a control number cannot be used. In this case, the sequence number is skipped, the value of the sequence number is increased by 1, and the calculation of the control number is repeated according to the same procedure.

The question often arises of whether the number 50, being a code for Slovenia in the former Yugoslavia, should be cancelled in order to shorten the EMŠO, which is currently two digits longer than it needs to be, for no good reason. However, to do so would be extraordinarily complicated, as the Ministry of the Interior has explained.<sup>2</sup>

If the EMŠO is assigned the wrong date of birth or gender, the CPR administrator must cancel and redetermine it; in such a case, the cancelled EMŠO remains in the record. In the case of changes to other data (name, citizenship, address, marital status), the person shall retain the allocated EMŠO. A cancelled EMŠO cannot be assigned to another individual.

**Figure 2: Calculation of the Check Digit**

### **2.1.2 EMŠO Application**

The EMŠO is used by the administrators of databases (registers, records, etc.) that are kept on individuals, based on the laws governing the following areas

<sup>2</sup> The Ministry of the Interior does not foresee a change in the composition of the EMŠO with the existing legal bases, as the EMŠO (as composed in the manner described above) is used as the key for accessing the database in all large systems, as well as in many smaller ones. The management of these databases is usually established for many years and is based on the system of obtaining basic data from the CPR, the key being the EMŠO for all of them; therefore, to change any data in the existing EMŠO structure would result in a change of database architecture in connection with all these administrators. In any case, millions of corrections would need to be made. Their number is difficult to evaluate, as the bases are of different sizes, including up to 2 million.

- Statistics
- Internal affairs
- Health care and health insurance
- Taxes and customs duties
- Defense
- Geodetic services
- Spatial planning and environmental protection
- Employment and monitoring of the workforce
- Pension and disability insurance
- Justice
- Education
- Social security

Other users or database administrators may also use the EMŠO in their databases as set out by the law. The EMŠO can also be entered into public documents, which are issued to individuals based on the collections referred to above.

According to the Personal Data Protection Act<sup>3</sup> (ZVOP-1), the entity that acquires the EMŠO is obliged to state the legal basis and the purpose for acquiring it, and in the case of written consent, must inform the individual about the purpose for the acquisition.

### **2.1.3 Legislation**

The Central Population Register Act<sup>4</sup> regulates the determination and use of the personal identification number (EMŠO) and the contents of the CPR, as well as the data flow, management, maintenance, storage, and use of the data.

### **2.1.4 Central Population Register (CPR)**

The CPR is the central database with the most basic data on the population of Slovenia; it is managed by the Ministry of the Interior of the Republic of Slovenia. In it, data on the population is collected, processed, stored, and used centrally in order to monitor the situations and movements of the population. The functions and uses are of the CPR is often unknown to the general public, although everyone is aware of at least one of its elements, that is, the EMŠO. The main purpose of the CPR is to ensure the basic social, civil, and political rights of the Slovenian people.

The data in the CPR are personal data; therefore, data protection and security, as regulated by the ZVOP-1, are of prime importance. The CPR contains the following data:

- EMŠO
- Place of birth
- Name
- Citizenship
- Residence and type of residence
- Marital status

---

<sup>3</sup> Official Gazette of the Republic of Slovenia, No. 94/07 – official consolidated text

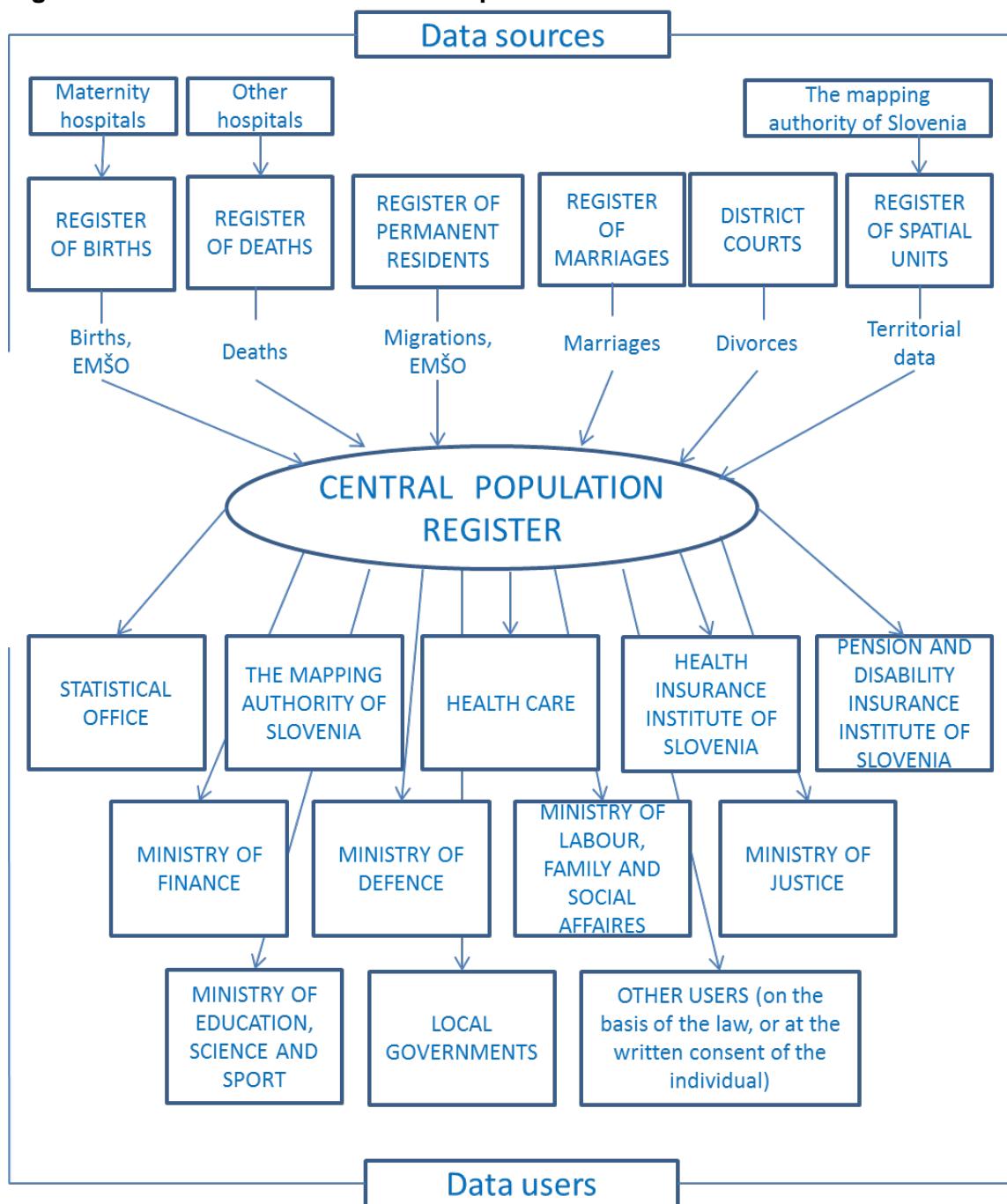
<sup>4</sup> Official Gazette of the Republic of Slovenia, No. 72/06 – official consolidated text

- Right to vote
- EMŠO (mother, father, spouse, and child)
- Identifiers for connecting with administrative databases
- Dates and data on events, changes, and corrections to the record.

The CPR obtains data from various sources and transmits it to various users, such as:

- Civil register (CR) (birth, death, nationality, marriage, change of personal name, divorce);
- Hospital information systems (electronic birth registration);
- Register of permanent residents (registration or deregistration of residence, voting registration, household);
- Foreign nationals register (residence permits for foreigners);
- Data collection on the employment of foreigners (determination of EMŠOs for foreigners);
- Citizenship Register (acquisition and termination of citizenship);
- Register of foreign nationals (enforcement of rights or exercise of duties within the Republic of Slovenia);
- Asylum register (for applicants for international protection);
- Register of spatial units (municipality, settlement, street, house number, apartment number, postal code, polling station);
- Register of taxable persons (tax number).

**Figure 3: CPR is the Central Hub of Population Data**



Personal data from the CPR can be obtained by state authorities and other users who need information about an individual in order to carry out specific tasks; for the maintenance of databases on individuals; or for carrying out statistical, socioeconomic, and other types of surveys. The data can be acquired by users with a legal basis for access, based on a written request, or the written consent of the individual concerned. CPR data for scientific and research purposes can only be obtained in an anonymous form.

**Figure 4: CPR Portal: Insight into Personal Data, Using a Personal Qualified Digital Certificate (Screenshot)<sup>5</sup>**

The screenshot shows the user interface of the Central Register of Population portal. At the top, there is a navigation bar with tabs: Domov, VLOP (highlighted in orange), Javni sektor, Mednarodno sodelovanje, Zasebni sektor, and Registracija. Below the navigation bar, the logo of the Republic of Slovenia and the title "Portal Centralnega registra prebivalstva" are displayed. A breadcrumb menu shows the path: Kazalo: Portal CRP > Storitve > VLOP > Osnovni podatki.

In the left sidebar, the user information is shown:

- Uporabnik: BORIS KODELJA
- Certifikat: POSTArCA 210235
- ▶ Osnovni podatki
- ▶ Dogodki o osebi
- ▶ Odjava

Below the sidebar, there are three buttons: "Uprava" (red), "CENTRALNI KATALOG INFORMACIJI JAVNEGA ZNAČAJA" (blue), and "Ministrstvo za notranje zadeve" (blue).

The main content area displays the following personal data:

Osebni podatki			
EMŠO	1703982500340	Davčna številka	24146986
Priimek	Kodelja	Ime	Boris
Spol	M	Državljanstvo	Slovenije
Datum in ura rojstva	17.03.1982 (18:50)	Zakonski stan	POROČEN
Kraj rojstva			
Občina	Postojna	Naselje	Postojna
Stalno prebivališče			
Upravna enota	Ajdovščina	Občina	Ajdovščina
Naselje	Ajdovščina	Ulica	Ulica Milana Klemenčiča
Hišna številka	005	Številka stanovanja	6
Pošta	5270 - Ajdovščina		
EMŠO			
Matere	0811947505139	Očeta	1705942500332
Zakonca	2304978505062	Lokalno	Otroški vrtec na Ribniku, Pot v Žapuže 14
Volilna pravica in volišče v Republiki Sloveniji			
Volilna pravica	DA	Državno	Otroški vrtec na Ribniku

Below the data, a note states: "Če menite, da so podatki napačni, vas prosimo, da se v to prepričate in posredujete zahtevek za popravek podatka po elektronski pošti ali se zglasite na Upravnji enoti Ajdovščina."

At the bottom, there is a footer with the text: "2006-2010 Ministrstvo za notranje zadeve, vse pravice pridržane" and "Naslov za vsebinska vprašanja: crp@gov.si | Naslov za tehnična vprašanja: ekc@gov.si". On the right, there are links: "Predstavitev CRP | Katalog podatkov CRP | Pogoji uporabe".

## 2.1.5 Registration of Civil Status

<sup>5</sup> Translation of information that appears on the portal:

- The user
- The digital certificate with which the user is logged
- Date and time of display of data
- Personal data: EMŠO, Tax number, Surname, Name, Gender, Nationality, Date and time of birth, Marital status
- Place of birth: Municipality, Settlement
- Permanent residence: Administrative unit, Municipality, Settlement, Street, House number, Flat number, Post office number
- EMŠO: of mother, of father, of spouse
- Electoral Rights: Electoral Rights, Electoral District

On May 3, 2005, a CR for Slovenia was established based on the Civil Register Act<sup>6</sup> (ZMatR), and the Rules for Implementation of the Civil Register Act.<sup>7</sup> As of the day of the establishment of the CR, the registrations of births, marriages, and deaths that were kept manually and separately were no longer maintained.

The CR is a central computerized database that records civil facts, including birth, marriage, and death, as well as other facts set out by law. The following data are kept in the CR:

- Birth data;
- Acknowledgement, judicial declaration, and determination of paternity;
- Adoption data;
- Change of personal name;
- Extension and/or deprivation of parental responsibility, and the reason for and date of termination of this measure;
- Custodianship, and the reason for and date of termination of this measure;
- Deprivation and return of the capacity to contract;
- Acquisition and cessation of citizenship;
- Change of sex;
- Data on entering into marriage;
- Invalidity and/or termination of marriage;
- Death data;
- Legal basis of the entry;
- Data on the registration of a same-sex partnership;
- Invalidity and/or termination of a same-sex partnership.

The indicated data represents a complete record of the personal status of nationals in the Republic of Slovenia, and it is also a record of the births, marriages, and deaths of foreign nationals. (Other changes in the personal status of foreign nationals are not entered into the register).

The CR is connected to other registers of the Information System of Administrative Internal Affairs, namely the CPR; the Permanent Resident Register; the Register of Travel Documents; the Register of Identity Cards; the Asylum Register; the Register of Citizenship; the Register of Civil Status; and the Register of Forms.

The CR enables the issuance of birth, marriage, and death certificates, and certificates of the basic facts and individual changes in personal status as entered into the register.

Rational, modern electronic operation is established, and the possibility of errors is reduced by massive data transmission through the CPR to all eligible data users. The establishment of the CPR has also enabled a number of improvements for individuals, who can now obtain extracts and other certificates from the CR of any administrative unit, not only at the place of entry into the register. With an appropriate and valid online digital certificate, an individual may also submit a request for the issuance of an extract from the CR through a single national e-government portal.

---

<sup>6</sup> Official Gazette of the Republic of Slovenia, No. 11/11 – official consolidated text

<sup>7</sup> Official Gazette of the Republic of Slovenia, No. 40/05, 69/09 and 77/16

## **2.1.6 The E-Birth Application**

The main sources of newborn data are maternity hospitals and maternity wards, where 99 percent of mothers in Slovenia give birth. In Slovenia, there are 14 maternity hospitals, where approximately 20,000 children are born annually.

In 2005, the Ministry for Internal Affairs of the Republic of Slovenia, in agreement with the direction of the development of e-management, prepared the introduction of the electronic application of births into the Register of Civil Status. The Ministry of Health responded to this request with a project enabling support for the registration of newborns into the registers mentioned above.

Accomplishment of this project is the result of cooperation among three ministries: the Ministry of the Interior is responsible for the management of registers concerning civil status, citizenship, population registration, and public documents; the Ministry for Public Administration is responsible for e-government, and for support of the communication infrastructure of public administration; and the Ministry of Health is responsible for the registration of births.

Various institutions, such as social work centers and HIIS, need information about newborns as soon as possible after their birth. Two conditions must be fulfilled in this respect: registration of the birth in the CR, with the allocation of an EMŠO to the newborn in the CPR; and registration of the name and permanent residence of the newborn in the CR. In order for these procedures to take place as soon as possible after the birth, an e-Birth system was created that enables the allocation of EMŠOs to newborns in the maternity hospital, and the entry of their births into the CR by electronic means. The basis for the realization of the system is an electronically supported CR, which was established by the Ministry of the Interior in 2005, and which enables electronic data exchange with other databases and registers. This provided the opportunity to support the procedures for birth registration thus far established using new technology, in the process facilitating routine work, and at the same time enabling quicker access to newborn data by other institutions.

The e-Birth solution consists of three phases, through which the exchange of data between the maternity information system and the registries of the Ministry of the Interior takes place. These are:

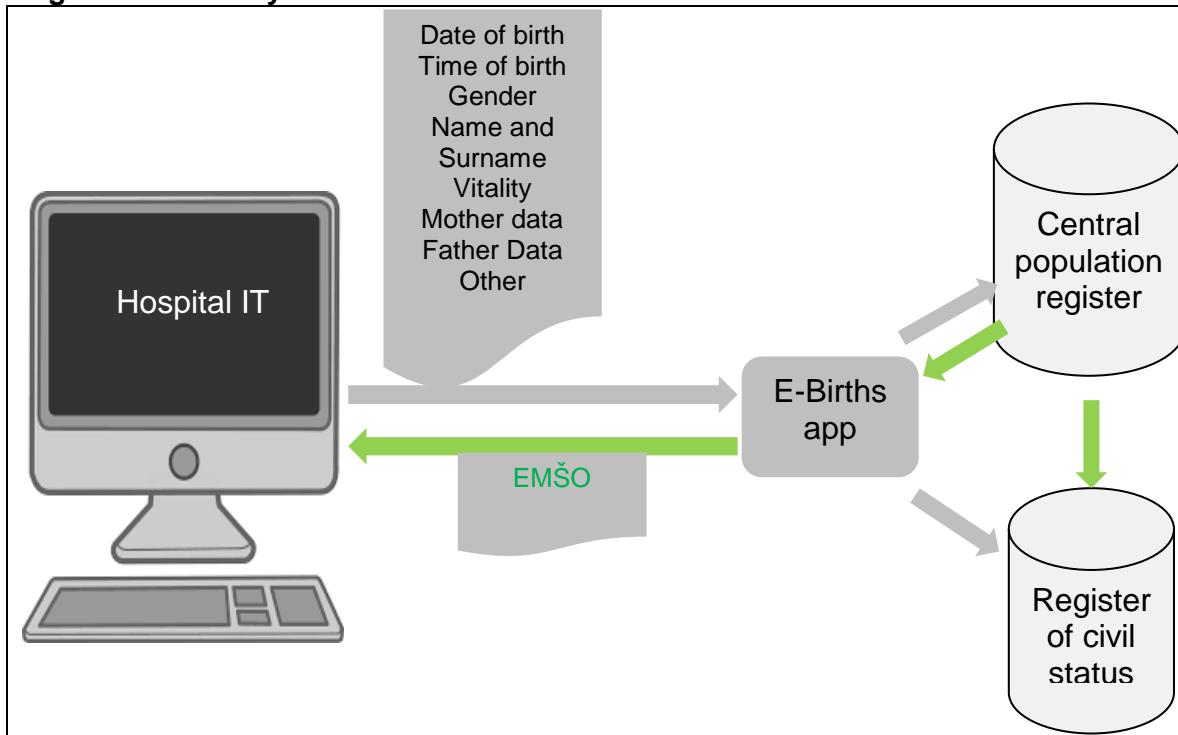
- Birth registration in the CR, and the allocation of an EMŠO to the newborn (maternity hospital, CPR, CR);
- Notification of the allocated EMŠO, and submission of the pre-completed forms for the registration of the name and permanent residence of the newborn (CPR, maternity hospital);
- Submission of official data on the newborn and his or her mother (CR, CPR, maternity hospital).

The forms for the registration of the name and permanent residence of the newborn, which are received by the maternity hospital together with the newborn's EMŠO, are completed using previously known data on the newborn and the mother. In the maternity hospital, the forms are printed and handed to the parents, who then verify the entered data and, if necessary, correct them; enter the newborn's name and surname; and confirm the validity

of the data with their signature(s). The maternity hospital then submits the signed application form to the local central<sup>8</sup> register office,<sup>8</sup> where the data is finalized, and the official, confirmed data is sent to the maternity hospital for entry into their records.

It is important that this data is transmitted at least once a day, even on weekends and holidays. Although the legally determined time limit for birth registration is set at 15 days, and for the registration of the name and permanent residence at 30 days, the essential advantage of the new system can only be realized through regular birth registration, and the swift determination of the name and permanent residence of the newborn. This method also enables the birth registration and allocation of the EMŠO for a stillborn child within the statutory deadline of 24 hours without the need for additional system measures.

**Figure 5: eBirth System Data Flow**



This service has brought a number of advantages to maternity hospitals, administrative units, and to all public authorities that need information about newborns in order to perform their statutory tasks. Due to the exchange of data between hospitals and both of the registries, the civil registry officer receives data more quickly, in electronic form, and with an already assigned EMŠO; this shortens the administrative process of birth registration. Thus, the upgrading of data in the public records and all personal databases that receive data from CPR have been improved.

<sup>8</sup> In every major city there is a local central<sup>8</sup> register office under the auspices of the Ministry of Public Administration, where citizens are provided with all administrative services, such as: obtaining personal documents, registering life events (marriage, separation, birth, changes of residence or name, etc.).

### **Advantages from a Health Care Perspective**

- There is no longer a need to send birth registration forms by post. This reduces both the scope of manual work, and the possibility of errors when entering data.
- It provides access to supplemental basic health documentation for the hospital treatment of newborns, and verification and updated data on the mother.
- Maternity hospitals can ensure the traceability of access to the personal data of the newborn and the mother, as set out by the ZVOP-1.
- An automated birth registration procedure has been established.
- The quality and completeness of the data capture for health statistics and analytics has been improved.
- More rapid database updating in the fields of health care and health insurance is now possible.
- The procedure for issuing health insurance cards (HIC) to newborns more quickly enables more accurate recording of the health services performed.

The e-Birth application also offers benefits to parents. The service is one step closer to a friendly public administration, since parents do not have to go to an administrative unit to apply for health insurance coverage for the child; moreover, the time for obtaining the HIC, tax number, and other documents for the newborn is reduced. In addition, the exercise of obtaining rights at social work centers is quicker and simpler.

With the introduction of electronic birth registration, the quality and updating of data for health statistics and analytics, administrative internal affairs, social work centers, HIIS, the Financial Administration of the Republic of Slovenia (FURS), and the Statistical Office of the Republic of Slovenia have improved. Due to the shorter process of birth registration and more rapid access to data, savings have been made in all these areas, as well as in other areas of public administration and e-government, especially when data about a newborn is needed as quickly as possible after birth.

The process of electronic birth registration in the maternity hospital is secure, as access to the system is only possible with a qualified digital certificate. Representatives of the Ministry of the Interior, the Ministry of Public Administration, the Ministry of Health, HIIS, the Institute of Public Health of the Republic of Slovenia, and the Statistical Office of the Republic of Slovenia, as well as external contractors were involved in this project.

Electronic birth registration was introduced at University Medical Center Maribor in 2007, and then, progressively, in the 13 other maternity hospitals.

## **2.2 TAX NUMBER**

### **2.2.1 Tax Number Determination and Composition**

All newborns, whether with permanent or temporary residence in Slovenia, are entered into the tax register ex officio. This means that the entry is made by the finance office on its own initiative, based on data from the CPR. The certificate on the tax number of the newborn is sent to the parents by post about one month after the child's birth; the parents can also obtain it immediately after the child's birth, from any finance office.

This number is an eight-digit, randomly selected number, controlled by module 11 (the first seven digits are randomly selected, and the eighth is a control number).

### **2.2.2 Use of the Tax Number**

The tax number is used for the uniform definition and connection of data in the records maintained by FURS. The person liable for tax must indicate his or her tax number on the tax return, as well as other documents and forms addressed to the tax authority.

Natural persons<sup>9</sup> must submit their tax numbers to the employer or contractor in all cases involving the receipt of income, regardless of the form in which it is acquired. If a natural person fails to do so, the income cannot be paid. According to the law governing payment services, individuals are also obliged to submit their tax numbers when opening an account with a bank, savings bank, or payment service provider.

### **2.2.3 Legislation**

The Tax Procedure Act<sup>10</sup> (ZDavP-2) regulates the determination of tax numbers; the calculation, assessment, payment, repayment, supervision, and enforcement of taxes; the rights and obligations of persons liable for tax; the state and other bodies that are authorized to collect taxes in accordance with the law; other persons involved in the process of collecting taxes; the protection of data obtained through the process of collecting taxes; and mutual assistance in collecting taxes and data exchange with other member states of the EU, as well as countries and territories outside the EU.

## **2.3 HEALTH INSURANCE NUMBER**

### **2.3.1 Health Insurance Number (HIN) Determination and Composition**

When applying for CHI, each insured person receives an HIN. It is a random 9-digit number, with a leading zero. The HIN is composed of a sequence number and a control number according to module 11. The new number equals the last sequence number + 1; the control number is calculated under module 11 to determine the new number.

---

<sup>9</sup> A natural person is a person having legal status as an individual, as distinguished from a corporate body.

<sup>10</sup> Official Gazette of the Republic of Slovenia, No. 13/11 – official consolidated text, 32/12, 94/12, 101/13 – ZDavNepr, 111/13, 25/14 – ZFU, 40/14 – ZIN-B, 90/14, 91/15, 63/16, 69/17 in 13/18 – ZJF-H

Sequence numbers exceeding 2,000,000 are reserved for the calculation of the HIN for insured persons; as each sequence number is also equipped with a control number, the number of HINs for insured persons exceeds 20,000,000.

The HINs are absolutely unique; once a number has been allocated to a person, it is never used for another person, even when the person has become deceased.

### **2.3.2 The Use of HIN**

The HIN is assigned to a person upon his or her first registration for CHI. The HIN is automatically generated in the HIIS database as soon as HIIS receives information from CPR that a new personal record has been created in CPR. The person also receives a HIC, and the HIN is indicated both on the card and in the card chip. The purposes for which the HIN and HIC are used are explained in Chapter 4.1.

### **2.3.3 Legislation**

The Health Care and Health Insurance Act<sup>11</sup> (ZZVZZ) determines the HIN, which is to be used as an identification number for the insured person. The HIN is the UIN of the insured person in the CHI system, and is determined by HIIS.

---

11 Official Gazette of the Republic of Slovenia, No. 72/06 – official consolidated text, 114/06 – ZUTPG, 91/07, 76/08, 62/10 – ZUPJS, 87/11, 40/12 – ZUJF, 21/13 – ZUTD-A, 91/13, 99/13 – ZUPJS-C, 99/13 – ZSVarPre-C, 111/13 – ZMEPIZ-1, 95/14 – ZUJF-C, 47/15 – ZZSDT, 61/17 – ZUPŠ in 64/17 – ZZDej-K

## PART III – DATA EXCHANGE BETWEEN THE CPR AND HIIS

HIIS has an information center that supports the operations of all the key business processes of CHI. HIIS continuously strives to improve the technological infrastructure and optimize the work performed at HIIS and its client services, the most important being registering insured persons and persons subject to the payment of contributions, and registration of insurance and contractors regarding health services.

With the e-government projects that have been introducing e-business into public and central public administration in Slovenia over the past decade, the exchange of data between institutions has been improved and technologically updated. In 1995, HIIS started to obtain data from the CPR from the Ministry of the Interior on a monthly basis. In 2010, the daily exchange of a wider set of data and the use of a solution with direct insight into the CPR was introduced. The link between computerized CPR databases and CHI records has been automated, and with the help of the Internet, HIIS has increased administrative efficiency and supported its key activity, which is registration for insurance. The quality of this service naturally depends on the accurate entry of data on insured persons (name, address, work contract, etc.) into the CHI records.

The efficiency of the data source is based on fundamental principles: continuous availability; universality of use; optimal load; and coordinated allocation of access to resources. The computer link between these two sets of records has confirmed all of these principles and has assured added value for the employees of the Ministry of the Interior, HIIS, and insured persons.

HIIS is computer-linked to the CPR through two functionalities: the submission of all changes made on the previous day from the CPR at night; and direct insight into the individual's data. In order to register a person for insurance coverage, it is important for HIIS to have the exact data on the name, residence, and business entity at which the insured person has an employment relationship, and to obtain data (name and residential address) at the end of the day with the so-called "night train," by which all changes made in the CRP on the previous day are acquired. If the insured person changes his or her personal data at the local register office, and visits HIIS on the next day in order to make arrangements in connection with his or her insurance (e.g. foreigners, change of personal name, etc.), the HIIS employee can access the CPR with a direct online service and obtain the latest data. By establishing and upgrading the computer connection with CPR, HIIS has successfully supported its business goal, namely, to ensure optimum coverage of insured persons and to ensure the quality regulation of CHI.<sup>12</sup>

The data in the CPR is a very important basis for the efficiency and accuracy of data, and for updating the databases managed by HIIS, which facilitates HIIS procedures as well as the procedures of other institutions that collect data from HIIS (for example FURS, for collecting contributions for CHI; health service providers, for the management of medical

---

<sup>12</sup> In 2014, HIIS provided as much as 99.55 percent of insurance arrangements within three working days of the receipt of the form in connection with registration, deregistration, or change of insurance; and it processed as many as 1.5 million such events. Furthermore, with the help of the CPR, HIIS has managed to ensure that only 0.27 percent of Slovenian citizens with permanent residence in Slovenia currently fail to be covered by CHI for more than two months.

documentation and reporting on health care services provided; the Ministry of Labor, Family, Social Affairs and Equal Opportunities, for the implementation of procedures for exercising social rights, courts, municipalities, and inspectorates; and many others, for carrying out their procedures). The data is also used for implementation of the uniform registration procedures in social insurance, and the communication of quality data to the Pension and Disability Insurance Institute of Slovenia (ZPIZ); the Employment Service of Slovenia (ZRSZ); and the Statistical Office of the Republic of Slovenia.

In accordance with the ZZVZZ, HIIS acquires free of charge from CPR the following data:

- EMŠO
- Place of birth
- Name
- Citizenship
- Permanent or temporary residence
- Permit for permanent or temporary residence
- Marital status
- Educational level
- EMŠO of mother
- EMŠO of father
- EMŠO of spouse
- EMŠO of children
- Tax number

### **3.1.1 Acquisition of the CPR Link and the HIIS Records**

The link between computerized databases at the Ministry of the Interior and HIIS has greatly improved the quality of data in both institutions. Customer satisfaction has also increased due to up-to-date, accurate, and high-quality data on insured persons. The link between CPR and CHI records is an example of the thoughtful use of information technology (IT) to enhance the quality of data in databases; the satisfaction of employees in HIIS registration and deregistration services; and has rationalized the provision of services for Slovenian citizens and other insured persons, as well as business processes at the Ministry of the Interior and HIIS.

## **PART IV – HEALTH INSURANCE CARD (HIC)**

A HIC system was introduced nationwide in Slovenia in 2000 and renovated by the end of 2010. Today, the health insurance “smart card” is no more simply a medium for transferring data between the health insurance administration, health care providers, and other health care actors. It has now undertaken the role of a certified key for direct electronic data exchange in the parallel online system that has been established.

Today various users have reliable, secure, constant (24/7/365), and rapid online access to comprehensive administrative data on insured persons (including certain health and medical data) from databases in the backend application systems of HIIS and of VHI providers. The use of the online system is obligatory for all health care providers included in the public health care system, in order to obtain data for the recording and accounting of services.

### **4.1 ACQUISITION AND USE OF THE HEALTH INSURANCE CARD (HIC)**

The HIC is an official identity document for persons insured under the CHI scheme. Anyone who arranges CHI for the first time in Slovenia receives a card, which is issued by HIIS free of charge. An insured person must submit the HIC when visiting a doctor or claiming and/or enforcing his or her health-related rights. Health providers, suppliers of medical devices, and HIIS employees may also ask to see the HIC or another identity document for the purpose of data verification. The HIC enables simple and quick data transfer among insured persons, insurance companies, and health care service professionals.

By presenting the HIC, the insured person allows health care professionals electronic access to information about:

- the insured person (name, address, gender, date of birth)
- persons subject to the payment of contributions (registration number, title, address, type of contribution payer)
- CHI (validity of insurance)
- VHI (insurance company, type of policy, validity of insurance)
- preferred personal physicians (GP or pediatrician, dentist, gynecologist)
- prescribed medical devices
- prescribed medications
- maternity procedures and procedures of artificial insemination
- commitment for voluntary post mortem organ and tissue donation for transplantation.

With the exception of the data on VHI, which is kept by the insurance companies, this data is kept by HIIS.

Data kept in the records of HIIS and the voluntary insurance companies are protected against unauthorized access in such a way that only the holders of health professional cards (HPCs) can gain access. HPCs are issued only to health care professionals and other authorized workers. It is only possible to access the information by using both the HIC and the HPC at the same time; therefore, access to this information is impossible without an HPC. The only way it is possible to access data *without* the HIC is in the event that the card doesn't work, or when the insured person provides proof of medical insurance

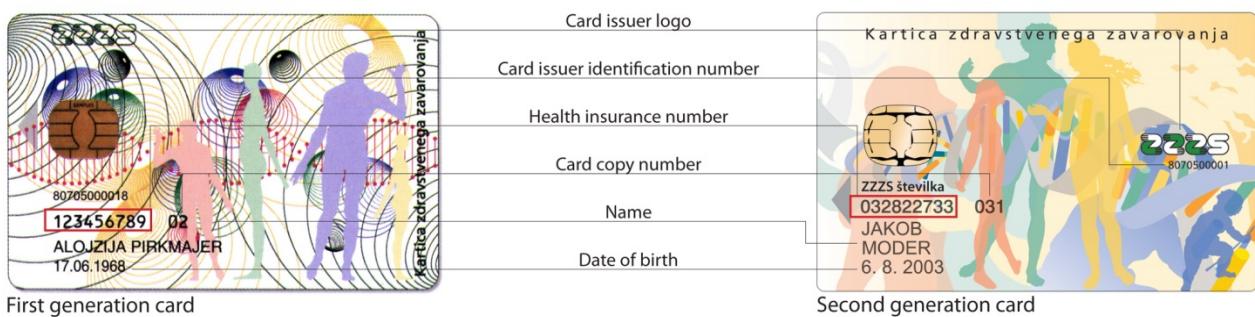
with a temporary written certificate, or in the event of an emergency situation. Even in such cases it is impossible to access certain sensitive personal information, such as data on drugs issued.

Different groups of health care professionals have different rights of access. For example, an administrative worker can only access administrative information, while a doctor or pharmacist can access information about prescribed medications. A complete authorization scheme for various groups of health care professionals has been approved by the Republic of Slovenia National Medical Ethics Board. Furthermore, data operators keep records of all access to information on insured persons according to the rules in force.

## 4.2 HIC SYSTEM TECHNICAL COMPONENTS

### 4.2.1 The Health Insurance Card (HIC)

**Figure 6: Two Generations of the HIC**



These images present the front of the card with the visible information. The back side of the card provides brief instructions. Special cards have been designed for bilingual regions of the country, with both of the official languages included Slovenian, and Hungarian or Italian.

The HIC chip includes a digital certificate with the following data:

- HIN
- Number of the HIC
- Name of the HIC holder
- Birth date of the HIC holder
- Gender of the HIC holder
- Identification number of HIIS (HIIS regional units)
- Number of the HIC publisher.

The digital certificate on the HIC enables identification, authentication, signing, and encryption based on public key infrastructure (PKI), and enables an electronic signature and data encryption. It has a life span of 10 years.

**Table 1: The number of issued health insurance cards per year**

HIC in circulation on Dec 31 2017	2,210,553
Issued in 2017	119,846
new insured persons	42,215
lost, broken, change of name...	77,631

Source: HIIS Business Report 2017

#### **4.2.2 The Health Professional Card (HPC)**

HPCs provide the owners with permission to access information they need for their work, and information for which they have authorization. Doctors, nurses, and administrative staff at reception offices; and pharmacists, physical therapists, and other health care professionals possess HPCs.

Each HPC contains a digital certificate that is used to obtain secure access to patient data. This certificate is used to establish a secure communication channel between the workstation and the entry point to the backend systems of health insurance companies and is triggered by entering a PIN code. Access to this data is possible only by using an HPC. In addition, the HPCs of doctors, dentists, and pharmacists contain a qualified digital certificate, providing the user with a secure electronic signature, in accordance with Slovenian legislation on e-commerce.

The HPC is thus used:

1. to identify and verify the identity of a health care professional;
2. to ensure secure communications; and
3. to allow electronic signature.

**Figure 7: Health Professional Card (HPC)**



Each cardholder has received a specific level of authorization for accessing patient data, depending on their role in the health care system, and their place in the health insurance system. These authorizations are not recorded on the card itself, but in the back-office system, which allows the authorizations to be dynamic and flexible.

The PKI on the professional card allows health care providers access to secure communication and secures electronic signature in the field of health insurance as well as throughout the health care system. It has facilitated the development of new IT solutions in health care, such as e-Prescription and e-Referrals, which are contributing to higher quality services and more efficient operation.

#### **4.2.3 Card Readers**

**Figure 8: Card Readers in Use**



Data from the online system can be read or changed only with the simultaneous use of the HIC and the HPC. The communication between the two cards goes through the card reader, which employs special software.

#### **4.2.4 Introduction of the First-Generation Health Insurance Card (HIC) System**

The Slovenian HIC system was introduced on the national scale in the year 2000. This system provided insured persons with smart cards and set up data links between health care service providers, HIIS, and VHI providers. The cards were issued free of charge to all users. This first generation of card was a patient identification document containing electronic data on the insured person's CHI and VHI status. It contained certain health care and medical data (records of the insured person's chosen physicians, drugs and medical aids issued, and declarations for the donation of organs and tissues for transplants). All health care professionals (i.e. doctors, nurses, pharmacists, etc.) acquired their personal HPCs, which enabled them to gain access to the data stored on the insured persons' cards. Insured persons updated their data (for example CHI and VHI validity) by using the network of largely accessible self-service terminals, which also served as health promotion and health care information kiosks. The system functioned well, and offered users several benefits, and above all higher operational efficiency and reduction of the volume of administrative tasks.

#### **4.2.5 Introduction of the Second-Generation Health Insurance Card (HIC) and the New Online System**

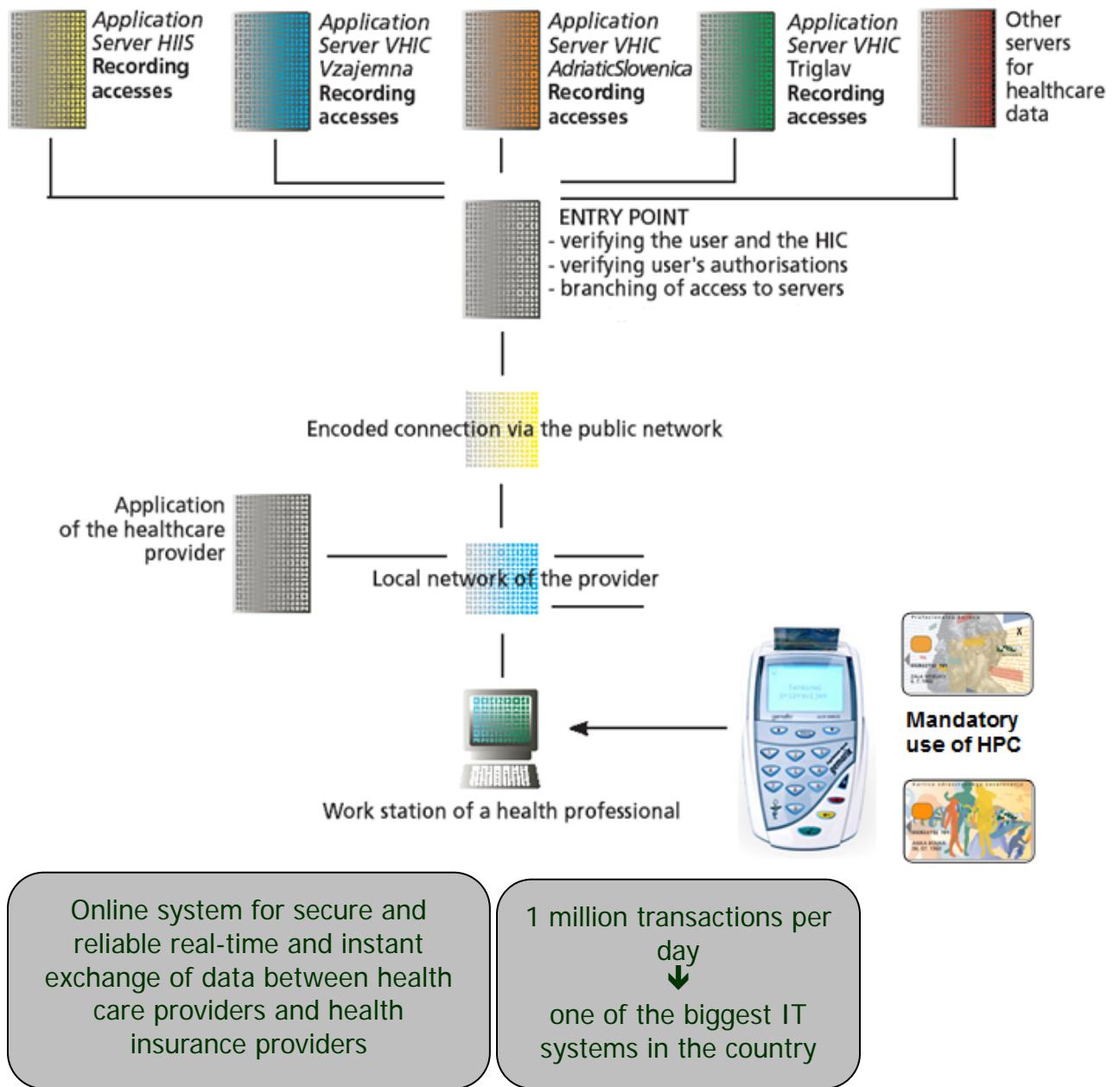
The grounds for renovation of the card system were of a technical and business nature including the following: the aging of technical components (cards, self-service terminals, readers); new trends in information-communication technology (ICT); demands for greater scope, and more accurate, qualitative, and updated data from health care providers, and so on. The basic goal of the new system was to abandon the above-described off-line system, and to promote direct electronic data exchange between various actors in the health care system in a new online system, in which the HIC and HPC cards are secure keys used to access data from HIIS/CHI and VHI backend databases. This system has simplified the process of insurance identification and validity control of insurance status in all entry points of the health care system, promising the full benefit of unique, accurate, and qualitative data from backend IT applications, and improving security by employing modern solutions in safety procedures, including digital subscription.

The renovation and introduction of the online HIC system was implemented from 2008 to 2010, managed and coordinated by HIIS. Due to its national scope, the project was supervised by the Ministry of Health working with representatives of health care providers. Among the partners were VHI providers and IT provider experts. In 2009 a pilot of the renovated system was implemented in the Posavje region of Slovenia. National implementation followed gradually, region by region. All health care providers (1,850 providers from 220 public institutes, and 1,630 private providers) were switched onto the new online system by the end of 2010.

Technically the new HIC is not very different than the first-generation card, which is why there was no need to replace all of the HICs at once. Rather, they are being replaced in a “natural” way—meaning on an as-needed basis, because a card has been lost or damaged, because the owner requests it, etc.). However, the *role* of the HIC has changed significantly. The card is now the key needed to access remotely stored data and is no longer simply a data carrier.

In the new system, health care providers connect to the online system through the Internet, access to which is obligatory for providers. A special provider portal has been developed, from which they can gather electronic data from the HIIS backend information system for administrative purposes (i.e. the recording and accounting of services), and other data connected with their activities.

**Figure 9: The New Online System**



#### 4.3 ADVANTAGES OF THE NEW SYSTEM

The renovation of the HIC system, and the introduction of the new online system has offered important advantages for various parties in the health care system. For insured persons the online system means further simplification of the procedures by which accurate and reliable data from backend applications can contribute to greater efficiency, and a better quality of health care services. The HIC and the online system arrangement has simplified a number of procedures, and, in particular, is more user-friendly for the insured, as it eases administrative barriers in the implementation of health insurance rights. Future e-services for insured persons will offer various certificates and approvals for service utilization (including cross-border health) and will further improve the system.

The new system also simplifies administrative procedures for health care providers. The biggest advantage for them is faster, easier, and more secure e-communication, not only with insurance providers (including HIIS) but between health care providers as well. The new information infrastructure offers important new solutions that allow for the secure exchange of data and communication via the network. This is the basis for further improvement of both the efficiency and the quality of the services provided.

For HIIS and VHI providers, in addition to improvements in the simplification and automation of administrative procedures connected with the recording and accounting of health care services, the new system ensures a firm base for the rapid development of electronic communication with providers and other parties in the health care system. It is worth mentioning that in 2013 HIIS had already developed and introduced a special new application called "Expenditures," through which all detailed data on health care services delivered, and medical products issued (i.e., drugs and medical aids) are gathered electronically from health care providers for recording and accounting purposes. With this application, more than 500 automated controls for proper billing have been developed. In addition, a special analytical system for deeper analyses of these huge amounts of electronically gathered data on health care service expenditures (costing), based on data warehouses, was developed.

The data, stored in the backend applications and databases of HIIS, are protected against unauthorized access by being made accessible only through digital certificates or the digital signatures of the HIC and HPC holders. This ensures a high level of security in the online system, the significance of which is growing along with the progressive extension of the data set and the e-services provided.

Finally, it is worth stressing again that probably the biggest advantage of the new HIC and online system is a new, solid, secure infrastructure with good prospects for the future development of e-services/e-communication between various parties within the health care system. How these prospects will be realized depends on the available resources—and in particular on the will and knowledge of the involved parties to take advantage of the full benefit of the established infrastructure to achieve greater (or at least measurable) efficiency and quality of the health care system.

#### **4.4 LEGISLATION: THE HEALTH CARE AND HEALTH INSURANCE ACT (ZZVZZ)**

The Health Care and Health Insurance Act (ZZVZZ) stipulates that the status of the insured person of the insured person is verified by the HIC, which is a public document issued by HIIS. The HIC enables access to the data necessary for exercising the right to health insurance, as well as other data, when so provided by a special law.

The HIC is defined in more detail in the rules included on the HICs and professional cards; and in the authorization to read and write data in back-office systems,<sup>13</sup> which determines the form, content, issue, and validity of the HICs and HPCs; the purpose of their use; the method of accessing data; and the access rights to reading and writing data in the online system.

---

<sup>13</sup> Official Gazette of the Republic of Slovenia, No. 12/17

## **4.5 DATA PROTECTION MEASURES**

Digitization has been bringing rapid, important, and extensive changes into the health care environment for years. On the one hand, the integration of systems offers numerous financially measurable advantages; on the other hand, the personal information stored in such systems becomes more vulnerable. The protection of personal information is therefore an ongoing and permanent task of digitization, and with the elimination of national borders and the integration of national systems, it is becoming a challenge from the legal, organizational, technical, and financial standpoints.

The health care system in Slovenia is already supported effectively with digital solutions. The administrative work of all providers of health care services, as well as patient records and procedures for the collection and exchange of financial and statistical information is fully supported with IT. In addition, numerous providers have already developed individual solutions for the electronic management of medical records and support for medical procedures.

The introduction of the online system has brought additional advantages to providers, the most important being safe access to the Internet from all sites. The infrastructure established for this purpose provides the information and security foundations upon which additional safety solutions can be built.

### **4.5.1 Legislative Frameworks of Information Protection**

The protection of personal information and electronic business in Slovenia is required by the Personal Data Protection Act (ZVOP-1), the Electronic Business and Electronic Signature Act<sup>14</sup> (ZEPEP), the accompanying rules to these acts, and other relevant regulations. At the EU level there are also numerous standards, directives, and recommendations concerning information security, and in particular concerning the protection of health care information, because information about the health of individuals is especially sensitive. From this aspect the exchange, storage, and use of such information has to be supported with IT that offers the highest possible level of security.

In establishing the HIC system and developing the online system, HIIS followed the legislative provisions concerning technological and security requirements in Slovenia; recommendations and advice from Slovenian and international experts; and EU legislation, directives, and recommendations related to the security of health care systems. The solutions that have already been established meet the requirements and provisions at the EU level and are an adequate foundation for the safe integration of cross-border information.<sup>15</sup>

---

<sup>14</sup> Official Gazette of the Republic of Slovenia, No. 98/04 – official consolidated text, 61/06 – ZEPT and 46/14

<sup>15</sup> In 2008, the Information Commissioner awarded HIIS a prize for solutions in the field of personal data protection (including HIC and the online system).

#### **4.5.2 Protection of Information from the Aspect of Direct Users**

The computerized health care system is used by patients, citizens, and health care workers—that is, doctors, nurses, pharmacists, and administrative staff in health care.

The expectations of patients directly depend on their level of familiarity with IT. Their experience also depends upon the safety and reliability of information solutions in other areas, primarily with electronic commerce and banking.

One thing that is common among patients is the expectation that digitization will simplify procedures without increasing the risk of unauthorized access to sensitive personal information. In accordance with regulations, every individual should be made aware when information about them is being entered into the databases of individual providers, and they should have the right to decide whether they will prohibit access to particular sets of information.

The HIC is used to identify patients included in the Slovenian health care system. The use of the card for this purpose is not password-protected; this enables simple handling of the card for routine procedures, and there is a sufficient level of security for this purpose.

In developing information solutions, it is also very important to take into account the needs and demands of health care workers. All solutions must provide a sufficient level of security, but at the same time they have to be user-friendly to health care workers. Therefore, to access insurance data, health care workers use password-protected professional cards.

In 20 years of the use of this card system, HIIS has not detected any invasion into the system. On this basis, and considering the daily feedback from users, it would appear that most users trust the system. This trust is a necessary condition in order to develop new solutions that will be even more helpful to users, and that will allow for the envisaged cross-border expansion.

#### **4.5.3 Experience with Security Components in Slovenia**

In developing information solutions, HIIS has paid particular attention to information security, because it is dealing with sensitive personal information. In addition to solutions for the protection of information during transfer through telecommunication networks and for access protection, HIIS has installed mechanisms for the protection of central components against invasions from public networks, and for comprehensive usage tracking.

A series of technical and organizational solutions has been introduced to ensure optimal availability of the system. Redundancy equipment has been provided, and architectural solutions for communication links, active network equipment, application servers, and databases in the central system have been established. Comprehensive supervision over the functioning of all these components has been ensured, and a supervision service that activates expert teams in the case of problems has been organized.

Particular attention is being paid to managing the security and reliability of systems used by the providers of health care services. HIIS has introduced a series of necessary solutions and measures related to the upgrading of equipment, information protection, and

reliable functioning of the system, which providers have to ensure. Health care service providers receive funds earmarked for these tasks once a year.

#### **4.5.4 Safe Transfer of Data in the Online System**

The online system enables safe and direct exchange of data messages among the information systems that link the application of the provider with the back-office systems of HIIS. Providers log onto the online system via a safe Internet connection.<sup>16</sup> Information goes through the central entry point, which provides identification, verification, and authentication of the users' authorities. The entry point is an application server that uses software developed in Java and directs messages toward selected back-office systems. Messages between the entry point and users are in Extensible Markup Language (XML) and in Simple Object Aspect Protocol (SOAP) format.

#### **4.5.5 Opt-Out Solutions**

In cooperation with the National Medical Ethics Commission, HIIS has introduced another safety feature for information about prescribed medications. For example, HIV medications are not displayed to anyone, because such information could well bring more harm than good to patients due to discrimination.

HIIS's solutions have passed security tests carried out by independent expert institutions, such as the Jožef Stefan Research Institute. Tests have been carried out on the previous card system, as well as on the introduction of the new cards and the new online system. The testers have established that the solutions meet the security criteria.

---

<sup>16</sup> Transport Layer Security

## **PART V – COMPULSORY HEALTH INSURANCE IN SLOVENIA**

Health insurance provides insured persons with adequate health care and social security during periods of illness or injury. The basic principle of health insurance is that the rights of each individual or dependent family member is linked to the application for insurance and payment of the corresponding contribution.

CHI is managed by HIIS, which began operation on March 1, 1992, and was based on the ZZVZZ. CHI is implemented according to the principles of social justice and solidarity for everyone, including the healthy and the sick, the elderly and the young, the rich and the poor.

### **5.1 THE HEALTH INSURANCE INSTITUTE OF SLOVENIA (HIIS)**

The HIIS conducts its business as a public institute, and is bound by statute to provide CHI. Its principal task is to provide the effective collection and distribution of the public funds needed to ensure that insured persons have access to quality health care and other rights, arising from said funds. The benefits basket arising from CHI includes the right to health care services, as well as to several financial benefits.

HIIS has 10 regional units and 45 branches in Slovenia. In addition, it has the Information Center, a sectoral unit, and a Directorate. At the end of 2016, there were 853 HIIS employees.

HIIS is managed by an assembly, which is composed of democratically elected representatives of employers (including representatives of the Government of the Republic of Slovenia) and insured persons. The HIIS Management Board is the executive body of the assembly. The Director General is the managing body responsible to the Assembly. Regional councils, established in 10 HIIS regional units, represent the governance body at the regional level.

### **5.2 CONTRIBUTIONS FOR COMPULSORY HEALTH INSURANCE**

CHI contributions are calculated as a percentage of the specified bases.

The Law on Health Care and Health Insurance provides the bases applied in calculation of the contributions for various groups of insured persons. These were broadened by the Law on Contributions for Social Security. The obligors<sup>17</sup> for contributions, and the types of contributions to be paid for different classes of insured persons are identified in Articles 48 and 49 of the Law on Health Care and Health Insurance.

---

<sup>17</sup> Obligors are entities that are obliged by the Health Care and Health Insurance Act to pay health insurance fees for a particular insured person, and to register that person (or any changes in the status of that person) at the HIIS. For example, for employed persons, the obligor is the employer. For retired persons, the obligor is the ZPIZ. Self-employed persons and farmers are themselves the obligors.

The amount of CHI contribution depends upon the salary or other income earned by the insured person. This ensures a high degree of solidarity<sup>18</sup> within the system. For some groups of insured persons (for example, the unemployed, recipients of social security allowances, and so on), the contributions are paid by national or local community budgets.

**Table 2: Basic categories of insured persons and CHI contributions**

Active population: <b>13.45 %</b> of gross wages (employers 7.09% + employees 6.36%)
Pensioners: <b>5.65 %</b> of their gross pension
Self-employed (including farmers): a fixed proportion of their income
Socially weaker groups: fixed contributions paid by state or local budgets

The amount of paid contributions in 2017 amounted to €2.59 billion. The largest portion is provided by contributions paid by employers and the employees (€1.97 billion). This is followed by contributions from the pension fund (€380 million); contributions of the self-employed and farmers (€128 million); and other contributions (€112 million).

### **5.3 VALUATION OF THE PROGRAM OF HEALTH CARE SERVICE ACTIVITIES (PARTNER NEGOTIATIONS)**

Each year, representatives of health care service providers (chambers, associations), of the Ministry of Health Care, and of HIIS take part in negotiations and agree upon the common scope of the programs of health care services, and the funds needed to cover the program at the national level.

As a result of this negotiation process, a written agreement is signed, which then provides a legal basis for the signing of contracts with public health care institutions and private service providers. The significance of these negotiations lies with responsible determination of the "upper limits" for the public funds for health care, and responsible spending of the monies collected in the form of contributions for CHI from all insured persons in Slovenia.

The agreement determines the overall extent of the health care service program; the areas of priority; and the necessary capacities and elements (prices) to be applied in valuation of the services.

Each year, based on the adopted agreement, HIIS publishes a public competition that is open to all eligible health care service providers to perform their services within the network of the public health care service network. In 2017, HIIS signed contracts with 1,722 health care service providers. Of these, 204 were public institutes and 1,518 were private practitioners, including pharmacies.

Thus, in 2017, of the total CHI budget, HIIS designated a sum of approximately €1.87 billion for health care services; €395 million for medication and medical aids; and €317 million for various financial benefits.

---

<sup>18</sup> Solidarity means that everyone contributes to the health care fund in accordance with their income (the rich contribute a larger amount, the poor contribute a smaller amount). Nevertheless they all have the same health insurance rights.

## **5.4 SYSTEMS FOR FUNDING HEALTH CARE ACTIVITIES**

Different systems of funding apply to different categories of health care services and activities funded by CHI.

In the area of primary health care (including general and pediatric surgery), a combined system of capitation and fee for services is in effect. The same system has been introduced in primary gynecology. In other areas of primary health care in its narrow sense, the fee-for-service system is applied. Health education and some preventive programs are funded by HIIS in the form of fixed sums.

For specialists, the fee-for-service system is mainly in effect. For individual specialists, standards are specified to determine the annual planned number of visits per team. Prices are set for five different types of dialysis services. HIIS pays for these services at uniform, agreed-upon prices.

For hospital activity, a payment per diagnosis-related group<sup>19</sup> (DRG), the Australian type is used, combined with the fee-for-service system for some high-cost services and materials. The number of days is followed statistically. The same system is in effect for the "one day hospital"<sup>20</sup> and the "daily hospital" fees.<sup>21</sup>

For pharmacists, the fee-for-services system is in effect, while prescribed medications and medical aids issued by pharmacies and suppliers of medical aids are separately invoiced to HIIS at their purchase prices.

For health resorts, the price of a nonmedical daily charge is set, covering the cost of residence and daily meals, and the value of the health resort treatment.

For social care and social rehabilitation institutions, the average daily charge system is in effect.

The operation of emergency transport service is evaluated using a planned budget for emergency transports, with a price per kilometer for nonemergency transports. There is a separate price for round-trip transport service for dialysis.

---

<sup>19</sup> "A Diagnosis-Related Group (DRG) is a statistical system of classifying any inpatient stay into groups for the purposes of payment. The DRG classification system divides possible diagnoses into more than 20 major body systems, and subdivides them into almost 500 groups for the purpose of reimbursement. Factors used to determine the DRG payment amount include the diagnosis involved as well as the hospital resources necessary to treat the condition. Hospitals are paid a fixed rate for inpatient services corresponding to the DRG group assigned to a given patient." Gillian I. Russell, Terminology, in FUNDAMENTALS OF HEALTH LAW 1, 12 (American Health Lawyers Association 5th ed., 2011).

<sup>20</sup> One-day admission to the hospital without overnight stay.

<sup>21</sup> Repetitive short visits to the hospital in scope of single medical treatment (e.g. chemotherapy treatment).

## **5.5 RIGHTS OF INSURED PERSONS**

The extent of rights deriving from CHI is specified by the ZZVZZ, and the regulations concerning CHI, which is a document adopted by the HIIS Assembly.

CHI includes insurance in the case of illness or injury either outside of work or at work, as well as coverage for occupational diseases. The extent of the rights to health care services is defined in terms of a percentage share of the total service costs. This means that CHI covers the majority of health-related risks; however, it does not necessarily cover all of them, and it does not necessarily cover them completely. The costs not covered by CHI can either be paid by the insured, or the insured can choose to take out a supplementary insurance policy.

CHI covers insured persons to the extent defined by statute, and includes

- The right to health care services; and
- The right to financial compensation in the case of illness or injury.

The right to health care services includes services at the primary health care level, including dentistry, health care services in certain types of social care institutions, specialist outpatient services, and hospital and tertiary-level services. In addition to medical services, the right to health care services also includes the right to treatment in a health resort; rehabilitation treatment; transport by ambulance and other vehicles; and medications and medical devices.

Under CHI, insured persons are entitled to financial compensation as follows:

- Compensation of lost salary during temporary absence from work;
- Reimbursement of travelling expenses related to accessing health care services.

Urgent medical treatment and urgent medical assistance are fully covered by CHI and therefore require no copayment. In addition to these services, CHI fully covers:

1. Systematic and other preventive medical examinations of children, and students up to the age of 26; medical examinations of women in connection with pregnancy;
2. Prevention, screening, and early detection of diseases in alignment with the program of the Health Council;
3. Counselling, education, training, and assistance in changing unhealthy lifestyles;
4. Treatment and rehabilitation of children and teenagers with physical and mental disorders, and of children and teenagers with head trauma and/or brain damage;
5. Health security of women linked to counselling on family planning, contraception, pregnancy, and childbirth;
6. Prevention, detection, and treatment of HIV infection and contagious diseases, with legally determined steps taken to prevent further contagion;
7. Compulsory vaccinations, immunoprophylaxis, and chemoprophylaxis pursuant to the program;
8. Treatment and rehabilitation of malignant diseases, muscular and neuromuscular diseases, paraplegia, tetraplegia, cerebral paralyses, epilepsy, hemophilia, mental illnesses, diabetes, multiple sclerosis, and psoriasis;
9. Holistic treatment and rehabilitation related to blindness and myopia, in compliance with the classification of the World Health Organization; to total and extreme hearing defects, according to the International Classification of Impairments,

- Disabilities and Handicaps of the World Health Organization (1980); cystic fibrosis; autism; and treatment and rehabilitation related to accidental head injuries and brain damage;
10. Treatment and rehabilitation for occupational diseases and injuries at work;
  11. Health care regarding the donation and exchange of tissues and organs for transplantation to other persons;
  12. Emergency medical assistance, including emergency transportation;
  13. Home-care visits, and home-based treatment and care, as well as treatment and care in social security institutions;
  14. Medicinal products for the treatment of persons and conditions from points 4 - 13 above, and medical devices for the treatment of persons and conditions from points 1 - 13 above;
  15. Medicinal products and foods for special medicinal purposes for children, pupils, high-school students, apprentices, university students, and persons with disorders in mental and physical development;
  16. Foods for special medicinal purposes, with ingredients adapted for the treatment of insured persons with inherited digestive disorders;
  17. The cost for one parent to accompany a patient up to 5 years of age to a health care institution;
  18. Preliminary and periodic medical analyses for athletes competing in official competitions of national sports associations.

Other services are provided free of charge only up to a certain percentage of the cost, so for some medical services the difference between that point and the full price has to be paid by the insured. This depends on individual cases and can amount to anywhere from 10 percent to 90 percent of the value of the medical service or appliance. The shares are specified by the HIIS assembly, with the consent of the government of the Republic of Slovenia, while the ZZVZZ specifies their lower limit.

**Table 3: The percentage of health care services prices covered by compulsory health insurance, varies from 10% to 90%**

Medical services to which copayments apply	Percent of copayment
Transplantations of organs; highly demanding surgical operations, irrespective of the reason for them; intensive therapy; dialysis and other highly demanding therapeutic and rehabilitation services.	10%
Medical services in the field of specialist outpatient and inpatient activities; services in the field of health resort treatment as the continuation of hospital treatment, except for injuries that were not caused at work; services in the field of dental and oral cavity treatment; orthopedic, orthotic, hearing, and other medical devices.	20%
Specialist outpatient, inpatient, and health resort services as continuation of hospital treatment; the nonmedical part of nursing in a hospital or health resort as continuation of hospital treatment; orthopedic, orthotic, and other devices? related to the treatment of injuries that were not caused at work.	30%
Medical services of health resort treatment, and nonmedical nursing within health resort treatment (i.e. the hotel part of the hospitalization) that is not a continuation of hospital treatment.	90%
Dental prosthetic treatment of adults, ophthalmic appliances for adults	90%
Nonurgent ambulance transport	90%

Source: Official Gazette of the Republic of Slovenia, No. 1/13. Add date? At least year?

## 5.6 VOLUNTARY HEALTH INSURANCE (VHI)

VHI is provided by insurance companies based on the ZZVZZ, which ensures:

- VHI to cover costs not covered by CHI up to the full value of health services ;
- VHI for a greater range of rights or a higher standard of service than that defined for CHI, and for additional rights not covered by CHI.

VHI covers the difference between the full value of health services and the value that is covered by CHI. ZZVZZ determines which health services are fully covered by CHI, and which are covered only up to a certain percentage. It also determines the special groups of insured persons for whom all CHI services are fully covered, and insured persons for whom the difference is covered by the Republic of Slovenia.

The payment of health services is provided entirely from CHI for the treatment and rehabilitation of:

- Children up to the age of 18, and students who regularly attend school (up to the age of 26);
- Children and adolescents with disabilities in physical and mental development;
- Children and adolescents with accidental head injuries and brain damage.

For certain groups of insured persons (for example, detainees, the socially disadvantaged, war-disabled servicemen, war veterans, etc.), the difference between the value of the health services covered by CHI and the full value of the health services is covered by the Republic of Slovenia.

Insured persons can decide whether or not they want to pay for VHI; however, HIIS recommends that if they do not belong to one of the above-indicated groups, they should have insurance to cover up to the full value of health services that are not fully covered by CHI.

### **5.6.1 Changes in the Legislation Underway**

Complementary health insurance is voluntary, but about 95 percent of Slovenian citizens choose to sign up for it, which suggests that it is essentially *involuntary*, and that high fees for health services have forced citizens into paying for this insurance, which has become *de facto* obligatory. Without such additional insurance, people with lower incomes would be limited, or even denied access to, most of the rights arising from CHI, since most of them require a copayment.

Complementary insurance does not in any way meet the conditions of solidarity defined in CHI, (where contributions are dependent on income), since the premiums for complementary insurance are uniform for all citizens. With complementary insurance, a person with a minimum wage is charged approximately 10 percent of his or her gross income for health care, while the total burden in this respect for persons with triple the average income is less than 7 percent.

Unequal treatment that does not respect material wealth may be contrary to the constitutional principles of the welfare state, social security, equality (where discrimination based on a person's financial situation is explicitly prohibited) and is contrary to the principle of equal access to health care. The Oviedo Convention explicitly highlights the importance of equitable access to health services. In 2000, the World Health Report ranked Slovenia 38th among 170 countries, based on dozens of indicators; however, it was only ranked 82nd in the indicator for "equity of the distribution of the financial burden among the population."

The regressive nature of the collection of funds for health care can be mitigated or eliminated by the abolition of copayments, which are the basis for complementary insurance. The new ZZVZZ-1 thus proposes to eliminate copayments for health services and, consequently for complementary health insurance, and to replace them completely with CHI, which is determined based on the income of the insured person.

### **5.7 THE INCLUSION OF INSURED PERSONS IN HEALTH INSURANCE**

In Slovenia health insurance is obligatory, and the payment of the prescribed contribution is, as a rule, linked to a source that provides the insured with basic social security (salary,

pension, disability allowance, unemployment benefits). The contribution is not specified for family members (children, spouses, stepchildren), who are included in CHI through insured persons. Only those persons who have arranged for CHI can use health services or cash contributions in connection with CHI. This means that they must be registered for the insurance, and that all of the conditions for the insurance must be fulfilled at all times, according to the basis on which they were registered.

On the basis of ZZVZZ, all residents are included in CHI, either as insured persons or as their family members; this should enable 100 percent involvement of the population in CHI. Insured persons are included in one of the categories provided by ZZVZZ, based either on their employment or their social position.

Employees represent the largest group of insured persons; employers are obliged to provide insurance registration for them. The next-largest group is retired persons and their registration is provided by the ZPIZ. The ZRSZ is responsible for the registration of unemployed persons receiving monetary compensation, and HIIS is responsible for the registration of persons who are entitled to payment of the contribution for CHI at the Social Work Center. Some insured persons are obliged to provide registration for themselves—for example, sole proprietors, the members of unincorporated companies, limited liability companies, founders of institutions that are also business persons in the company or institution, and others.

**Table 4: Categories of Insured Persons**

categories of insured persons	insured persons		family members		all		%		Index 2017/20 16
	2016	2017	2016	2017	2016	2017	2016	2017	
workers	755.940	784.965	412.832	419.431	1.168.772	1.204.396	56,0%	57,4%	103
entrepreneurs	73.024	74.263	31.749	33.627	104.773	107.890	5,0%	5,1%	103
farmers	12.153	11.837	6.619	6.462	18.772	18.299	0,9%	0,9%	97
pensioners	546.669	545.252	31.679	29.650	578.348	574.902	27,7%	27,4%	99
unemployed	19.019	17.818	5.268	4.606	24.287	22.424	1,2%	1,1%	92
citizens with no income	50.683	46.787	11.962	10.774	62.645	57.561	3,0%	2,7%	92
persons who pay contributions themselves	56.662	50.280	10.835	9.623	67.497	59.903	3,2%	2,9%	89
others	45.831	44.650	15.293	6.664	61.124	51.314	2,9%	2,4%	84
	1.559.981	1.575.852	526.237	520.837	2.086.218	2.096.689	100%	100,0%	101

Source: HIIS Business Report 2017

### 5.7.1 Coverage of Persons with Insurance

As of December 31, 2017, there were 2,096,689 insured persons in Slovenia, a slight increase (0.5 percent) compared to 2016.

Employees and their family members represented the largest share of insured persons, (57.4 percent). Retired persons and their family members represented the next largest group (27.4 percent).

According to the records, as of December 31, 2017, the category of insured persons included in CHI through an employment relationship increased by 3.8 percent (29,025 insurances), while the category of persons who are self-employed or who carry out professional activities increased by 1.7 percent (1,239 insurances) compared to the previous year. All other categories of insured persons decreased. The category of persons

who pay the contribution themselves decreased the most (by 11.3 percent); the category of citizens without income decreased by 7.7 percent; and the category of retired persons decreased by 0.3 percent.

Over the past year, HIIS has intensively and systematically regulated the insurance of uninsured persons in accordance with its strategic guidelines. Persons who had been without insurance for more than 20 days have been invited to arrange their insurance. HIIS also issued, *ex officio*, a decision on the definition<sup>22</sup> of an insured person to persons who had failed to arrange insurance for themselves, since every person with permanent residence in the Republic of Slovenia is obliged to be insured unless he or she fulfills the conditions for insurance on a different basis.<sup>23</sup> However, despite these efforts, the number of uninsured persons remains at approximately the same level as it was on December 31, 2016.<sup>23</sup> This group also includes "temporarily" uninsured persons, which are people who are waiting for recognition of the right to a pension, unemployment benefit, or some other right, and who fail to "temporarily" arrange insurance on another basis until the decision is issued, since as a rule any such right is recognized retroactively. This also includes people with registered permanent residence in the Republic of Slovenia; however, it is often doubtful that these persons permanently reside at the address they have given, or indeed whether they reside in the Republic of Slovenia at all. Consequently, it is doubtful whether they fulfill the conditions for inclusion in CHI; as of December 31, 2017, there were 372 such persons.

Despite the relatively low percentage of uninsured persons, HIIS continues to devote particular attention to this phenomenon, as it is the only way to enable the provision of health insurance to the widest range of beneficiaries under the law.

At this point, we should highlight the problem of the group of insured persons who, due to nonfulfillment of the obligation to pay contributions for various reasons, have had their rights revoked (except for urgent treatment). HIIS obtains data on the nonpayment of contributions for CHI from the FURS. As of December 31, 2017, there were 20,298 persons (insured persons and insured family members) with unpaid CHI contributions who consequently had their CHI rights revoked; and as of December 31, 2016 there were 20,196 such persons. In 2017, there were also 7,547 insured persons (in 2016, there were 8,433 insured persons) who had revoked rights due to the nonpayment of contributions for more than a year.

### **5.7.2 e-VEM - One-Stop Shop System**

As a welfare state, the Republic of Slovenia regulates compulsory health, pension, and disability insurance, parental protection, and unemployment insurance. All of these types of insurance are compulsory, which means that all persons who fulfill the prescribed conditions under sectoral laws must be insured in this respect. HIIS is the only provider of CHI and, in addition to determining the characteristics of the insured person, it also performs registration and deregistration services for pension, disability, and unemployment insurance.

---

<sup>22</sup> According to Article 15 of the Health Care and Health Insurance Act.

<sup>23</sup> In December 2016 there were 4,038 uninsured persons. On December 31, 2017, there were 3,733.

HIIS joined the national e-VEM system (One-Stop Shop System) in 2016, thus facilitating the quick arrangement of administrative procedures for reporting data on compulsory social insurance by electronic means.

The arrangement of insurance on the e-VEM portal became mandatory as of January 1, 2016. The business entities are responsible for submitting registrations, de-registrations, and changes to insurance status of their employees in electronic form on the e-VEM national portal for companies and entrepreneurs (<http://evem.gov.si>).

The following procedures are available on the e-VEM portal:

- Registration for compulsory social insurance (M-1);
- Reporting data changes in compulsory social insurance (M-3);
- Deregistration from compulsory social insurance (M-2);
- Registration of insurance against the risk of accident and occupational disease (M12);
- Deregistration from insurance against the risk of accident and occupational disease (M12).

All of these procedures are done in steps. In the first step, the selected application form is filled in; in the second step, the attachment (for example, the employment contract) is attached; the third step enables preview of the entered data. In the final step, the user of the system digitally signs the application form, completing the process. If no errors are detected in this procedure, the insurance is automatically arranged in the HIIS register based on the received data, and the data that is to be submitted to the responsible person is prepared. In the event of detected errors, the software solution attaches a list of errors to the electronic application and, depending on the nature of the errors, the electronic application is either

- Refused, with or without the possibility of supplementation, and the information is prepared for submission to the responsible person; or
- Submitted to a clerk via the HIIS CHI Register application.

Examples of fully automatic electronic applications are those for the insurance of pension beneficiaries under the regulations of the Republic of Slovenia (provided by ZPIZ), and the insurance of unemployed persons who receive financial compensation at ZRSZ.

The procedure for processing an electronic application, where the responsible person has to enclose an attachment, enables the clerk to carry out the following tasks:

- Accept the electronic application for consideration;
- Verify the existence and content of the attachments of the electronic application that are stored in the central electronic storage of the e-VEM system;
- Enter detected errors in the procedure manual for verifying attachments;
- Perform automatic controls and data processing of the electronic application.

The software records detailed tracking of the receipt, automatic processing, and processing of the electronic application by the clerk; and the return of data on the electronic application to the responsible person.

The preparation of this solution was carried out in close cooperation with the Ministry of Public Administration and their external software provider, ensuring the compliance of solutions on the e-VEM portal and in the HIIS information system.

### **5.7.3 Benefits of the New System**

The introduction of the mandatory electronic filing of applications, registrations, deregistrations, and changes in social insurance offers HIIS a number of benefits:

- It reduces the risk that an individual application will not be dealt with or will not be dealt with within the deadline. With written applications, there was a greater risk of the application being lost or misplaced; now all applications and their handling are being recorded.
- It reduces the risk of errors in arranging insurance; since manual data entry is being eliminated, additional controls have been installed, and genuine input data is now available for the possible subsequent detection of errors, and the execution of corrections.
- It reduces the cost of communication with obligors, which now takes place mostly in electronic form.
- Time is saved due to the reduction in the volume of manual data entry. This allows for faster implementation of procedures; more precise implementation of manual controls; greater accuracy and timeliness of data in the CHI database; and thus a reduction in the risk of problems for insured persons in exercising their rights, and of errors in the databases of other institutions, to whom HIIS provides data.

Effects on obligors and indirectly insured persons:

- Simplicity of procedures and accessibility (the e-registration of the obligor and the e-filing of data can be filed at any time of day, at the person's convenience);
- Time-saving (services are carried out in one place by electronic means; there is no need to go from office to office);
- Reduction of costs (e.g. cancellation of the court fee, and compensation for entries and announcements of entries into the court register); with the e-submission of data there are no costs for the purchase or printout of M forms, nor for travel, or postage.
- Better available information for obligors in terms of the registration and submission of data and compulsory insurance rules. (The e-VEM portal provides assistance to individuals in the form of instructions, answers to frequently asked questions, etc.).

### **5.7.4 Procedures for Natural Persons**

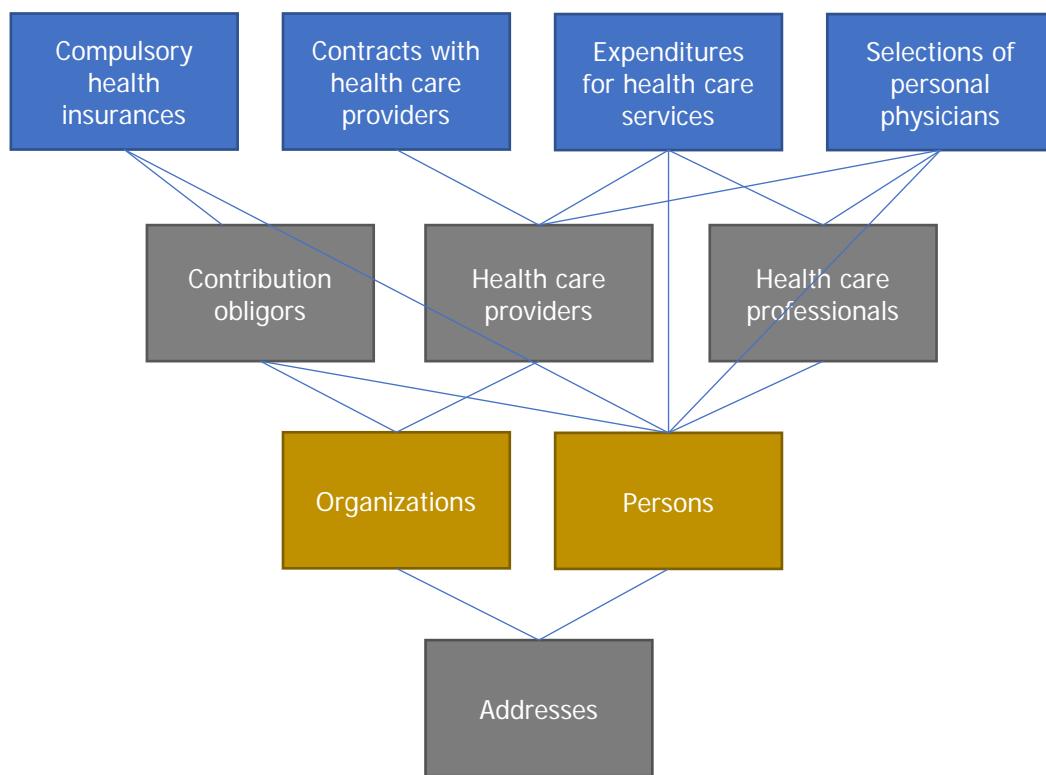
An obligor? who is a natural person may submit registration, deregistration, and changes to insurance status in paper form directly at the regional unit, the HIIS branch, or by post. There is no need for evidence to register a newborn in CHI, as data on the newborn is transferred directly from the CPR to the records of insured persons.

At the beginning of the 2013-14 school year, an electronic data exchange with the Ministry of Education, Science and Sport was fully established in order to obtain data on schoolchildren and students under 26 years of age. This abolished the obligation of students to deliver certificates of education, and relieved the HIIS registration and deregistration services of the task of entering data from those certificates for the extension of CHI. With these new solutions, the insurance for more than 100,000 insured persons was automatically extended.

## 5.8 DATABASES ON INSURED PERSONS MANAGED BY HIIS

The basis of any information service is an integrated, centralized, and carefully managed database. HIIS has built all of its developed solutions into a relational database system. With an appropriate methodological approach and organization of work, to the greatest extent possible the database has been integrated, and identical data is stored in only one place. Figure 10 shows the scheme of some of the key databases managed by HIIS in its central database.

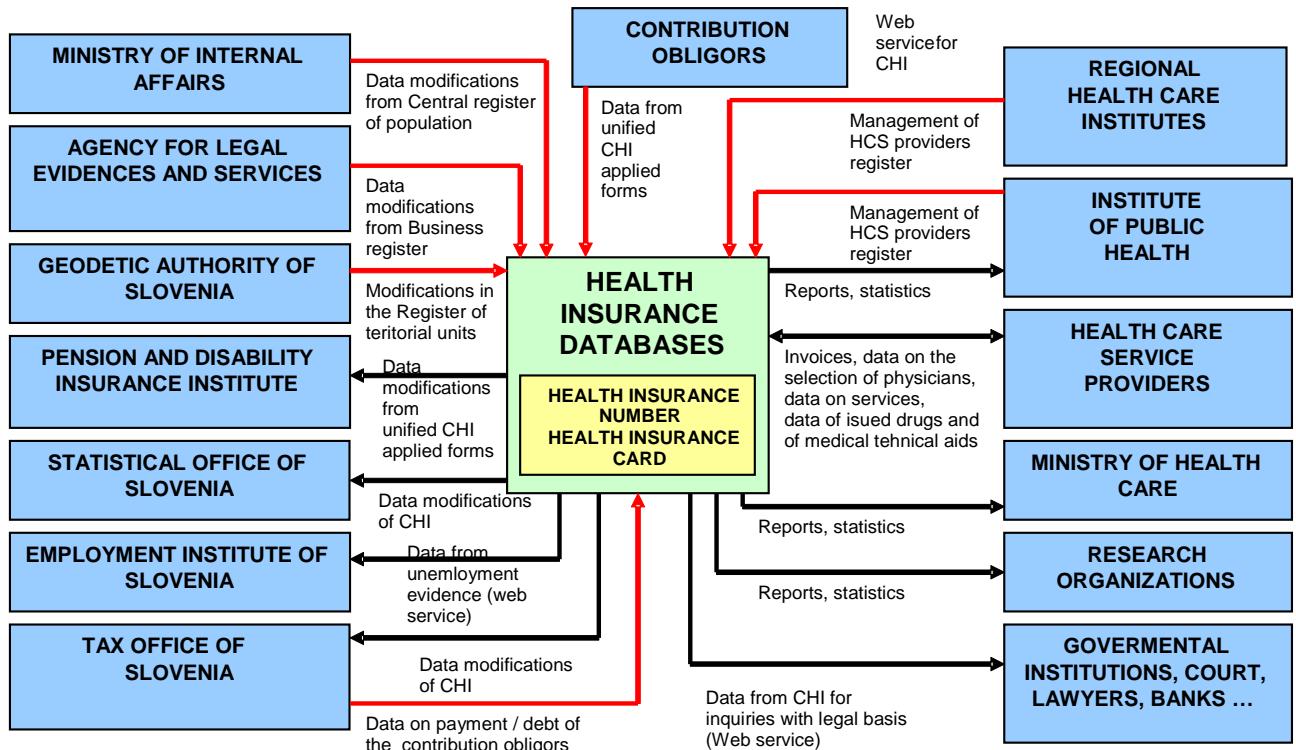
**Figure 10: Scheme of the Key Databases Managed by HIIS**



The quality of data is ensured by performing strict controls in obtaining data from different channels and sources, and by linking the databases with other reference databases (the CPR, the Business Register, various public codebooks, etc.). In 2000, continuous care of the database enabled HIIS to issue HICs for all insured persons without any major problems; and error messages were recorded for less than 0.5 percent of the cards issued.

The HIIS databases are linked to a number of entities in the health care system and more broadly as well, with various other entities in the public and central public administration. Figure 11 shows the key data exchanges schematically.

**Figure 11: Data Exchanges**



HIIS manages the databases of insured persons in accordance with the Health Care and Health Insurance Act (ZZVZZ). The CHI databases are processed for the purpose of implementing CHI; exercising the rights to CHI; managing and deciding in CHI procedures; performing supervision of and calculating services; and participating in compensation procedures when HIIS is a party to or participant in the procedure. The CHI databases contain sensitive personal and other data: therefore, the processing of data on insured persons at HIIS is carried out in accordance with ZVOP-1.

HIIS obtains data on insured persons based on:

- Data reports that are communicated by obligors in relation to the submission of applications;
- Data submitted by database administrators;
- Procedures carried out in accordance with ZZVZZ in order to ensure the accuracy of data, and procedures for determining the characteristics of the insured person and for the execution of supervisory procedures;
- Implemented procedures for exercising the rights and other requirements of CHI, and special rights to health care that are decided by HIIS;
- Implemented procedures for the enforcement of compensation for damages.

For the purposes of a common definition, the acquisition of data for the CHI databases, and the integration and other processing of data into these databases, as well as their connections with data from the databases of other administrators, the following UINs are used as the connecting signs:

- EMŠO;
- Tax number for natural persons;
- HIN

The CHI databases are:

- Databases on CHI editing
  - Database on insured persons;
  - Database on persons obliged for insurance registration;
  - Database on foreign insurance holders;
- Database on CHI rights
- Databases on CHI implementation
  - Database on the contractors, suppliers, and manufacturers of devices;
  - Database on the recipients of medical prescriptions for personal use;
  - Database on medicines;
  - Database on special foods;
  - Database on occurred loss events;
  - Database on holders of HICs;
  - Database on users of the electronic services of HIIS.

The data collected in the database of insured persons are as follows:

- Name
- HIN
- EMŠO
- Tax number
- Citizenship
- Date of birth
- Date of death
- Address (permanent and temporary residence, address for service)
- Marital status
- Data on the insurance holder for persons insured as a family member (EMŠO of the insurance holder, and the relationship of the family member to the insurance provider)
- Information on registered temporary departures abroad (date of departure and date of re-arrival)
- Registration of residence and residence permits (number, type, reason or purpose for which the permit was issued, and period of validity of the permit)
- Information on recognized entitlement to payment of the contribution to the Health Insurance Fund in accordance with the regulations governing the exercise of rights from public funds
- Data on schooling for insured persons whose condition is to regulate the insurance during their education (school year or study year, or period of status as a trainee);
- Basis for the insurance
- Start date of the insurance
- Date and cause of change of the insurance
- Date and cause of termination of the insurance
- Weekly number of hours of working time under an employment contract
- Information on the work permit (number, and period of validity of the permit)
- Data on disability for insured persons, as determined by the regulations on vocational rehabilitation and employment of people with disabilities

- Information on the country of posting to work abroad
- Information about the country of the foreign insurance carrier
- Data on the country where the person performs the activity of an employed or self-employed person
- Information on the profession or job the employee is performing
- Data on the entry into the register of unemployed persons (the period of registration).

The HIC holders' database contains the following information:

- HIN
- Number of the HIC
- Name
- Address for sending the HIC
- Date of birth
- Sex
- Identification number of the institution (regional unit of HIIS)
- Information on the personalization and distribution of the HIC
- Life-cycle status of the HIC, and dates and causes for the creation of statuses
- Expiration date of the HIC
- Data on the digital certificate on the HIC
- Statuses in the life cycle of the certificate on the HIC, and the dates and causes for the creation of statuses
- Expiration date of the digital certificate on the HIC
- E-mail address
- Information on payment of the HIC
- Information on the provisional certificate issued.

## **PART VI – IMPROVEMENTS IN EHEALTH AND HEALTH INFORMATION SYSTEMS**

### **6.1 EHEALTH SOLUTIONS**

The National eHealth Project has introduced the use of electronic communication tools in the field of health care to ensure safety, quality, and, above all, effectiveness in the provision of health care services. The project combines a number of advanced technological solutions that are enabling better adjustment of medical treatment to patients, reducing administrative costs, and improving communication and data exchange between health care service providers.

The digitization of Slovenian health care (eHealth) follows both national and European guidelines, as well as the guidelines of the World Health Organization for improving the quality and efficiency of health care systems. As of December 1, 2015, eHealth project solutions are being managed by the National Institute of Public Health (NIJZ).

With the comprehensive digitization of the health care system, Slovenian health care provides opportunities for better-quality and more professional work with patients; for the efficient and safe management of health information; for further development of the health care system; and for its competitive integration into the EU. Based on high-quality and authentic economic, administrative, and clinical data, it is now easier to plan and manage health care institutions, and the national health care system as a whole.

#### **6.1.1 z-VEM (One-Stop Shop System for Health)**

The z-VEM web portal, which can be accessed at <https://zvem.ezdrav.si>, was established within the framework of the eHealth National Health Care Services digitization project. This portal provides patients with access to electronic prescriptions, a list of dispensed pharmaceutical products, electronic referrals and appointments, and other health care information.

The z-VEM online portal is a modern electronic tool that enables patients greater access to their clinical documentation, such as the results of medical examinations, discharge letters, referrals, and prescriptions, as well as much more efficient access to health care providers. The portal enables patients to make more transparent and simple appointments with health care providers and gives them better control over dispensed prescriptions and medicinal products. The introduction of the Central Register of Patients (CRPP) has enabled insight into key and relevant health data. This portal provides quick, confidential? and reliable communication, as well as extensive information on health, and online education for doctors.

z-VEM offers patients a higher level of quality in the provision of health care services. Data is securely stored on the portal and is always available to users. With this portal, the Slovenian health care system has gained an online hub that enables searching for and sharing health data, and the use of eHealth services in a safe and traceable manner.

The portal provides access to eHealth services. The goal is for it to gradually become the central hub for all health care services, health data, and other useful information in the country. In order to access sensitive content, patients are obliged to register by providing

a qualified certificate for examining medical prescriptions and dispensed medical products in the ePrescription solution, as well as health records and data in the CRPP. With eAppointment, patients can also make appointments for health care services at the secondary and tertiary levels based on electronic referrals.

For registration on the portal, patients need to obtain a qualified certificate issued by one of the qualified, trusted service providers in Slovenia.

### **6.1.2 ePrescription**

The ePrescription system for electronic medical prescriptions completely replaces paper medical prescriptions. This information solution enables the creation of an electronic prescription, with which the doctor prescribes a medicine that the patient can obtain in any pharmacy. This application offers many benefits to all participants in the process of prescribing and issuing medicinal products.

After entering the ePrescription system, the doctor may select a product from a central database of medicinal products. He or she can then verify all of the patient's prescribed and dispensed medicinal products, and quickly select repetition of a prescription from the patient's permanent therapy list. Before issuing the prescription, the doctor can check for unwanted interactions between prescribed and dispensed products and receive warnings about the recurrence of active substances. Through this system, doctors can easily verify the suitability of medicinal products in consideration of possible contraindications or other circumstances that would make prescribing the product inadvisable (e.g. pregnancy, age, breastfeeding, etc.). The system also provides the doctor with electronic access to instructions on the use of the product and to documents describing the main characteristics of the products. The doctor is obliged to sign the form electronically with a qualified digital certificate, in the same way he or she would be obliged to sign a paper medical prescription, by using a professional card with a qualified digital certificate issued by HIIS. When the prescription is signed, it is automatically submitted to the central system.

The doctor can store information about permanent therapies for products taken regularly by the patient, and in certain cases (if allowed by the rules of insurance and medical doctrine), can arrange for long-distance prescription of the product. In this case, the doctor submits the electronic prescription to the central system, and the patient may then visit the pharmacy without having to first visit an outpatient clinic. The patient simply presents his or her HIC to the pharmacist, who dispenses the medication. Through this system, the doctor can monitor the status of the patient's medical prescription and can check to see whether he or she has received the product.

With ePrescription, the prescription of medicinal products is significantly more effective and safe. At the pharmacy, the patient submits his or her HIC, which serves as an identifier in the system. The patient and the prescribed product data are transferred to the pharmacist's interface, which means that the prescription no longer needs to be written again. In this way, the process of data preparation is significantly reduced, and in addition, the potential for errors due to unreadable prescriptions is greatly reduced. The pharmacist can now use the time that was previously needed for administrative tasks to check interactions and contraindications, or to provide additional expert advice to the patient.

The e-Prescription system has some very important advantages compared to the previous prescription method. It should particularly be highlighted that:

- The patient's safety is increased due to the elimination of errors caused by misspelled or barely legible handwriting.
- The procedure for patients is simplified; patients no longer need to visit the doctor every time to get a prescription.
- For annual prescriptions, the patient does not always have to visit the same pharmacy but can pick up the medicine anywhere in Slovenia.
- Renewal of prescriptions is simplified, and the time spent for prescribing products is reduced.
- Lower administrative costs (for the purchase of forms, printing in outpatient clinics, maintaining archives in pharmacies, etc.).
- Doctors can prescribe more efficiently and have better insight into the patient's medicinal products.
- Monitoring of the use of medicinal products is simplified, and there is increased reliability of data.
- Safe and reliable transfer of information between the doctor and the pharmacy is facilitated, and there are fewer administrative tasks at the time of dispensing the product.
- It has already been made easier to check contraindications, and certain warnings are included, which remind the prescriber that special attention is needed when prescribing certain pharmaceutical products.

### **6.1.3 eReferral**

As part of the National eHealth Project, the eAppointment information solution was set up, with the aim of facilitating more efficient referrals for health care services. eAppointment offers patients an overview of the waiting periods for all health care providers (both public and private), and thus, the option of choosing a provider according to the most favorable date or location. It also provides helpful information about appointments and enables patients to change the date of the appointment electronically.

With eAppointment, the patient's personal physician or specialist can issue an eReferral for a visit to an appropriate specialist. A simple eAppointment process is carried out through an electronic eReferral; the doctor signs the eReferral with a digital certificate on his or her HPC card, which guarantees a safe application process.

Immediately after the release of the eReferral, the doctor or nurse may direct the patient to a specific health care service. The eAppointment system offers a list of all institutions that provide the requested service, and information about the first available date. After consultation with the patient, the health care worker selects the desired region, the provider of the service, the clinic or medical specialist, and the date of the appointment.

Through the z-VEM portal, patients can make appointments from home, and can check and manage the list of eReferrals based on their eReferral and HINs. The system can also automatically send a reminder message to the patient a few days before the appointment, if the patient has checked this option.

eAppointment gives patients greater access to making appointments, and to managing their referrals on the z-VEM portal. It means less time spent waiting on telephone calls;

provides reminders of the date of the appointment; and simplifies making cancellations or changes in an appointment date. With eAppointment, doctors also have greater control over the course of a patient's treatment and can obtain more information about the patient's history of treatment.

#### **6.1.4 eHealth Record**

The CRPP is an electronic health record that is the basis for the comprehensive and continual treatment of a patient within the health care system. This collection of data contains a summary of the patient's basic health information and medical documentation, as set out by law. The CRPP allows the health care professionals involved in a patient's care to access key data, by means of which they can provide adequate, safe, and quality health care. It enables smooth communication, safe and traceable data exchange, and reliable updating for health care professionals both in Slovenia and abroad.

The CRPP collects health data concerning vaccinations, allergies, blood type, hospital discharge letters, written statements of expressed will regarding treatment, and any prohibitions on access to medical documentation, as well as data on family members, health care proxies, and any assignees authorized to process data in the CRPP, for all persons with permanent or temporary residence in Slovenia. This data is divided into data without a storage time limit (such as information on chronic illnesses, allergies, vaccinations, major medical interventions, and disabilities), and time-limited data (such as pregnancy, certain medical conditions, medicinal products, and medical devices), which are to be kept in the database for only six months. The patient can view his or her health documentation via the z-VEM web portal, and parents can access their children's documents until the children reach the age of 15. Doctors can access patient data through strictly protected information systems that they can access only by using their official electronic certificate.

Patients may forbid access to the summary of their information if they wish; however, they are obliged to actively submit any such prohibition. If access is *not* forbidden, it shall be considered that access is allowed by all providers of health care services in Slovenia; however, data access to providers abroad must be authorized by the patient in writing. The CRPP database also includes any written statements about the patient's will that may exist, for example, information about the exclusion of persons who are entitled to make decisions about his or her medical care; what kinds of medical care he or she does not wish to allow; and which persons may become acquainted with the patient's medical records.

The CRPP database has been built using the most advanced approaches to the computerization of health data, which offers a number of social benefits. In addition to increased safety, patients now play a greater role in the treatment process and can benefit from better responsiveness from their health care providers. As data becomes available for exchange, providers can quickly access it, which improves the quality of health care services, enables greater savings through the introduction of new solutions, and at the same time updates the record of essential patient documents.

## **6.1.5 Legislation in the Field of e-Health**

e-Health solutions are defined by the Health Care Databases Act<sup>24</sup> (ZZPPZ). ZZPPZ provides for a number of eHealth databases, including the CRPP and other eHealth personal databases: "eReferral," "eAppointment," "ePrescription," the "Register of users of the zNET health card for remote access," "eTriage," "TeleKap (remote assistance in the event of a stroke)," "eCommunications," the "Register of Teleradiological Examinations (x-rays, computer tomography, magnetic resonance, ultrasound...)," and the accompanying database, "Register of users of eHealth solutions."

The CRPP contains two types of data on patients that have permanent or temporary residence in Slovenia:

- Summaries of patient data; and
- Patient medical records.

The primary purpose of the establishment of the CRPP is to enable health care providers, whether within Slovenia or abroad, to access data and exchange patient information for the purposes of:

- Providing emergency medical assistance;
- Providing other health care services;
- Post mortem examination services; and
- The updating of basic health documentation data.

The summary of key patient health information ensures that health care personnel involved in patient care have access to key data, based upon which appropriate, safe, and quality health and other care can be provided.

Three sets of data are defined within the summary of patient data:

- Patient identification and status;
- Patient health data without a time limit;
- Time-limited patient health data.

Patients, as the owners of their personal data, have the right to forbid access to the summary of the data; however, they are required to actively submit any such prohibition. Otherwise, it is assumed that the patient has permitted access to all health care providers in Slovenia, within the framework of legal purposes, when performing a specific health service. However, ZZPPZ does not allow patients to forbid access to their names, EMŠOs and HINs, death certificates (day, month, year, time and place of death), and/or written statements concerning the will of the patient, regarding:

- The exclusion or restriction of persons who are entitled to make decisions about his or her medical care;
- What kind of medical care he or she wishes to decline in the event of a medical situation in which he or she is unable to give valid consent;
- The identification of persons who, during or after his or her death, are permitted to become acquainted with his or her medical records, as well as any persons to whom he or she does not wish to allow such access;
- Who is banned from access to the patient data summary.

---

<sup>24</sup> Official Gazette of the Republic of Slovenia, No. 65/00, 47/15 and 31/18

ZZPPZ determines how the data in the CRPP is obtained; stipulates that the acquisition of patient status and identification data is free of charge; and states that the procedure and method of exchange is arranged through contracts. Data is obtained from the CPR and the CR, as well as from HIIS and the insurance companies that provide VHI.

Health care providers are responsible for submitting data from basic health documentation into the CRPP. Data must be submitted upon their occurrence in the course of providing health care, and by the end of the same day that services were provided at the latest. ZZPPZ also regulates authorization of health care professionals and other persons authorized to transmit and obtain data to and from the CRPP.

The data in the CRPP is only relevant up to the point when the patient's treatment is possible, i.e. until death. Excluded are some specific medical data, which is time-limited (e.g. pregnancy and expected delivery date, which is accessible in the CRPP until 30 days after that date; medical conditions and medical interventions over the past six months; pharmaceutical products, foods for special health and nutritional purposes, and medical devices prescribed, received, and/or dispensed in the last six months). Longer storage is only allowed for data for which the patient cannot forbid management in the CRPP. This involves data that is important for health care providers to know after death (e.g. the disclosure of documentation to the patient's relatives and determination of the expiration of the storage deadline). Of course, this data does not have any useful value unless it is linked to the basic identifiers: name, EMŠO, and HIIS patient number.

## **6.2 BILLING FOR HEALTH CARE SERVICE SOLUTIONS**

In 2013, HIIS introduced the "Expenditures" application, the main purpose of which was:

- To obtain detailed information on the health care services and materials provided to the insured person;
- The development of new information support for the receipt, control, and recording of received financial and accounting and nonaccounting documents from all health care service providers;
- The organization of data in databases; and
- The establishment of information solutions to support data analysis.

Within the framework of the project, the processes for the receipt and processing of billing documents were amended and modified. Paper documents have been replaced by electronic documents or data in such a way that for charged services, HIIS now receives individual documents from providers on the services provided, medicinal products dispensed, and medical devices for individual insured persons. More than 540 controls have been identified for controlling data, most of which are automated, and which determine the compliance of data with respect to codes, price lists, and basic databases, such as the Central Medicinal Products Database, and the Providers Database. Data exchange between health care providers and suppliers is fully automated, and all necessary documents and feedback are sent in electronic form through the application.

In order to support these procedures, complex and comprehensive information solutions were developed within the project, including the new "Expenditures" application for dealing with documents with automatic data transfer to financial, accounting, and other applications. The online system has also been supplemented with functions related to data

exchange for foreign insured persons and the exchange of accounting data; and the portal for providers has been developed and implemented.

In order to prepare for the introduction of innovations, numerous workshops were carried out with providers, suppliers, and their software providers. For the safe exchange of items for billing and other data, a new technology for exchanging data on the portal was developed for health care service providers. Internal education for HIIS employees was also prepared and implemented.

Objectives achieved:

- The exclusive electronic exchange of billing documents (invoices, payment requests, and reports) has been established. The resulting single scheme includes all providers in all health care services within Slovenia;
- A switch to more advanced data exchange technologies has been enabled; instead of e-mail and even older technologies, data is now exchanged using the online portal system. The establishment of the portal offers a new and improved communication channel between providers and HIIS;
- HIIS has begun to obtain detailed data on the services provided and materials dispensed to individual insured persons in all services, or with all providers, based on the HIN of the insured person;
- Maximum automation of all document exchange operations, including data controls, is now enabled;
- Communication between providers and HIIS is simplified;
- The treatment of foreign insured persons is now enabled in the same way that it is for insured Slovenians. Paper documents or exchange of forms is no longer required for these insured persons.
- Centrally assembled data enables analytical processing, which is necessary for decision making and strategic planning.
- With the above-mentioned upgrades and renovations of databases and processes, HIIS has increased the scope and quality of data on provided health care services and dispensed materials.

## **6.2.1 Analytical Systems**

Every business process works with data, and decisions are based on information obtained from that data. The data is collected, stored, and updated according to current operation protocols in the transaction databases. Large amounts of unrelated data records are collected, from which it is not easy to obtain information for analysis and decision-making purposes; more demanding queries or analyses require the development of specific software solutions. Complete information can be obtained through a well-organized and reliable information system. Therefore, data is designed to produce useful output information using data warehouses.

The data warehouse, which is a standardized, well-ordered, and time-dependent database that does not change during daily business activities, enables the unification and shaping of data for the purposes of analysis and decision making. It is intended to be used for analyzing business reporting and decision making. The data must be recorded so as to enable a wide variety of inquiries.

Following the introduction of solutions that enable the acquisition of large quantities of detailed, quality data on health care services provided to individual insured persons, HIIS has prepared data warehouses for the following areas:

- Treatment in inpatient services (acute and nonacute);
- Treatment in specialized outpatient service facilities;
- Expensive hospital medicinal products, applied in outpatient treatment or during hospital care;
- Medical examinations with computer tomography and magnetic resonance;
- Treatment in general outpatient services;
- Treatment in dentistry;
- Treatment in health resorts;
- Care in retirement homes, specialist and educational institutions, and hearing and speech correction centers;
- The treatment of foreign insured persons;
- Chronological record of treatment by the insured person;
- Prescription medicinal products;
- Stimulative rewards for doctors for rational prescription of medicinal products;
- Quality indicators for prescription medicinal products;
- Recorded and dispensed medical devices;
- Absenteeism (days of absence from work, and compensation for absence from work);
- Reimbursement for travel expenses, daily allowance, and reimbursement for medical services abroad;
- Decisions of appointed doctors and/or medical commissions.

For the construction of an individual data warehouse, the needs for data and reports or analyses are first defined. This is followed by the preparation of data for easy and efficient use.

Data warehouses provide preprepared, standardized reports and numerous other data for various kinds of ad hoc analytical processing. For example:

- **The analysis of charged medical services and materials dispensed in terms of compliance with the legal bases**
  - Health legislation: a percentage for CHI in connection with the diagnosis, the type of insured person, and the content of and reasons for the treatment;
  - Rules concerning CHI: the use of rights from CHI, or a combination of several rights (services), the connection of rights with the age of a person, etc.;
  - General agreement: achievement of the quantity and structure with the contractually agreed-upon program; planning more of those health care services that have long waiting times; division of work between primary and secondary levels, etc.
- **Data for the planning of health programs**
  - Providing citizens with the names of doctors and health services in order to provide equal access to services;
  - Monitoring the use of services by municipality of residence;
  - Implementation of prevention;
  - Referral and relocation;
  - First visits to a doctor, and control visits due to the same health condition;
  - Dental treatment and prosthetics;
  - The scope of services in relation to the number of waiting patients (for example, waiting times).
- **Data for the development of service payment models**
  - Specification of services accounted for by activity;
  - Frequency of charged services;
  - A combination of charged services within a single treatment;
  - Complexity of treatment (or visit);
  - Cost per insured person;
  - The structure of services by age groups and gender;
  - Quality of service (e.g. noting the time lapse between two fillings on the same tooth surface);
  - Monitoring overall treatment costs (e.g. acute treatment and related nonacute treatment services, including medicinal products and other separately charged materials and medical examinations)
- **Data for monitoring activities**
  - Expensive acute treatments with a short inpatient length of stay (also in connection with nonacute hospital treatment);
  - Complexity of treatments/visits among comparable providers;
  - Hospitalization according to outpatient treatments;
  - The use of expensive medicinal products such as the amount of the medicinal products relative to the body surface area and weight of the hospitalized person;
  - Redundant, repeated services;
  - Repetitive services within a short period (rehospitalization);
  - Exclusive services within one treatment, visit, or multi-day care;
  - "Unauthorized" services at the primary level (e.g. dentistry);
  - "Unnecessary" services at a secondary level, which could be provided by a doctor on the primary level.
- **Data for the detection and prevention of fraud**
  - Prescriptions of medicinal products to persons without indications;

- "Suspicious" billing for individual services (repeated similar services in a short period of time, services that are illogical in relation to the gender or age of the person, etc.);
- Prescriptions of certain types of medicinal products by doctors without appropriate specialization;
- Prescriptions of large doses of medicinal products to one person (over a long period of time);
- Inconsistent prescriptions of medicinal products to one person (over a long period of time);
- Abnormal combinations of medicinal products (over a long period of time), etc.

It should be emphasized that the collected data is important not only at the individual patient level, but at the national level as well, as the statistical and accounting data are comparable across all levels of services. This data also provides a basis for the adoption of national plans and strategic decisions in the field of health care.

### **6.3 PORTAL FOR INSURED PERSONS**

HIIS has established a portal for insured persons that enables them to access their health insurance data easily and quickly, and/or to access other personal data that is kept by HIIS through digital certificates. This information is provided to insured persons in three ways: via Short Message Service (SMS); via an anonymous web service; and via secure access to personal information.

The goal of setting up this portal was to provide insured persons with access to health insurance data over the Internet. The infrastructure and solutions established have simplified communication between HIIS and the insured person, thereby lessening the work of HIIS and providing a basis for online applications for insured persons (e.g. electronic applications for reimbursement).

Thanks to the level of digital literacy in Slovenia, this information can now be provided to a large part of the population via the Internet. With the use of qualified digital certificates held by insured persons, it is now possible to provide a professional and legally consistent solution for secure access to data for both patients and health care providers.

An additional goal of developing this portal is the empowerment of insured persons within the health care system. By giving them better access to information and, consequently, more and better knowledge, insured persons will be able to more easily obtain higher quality services. For HIIS, this also means fewer visits of insured persons in the HIIS registration offices, as well as a reduced need to provide clients with information (in person or through the phone), since they will now be able to obtain that information for themselves.

**Figure 12: Available Services on the Web Portal for Insured Persons (Screenshot)<sup>25</sup>**

### 6.3.1 The SMS Solution

As of autumn 2011, the SMS solution has enabled insured persons to get answers to the following questions via SMS:

- Do I have CHI coverage? Did my employer register me with the CHI program?
- Have I paid a complementary health insurance premium? Does my complementary health insurance provide coverage up to the full value of health care services?
- Am I subject to the payment of contributions? Do I regularly pay a CHI contribution?

Using this solution, the insured person can send his or her HIN via SMS to a special phone number. Depending on which mobile operator is providing service, the insured person may immediately receive information on the validity of the insurance or be notified of any errors.

<sup>25</sup> Translation of e-services on the portal for insured persons:

- Verification of validity of A1 certificate
- Ordering a health insurance card
- Accessing my personal data
- Checking my health insurance status
- Ordering an European health insurance card

### 6.3.2 Anonymous Web Service

An anonymous web service enables insured persons to obtain answers to the same questions they can ask for via the SMS service, but in this case the answer comes via the web and displays more text than the SMS service is able to do.

In this solution, the insured person enters their HIN into the appropriate box and obtains detailed information on their compulsory and/or complementary health insurance, and on the status of their payment of CHI contributions.

**Figure 13: Display of Health Insurance Status (Screenshot)<sup>26</sup>**

The screenshot shows a web page with a blue header bar. Below it, there is a search input field containing 'Vpišite ZZZS številko: 38137230' and a grey 'Preveri' button. The main content area has a light gray background and contains two sections of text. The first section is titled 'Urejenost obveznega zdravstvenega zavarovanja:' followed by the text 'Obvezno zdravstveno zavarovanje je urejeno.' The second section is titled 'Obseg pravic iz zdravstvenega zavarovanja:' followed by the text 'Zdravstvene storitve v predpisanim odstotnim deležu krije obvezno zdravstveno zavarovanje. Razliko do polne vrednosti krije dopolnilno zdravstveno zavarovanje, ki je urejeno pri zavarovalnici TRIGLAV, Zdravstvena zavarovalnica, d.d..'

### 6.3.3 Secure Access to the Personal Information Service

Secure access to the personal information service is an essential component of this portal. With this service, the insured person can access the personal data that is kept by HIIS. In addition, the insured person can also see data on family members who are insured under his or her policy.

Secure access service differs from the anonymous web service in that its use requires a qualified digital certificate, because a much larger set of sensitive personal data is displayed.

The individual groups of data that insured persons can access via this service are:

- Personal data;
- Detailed information on CHI and who is responsible for the contribution;
- Data on documents for the rest of the world (EU-HIC and others); which documents have been issued to insured persons; and their validity;
- Data on dispensed prescription medicinal products;
- Data on assistive devices received;
- Data on personal doctors selected;

---

<sup>26</sup> Translation of the insurance status display:

- Enter the HIN
- Check button
- Status of Compulsory Health Insurance: Your compulsory health insurance is valid.
- Scope of health insurance entitlements: Your health care services will be covered by compulsory health insurance in the prescribed percentage. The difference up to the full value will be covered from your complementary health insurance by Triglav Insurance Company.

- Data on health care services used and charged;
- Data on insured family members;
- Notices for insured persons (expiration of insurance; changes in the status of insurance; withdrawal of rights due to the nonpayment of contributions; expiration of a device's viability; expiration date of a device that has been rented, etc.).

HIIS also conducted a brainstorming workshop with potential portal users that included representatives of insured persons and patients, as well as health care professionals. Both groups agreed that the services provided through the portal are useful. The following opinions and suggestions for improvement were given:

- Insured persons/patients emphasized that the use of the portal should be simple and supported by precise and clear instructions, with contact persons who can be reached in the event of problems.
- Both groups of users agreed that data security is well ensured with the smart cards and qualified digital certificates.<sup>27</sup>
- Insured persons/patients should be properly informed about the possibility of using the portal, for example through patient associations.
- Insured persons/patients and health care professionals both support the possibility of printing out prescriptions for dispensed medicinal products, for two purposes: for travel abroad, and for the preparation of a personal record of medicinal products.
- Insured persons/patients would like to receive additional health information through the portal (anamnesis, diagnosis, medical reports, laboratory results, X-ray images, etc.).
- The insured persons/patients believe, that the "access to health insurance data" service will have a positive impact on the regular payment of health insurance contributions.
- Notifications/alerts from the portal are welcome, but they must be in moderate quantities and via e-mail or SMS.
- Both groups of users oppose the possibility of restricting access through the online system to medical data (such as medications issued) to health care workers.
- Health care professionals believe that accessing data on the costs of services will help detect abuses or irregularities in the billing of health care services.
- Insured persons/patients and health care professionals believe that these services will contribute to better relationships between them.

The portal for insured persons has been in operation for several years, and it has been accepted by users, and demonstrated by the statistics, which show an increase in access to the portal and the use of ready-made online services. In the first seven months of 2013, there were 101,019 health insurance status checks through the anonymous online service, of which 41,963 were different users; and 5,843 logins to the secure websites with a digital certificate.

---

<sup>27</sup> For even greater security, it would be necessary to raise the awareness of users, who are the weakest link in security.

**Table 5: Number of uses of the anonymous web service and the number of logins to the secure data access service in 2013 and 2015**

	Checking the insurance validity through anonymous online service	Logins to the secure website
2013 (January - July)	101,019	5,843
2015 (January - December)	288,082	10,830
2015 (January - December) number of different users (insured persons)	118,018	6,964

Source: HIIS database logs 2016

### 6.3.4 Online Ordering of Health Insurance Cards

The representatives of insured persons, and the employees of HIIS have created an initiative to update the previous only-existing way of ordering new HICs; that is, personal ordering as part of the registration and deregistration service of HIIS. In practice, this had meant an administrative barrier for insured persons, because a visit to the office of HIIS during office hours was required. As a result, sometimes the insured person was unable to immediately visit a doctor if for some reason he or she failed to have a HIC; and was therefore treated as a private patient. Therefore, HIIS decided to simplify the procedure for ordering the HIC.

HIIS annually issues more than 100,000 HICs; 67 percent of the cases of ordering a new copy of a HIC are due to loss, damage, change of surname, etc. A large number of insured persons (11,000 on average each year) call HIIS for additional information about ordering a new HIC; 80 percent of them are interested in the online ordering of the HIC, based on information provided by the staff of HIIS's Card Service Department.

In preparing the online solution, special attention was paid to the simplicity and accessibility of services to all insured persons. It was decided to enable the ordering of HICs through a web-based form, without the use of digital certificates, special devices, or software. The potential users are all insured persons who are more or less computer literate and equipped with computers. Since a digital certificate is not required for the online order, new HICs for children, who cannot obtain digital certificates, can also be ordered by their parents.

The online solution has ensured a high level of security against unauthorized HIC orders and prevention of the acquisition of personal data by unauthorized persons. The insured persons must identify themselves with two personal identifiers, and no personal data is disclosed in the process of ordering. The Information Commissioner has confirmed that the online solution is sufficiently secure.

When ordering a new HIC, the insured person must enter at least two of the three identifiers (HIN, EMŠO, or tax number) in the web form; name; the reason for ordering the new HIC; and an e-mail address.

After entering the data, the data is checked for accuracy by comparing it to the data that HIIS has in its databases. If the data proves to be correct, the next step verifies whether the person meets the conditions for issuing the HIC, and whether the issuance of a new HIC is payable or free of charge. Notice of a successful order appears on the screen and an e-mail is sent to the e-mail address of the requestor, with information about payment for the card (if there is a charge), and provides a web link through which the insured person can confirm the order. The order is actually not executed until the requester confirms it by clicking on the link. The existing HIC is cancelled, and one or more electronic messages containing a temporary certificate (a PDF document that the insured person can save or print); an invoice (if there is a charge); and other relevant information, for example, when and where the insured person can expect to receive the card, are sent to the insured person via email. No personal data is disclosed in these messages; the data that the user has entered in the online form is displayed on the temporary certificate, and the invoice and the new HIC are sent to the address that HIIS keeps in the database. This prevents misuse of the service by sending the HIC to an address other than that of the insured person.

If the entered data is incorrect, the insured person immediately receives error messages. In the next step, the data can be checked and corrected. If, despite the corrections, the data is still incorrect, the order procedure cannot be completed, and a message is displayed that the insured person can order a new copy of their HIC in person at any regional unit or branch office of HIIS.

In order to prevent potential abuse, various control mechanisms that prevent multiple orders, automatic ordering, and the like have also been introduced.

The web solution for electronic HIC ordering has been in operation since January 1, 2016 at the HIIS portal for insured persons ([https://zavarovanec.HIIS.si/wps/portal/portali/azos/e\\_storitve\\_HIIS/narocanje\\_kzz](https://zavarovanec.HIIS.si/wps/portal/portali/azos/e_storitve_HIIS/narocanje_kzz)).

In preparation for this solution, HIIS has pursued and achieved the following goals:

- A simple and accessible solution available to all insured persons (ordering via a web form without the use of digital certificates, special equipment, or software);
- Protection against unauthorized HIC orders or unauthorized acquisition of the personal data of other persons;
- The introduction of a minimum set of data that ensures the identification of the person and prevents abuse, and enables the ordering of and payment for a new HIC;
- Immediate feedback to the person ordering the HIC (about errors, failure to meet the required conditions, payment details, etc.);
- The submission of a new copy of the HIC to the registered address;
- The issuance of a provisional certificate;
- The issuance of an invoice in the case of a payable HIC;
- Cancellation of the previous HIC;
- The provision of online HIC ordering in 24/7/365 mode.

Administrative obstacles have been eliminated to the greatest extent possible and have simplified the process of ordering the new HIC and more than 10,000 online orders have been successfully completed in the first 10 months of this solution. This translates into

more than 10,000 persons fewer standing in rows at the registration and deregistration services of HIIS, and more than 10,000 HIC ordering processes less for the workers in these services. Completing an order (form completion, data entry into the application, provisional certificate printout, oral explanation) takes about 2 minutes per order. This means 333 fewer hours of work (within 10 months) for employees in the HIIS registration and deregistration services.

**Table 6: The number of health insurance cards ordered through the web portal**

	2016	2017
All ordered (issued) Health Insurance Cards	109,191	119,846
Cards ordered through the web portal	12,393	18,965
Percentage of eOrders	11.3 %	15.8 %

Source: HIIS Business Report 2017

With the availability of e-ordering HICs, insured persons can avoid having to go to a branch office of HIIS. In cases when they cannot find their HIC prior to visiting a physician, they may now be able to avoid having to pay for health services (whereas previously? without a HIC or temporary certificate, they would have been treated as private patients). This also saves the related additional work required for regulating reimbursement for services paid for by the patient.

### **6.3.5 Ordering the European Health Insurance Card**

By entering their HIN and control data (day and month of birth) on the portal, insured persons can also order a European HIC, which can be used for urgent health services during temporary stays abroad. This card can be ordered by insured persons via SMS in the same way that they are able to verify the validity of their insurance.

### **6.3.6 Verification of the Validity of an A1 Certificate**

An employer who sends a worker to work in another EU country must obtain an A1 certificate from HIIS, with which the worker can prove that at the time of posting, he or she was registered for social insurance in Slovenia. On the Web portal for insured persons, a person can enter the validity of the certificate by entering the HIN and the number of the certificate.

If a QR code is printed on the back, the same information can be obtained by capturing the code on a mobile device that directs a person to the portal and automatically displays the certificate information.

Verification of the validity of an A1 certificate is an important step for the worker, since in the past it has happened several times that employers faked A1 certificates, and workers were consequently not included in the social insurance of that country? at all.

### **6.3.7 Future Developments**

The technology and software used in the development of this portal provide a good platform for upgrading the portal with additional data or services for insured persons and other partners of HIIS, and for the development of other electronic services. Here are some ways in which the portal can be made more useful in future:

- Insight into data accessed for the insured person (who, when, and why someone has accessed the information);
- Electronic insight into and definition of the donation of organs and tissues after death;
- Electronic applications for reimbursement;
- A platform for other e-services;
- Customer support in solving data errors;
- Linking data from the eHealth system.

#### **6.4 THE SVIT SCREENING PROGRAM**

One good example of linking data from different databases is provided by the Colorectal Cancer Screening Program (SVIT).

SVIT is a program designed to prevent and detect early colorectal cancer, which is a major health problem in Slovenia; it is the second most common cancer, and the number of cases of this cancer increases every year. It is an insidious silent killer of the population of Slovenia; each year more than 1,600 people are diagnosed with it, and about 700 die from it. Many Slovenians who have an early form of the cancer are not aware of it, because the disease develops over a long period of time without obvious symptoms. Due to the late detection of colorectal cancer, mortality in this respect is still high, and treatment is painful and not very effective.

Colorectal cancer is likely to develop from precancerous changes in the wall of the intestine called polyps. If the polyps are detected and removed in time, this form of cancer can be prevented; and if cancerous changes are detected early enough, treatment can be very successful, and can both save lives and improve the quality of patients' lives.

However, a person can have colorectal cancer for many years before serious health problems occur and by then it may be too late for effective treatment. The SVIT program enables the detection of this form of cancer early enough, even in people who do not yet have obvious health problems. It is designed to prevent colorectal cancer by detecting and removing precancerous polyps.

As a first step, a screening is done with a fecal occult blood immunochemical test. People with a positive screening result are then referred for a colonoscopy, which looks for the cause of the bleeding.

The SVIT program is under the auspices of the Ministry of Health of the Republic of Slovenia and is managed by the NIJZ. For the target population—men and women ages 50-74—participation in SVIT is free of charge, as the costs of the program are borne by HIIS.

More than half a million people were invited to participate, according to a predetermined plan, for a period of two years. In accordance with the legal basis, NIJZ may process personal data, and may acquire data on invited persons from the CPR, as well as data on the arrangement of CHI and personal selected doctors from HIIS.

Each month, NIJZ receives information from the CPR about people from the target population who are to be invited into the program in the following month. NIJZ then submits

a request for data on the validity of CHI to HIIS. Based on the information obtained, the person is then invited to participate in the SVIT program. If a person fails to show valid CHI status, their information is checked at HIIS every month for the next three months. If CHI is not arranged within this period, the person is invited to participate in the next screening circle (presumably two years later).<sup>28</sup>

From January 1 to December 31, 2017, 302,819 people were invited to participate in SVIT, and 301,701 of them responded to the invitation. 189,293 persons (62.74 percent) returned the statement of cooperation; 11,392 (6.02 percent) were excluded due to temporary or permanent exclusion criteria (colonoscopy in the last three years with or without removed polyps; colorectal cancer; and/or chronic inflammatory bowel disease); and 377 people did not want to participate in the program (0.12%). A set of testers for collecting two samples of stool for the fecal occult blood tests was sent to 177,732 people. As of December 31, 2017, 168,823 (94.64 percent) of them had submitted suitable samples for analysis. Among the analyzed persons, 158,287 (93.76 percent) had negative results, and 10,536 (6.24 percent) had positive results: 58.35 percent of the population was screened. In 2017 10,995 colonoscopies were carried out in 24 authorized colonoscopy centers: 214 cases of colorectal cancer were detected, and 2,429 people had advanced adenoma, which represents an increased carcinogenic risk. Table 7 shows the type and share of pathology discovered in persons who had their first colonoscopy performed in 2017.

---

<sup>28</sup> HIIS is assuming that a significant share of the uninsured people contacted no longer live in Slovenia.

**Table 7: Pathologies discovered through the SVIT screening program in 2017**

Discovered pathology	Number	%
Carcinoma	214	2.21 %
Suspicion for cancer	24	0.25 %
Lymphoma	1	0.01 %
Neuroendocrine tumor	3	0.03 %
Progressed adenoma	2,492	25.73 %
Non-progressed adenoma	2,857	29.50 %
Sessile serrated adenoma/polyp (SSA/P)	284	2.93 %
Hyperplastic polyps	587	6.06 %
Other non-neoplastic finds	397	4.10 %
No samples for histology	1,736	17.92 %
No finds	1,090	11.25 %
<b>Together</b>	<b>9,685</b>	<b>100 %</b>

Source: Annual report on the implementation of the SVIT program 2017

## 6.5 PREVENTION OF FRAUD

In Slovenia awareness of the prevention of fraud and corruption in the public health care system is growing due to various activities on the governmental, sectoral, and nongovernmental levels.

### 6.5.1 Legislation: The Criminal Code and the Integrity and Prevention of Corruption Act

In general terms, fraud is defined in the Criminal Code<sup>29</sup> (KZ) as "an offense committed by an offender with purpose to generate illegal proceeds for himself or to other persons...". KZ defines various kinds of fraud as criminal offenses. These include general fraud, business fraud, and social fraud (i.e. taking advantage of various social benefits). The KZ defines these offenses similarly to the basic definition of fraud, as a form of deceit, suppression, abuse, concealment, misuse, etc.

The legal basis and rules for fraud and corruption in general terms are defined in the Integrity and Prevention of Corruption Act (ZIntPK) as well. ZIntPK presents the basic

---

<sup>29</sup> Official Gazette of the Republic of Slovenia, No. 50/12 – official consolidated text, 6/16 – popr., 54/15, 38/16 in 27/17

legislation for the prevention and detection of fraud. According to ZIntPK, corruption is defined as "...each infringement of due action of officials and/or liable persons in the public or private sectors... or persons benefiting from infringement, because of directly or indirectly promised, offered, given, demanded, accepted or expected benefit for himself or another person."

ZIntPK requires all public institutions to undertake certain actions to combat fraud and corruption. HIIS and the majority of hospitals and health care providers on the primary level (health centers) have been established as public institutions, so ZIntPK is relevant for all them. On the basis of ZIntPK, a special governmental Commission for the Prevention of Corruption (CPC) that deals with corruption in general has been established; and health care fraud and corruption are among the items often found on the list of CPC activities. For example, in 2013 and 2014, on the basis of the investigated "afternoon work" of specialists working for both public and private health care providers, and their specific approach to "skip queues,"<sup>30</sup> CPC provoked a huge public response, and drew attention to the problem of "systemic corruption" in health care.

### **6.5.2 Types of Health Care Fraud**

Several different types of health care fraud are defined within the HIIS internal act "Regulation of Fraud Prevention":

- **Fraud committed by insured persons**
  - The use of false documents, resulting in undue entitlement to health care services, drugs, or medical aids;
  - The use of false documents, resulting in unjustified entitlement to cash benefits;
  - The use of false documents, resulting in undue entitlement to cross-border health care.
- **Fraud committed by obligors for CHI registration**
  - Intentionally referencing incorrect data for the inclusion of persons in CHI;
  - Choosing an inappropriate (and less costly) status of the insured person for the inclusion in CHI;
  - Intentional irregular registration of persons for CHI.
- **Fraud committed by obligors for CHI contribution payments**
  - Intentionally referencing incorrect data about personal revenues;
  - Nonpayment of CHI contributions;
  - Irregular payment of CHI contributions.

---

<sup>30</sup> Public health institutions have a contract with HIIS and provide patients with services at the expense of CHI. For certain health care services, a queue has been created in public health care institutions. For example, for the first orthopedic examination, the patient may have to wait for up to a year. Then the patient waits up to another year for a knee arthroscopy. Therefore, some doctors who are employed both in public and in private health care institutions invite patients to their private outpatient clinics, where they perform the first orthopedic examination for payment (from the patient), then issue a referral to the patient for further treatment in the public health care institution (as if the examination had been performed in the public health care institution). Using this strategy, the patient's waiting time is shortened by a year. Such behavior is corrupt, as the doctor has earned money from it, and the patient has skipped ahead of a whole queue of other patients waiting for the same services.

- **Fraud committed by health care providers**
  - Reporting of performed health care services that are not compliant with billing rules, and/or declaring services that were not provided;
  - Using false, incorrect, or incomplete account documents to be paid for medical services that were not provided;
  - Prescription drug fraud;
  - Medical device prescription fraud;
  - Abandonment of obligations defined in the General Agreement (GA) or contract;
  - Issuing false medical opinions, approvals, or certificates.
- **Pharmaceutical fraud**
  - Intentionally issuing irregular or fraudulent drugs;
  - False accounting of drugs issued (the use of false, incorrect, or incomplete account documents for payment of drugs issued);
  - Abandonment of obligations defined in the GA or contract.
- **Medical device supplier fraud**
  - Intentional irregular or fraudulent supply of devices;
  - False accounting of supplied devices (the use of false, incorrect, or incomplete account documents for payment of supplied medical devices);
  - Abandonment of obligations defined in the contract.
- **Other economic partner/operator fraud**
  - The use of false, incorrect, or incomplete documents in public procurement procedures;
  - Abandonment of obligations defined in the contract.

In Slovenia, the most frequent cases of suspected fraud are among providers of health care and pharmaceutical products. The main patterns observed are:

- Overbilling/"hyper coding" of DRG diagnosis and procedures to increase the "weight" of DRG cases;
- Reporting/billing hospital services when only outpatient specialist care was performed/required;
- Physician referral abuses: artificially long waiting lists and providing faster services if paid for out of pocket;
- Prescription drug abuses: networks of physicians organized to obtain and sell expensive (prescription) drugs in the black market (to ex-Yugoslavian states).

### **6.5.3 Supervision by HIIS**

As the sole provider of CHI in Slovenia, HIIS plays a crucial role in controlling the entire CHI process, and billing procedures in particular—including the prevention of intentional irregularities like health care fraud and corruption. According to the Health Care and Health Insurance Act (ZZVZZ) and the Health Services Act (ZZDej),<sup>31</sup> HIIS is responsible for controlling various points in the CHI process—from inclusion of the insured and funding, to the allocation of resources to providers and billing for provided services.

---

<sup>31</sup> Official Gazette of the Republic of Slovenia, No. 23/05 – official consolidated text, 15/08 – ZPacP, 23/08, 58/08 – ZZdrS-E, 77/08 – ZDZdr, 40/12 – ZUJF, 14/13, 88/16 – ZdZPZD in 64/17)

The most important auditing activities are performed by a special HIIS unit that is responsible for financial/medical control. The goal of this unit is to monitor the transparency and efficiency of health care providers, and to fulfill other GA and contracting goals. The unit has reinforced its activities during recent years in order to gain greater effectiveness of controls at provider sites, especially in hospital services. In line with this strategy, in 2009 the re-establishment of contractual penalties was achieved through negotiations with health care partners in the GA. Recently, special attention has been devoted to fraud prevention, mainly by use of the tools mentioned above: regulation of fraud prevention, a special computer application for the processing of frauds, anonymous e-reporting of fraud suspects, and so on.

HIIS performs two general control activities: administrative control, which is performed automatically; and administrative control of billing by the technical/administrative staff of HIIS. In 2013, on the basis of the computerization of billing communication with providers, the "Expenditures" project introduced e-billing. To date HIIS has introduced more than 700 automatic control mechanisms into the billing process with providers.

The financial/medical auditing of providers is performed by HIIS's medical doctors, who implement in-depth control mainly at the providers' sites, which is where patient health care records are examined. There are several important characteristics of such auditing. Since 2013, with the implementation of Expenditures, which introduced obligatory per-person e-billing for medical services provided from all health care providers, control has been much improved. Soon after the introduction of "Expenditures," the building of analytical tools proceeded; the additional analytical data has increased the precision of targeted inspections for contractors who deviate from the average in a chosen set of comparable cases. There are now regular controls of financing for acute hospital care, the prescription of medications, primary care activities, and so on. The strengthening of information, education, and counseling for providers is another important issue. Increasingly, important activity is being initiated in the form of auditing activities on the basis of reported complaints, or the detection of various suspected irregularities and frauds.

In 2015, safe, anonymous web registration and communication to detect fraudulent activities was established on the HIIS website, but the auditing capacities of HIIS are limited by the number of medical doctors who are willing to do this type of work. At the end of 2015 there were only 7.5 regularly employed auditing doctors in HIIS; another 7.5 were working on a contractual basis. It is estimated that at least another 20 should be regularly employed in HIIS auditing activities. The situation has not improved at all since then. The problem is that HIIS auditing doctors are paid as public servants, which is less than the doctors who work in health care are paid, so only few of them decide to work as auditing doctors.

The main tasks of HIIS control activities in regard to the processing of fraud suspects are documentation; treatment of suspected cases in accordance with HIIS's legal responsibility; risk assessment; damage recovery; and fraud prevention. HIIS does not have the authority to conduct certain investigative and prosecutorial actions. In cases where there is solid confirmation of suspects the cases are referred to the law enforcement authorities who have the ability to prosecute. HIIS also cannot impose civil sanctions or disciplinary actions, but according to the general agreement between contracting partners, it can recover financial damages resulting from irregular billing activity and can demand certain financial penalties. If the damage recovery is not paid properly, the case is referred

to court. Financial penalties are stipulated in advance for cases where financial damage is difficult to determine and/or when the financial damage is relatively high.

**Table 8: Supervisions Carried Out in 2017**

Supervision Area	2017
DRG	74
Secondary level healthcare	142
Secondary level dental care	14
Medicines	26
Primary level health care	94
Primary level dental care	72
Administrative	386
<b>Total</b>	<b>808</b>

Source: HIIS Business Report 2017

On the basis of the supervisions carried out in 2017, HIIS reduced its payments to health care providers for €3,147,428, while health care providers paid €312,549 in contractual penalties.

#### **6.5.4 Supervision by Voluntary Health Insurance (VHI) Providers**

VHI providers can audit financial accounting matters that are subject to their contracts with health care providers. To detect and prevent fraud, three VHI providers have recently put into place software systems specifically designed to detect fraud in insurance cases. These systems tend to focus primarily on the identification of known fraud types, and autodetection of insurance cases that are suspicious but still not determined to be fraudulent.

These software programs have defined a certain number of known types of fraud and known fraud suspects. Generally, they have focused on the billing of health care services that they as insurer do not cover; the billing of services that were not actually carried out; billing that is more expensive than the services actually performed; intentional implementation of unnecessary services; and other similar clusters of cases. However, the lack of physicians employed by the VHI providers is an even greater challenge for them than it is for HIIS. In fact, there are no physicians regularly employed at VHIs for the purpose of fraud detection.

#### **6.5.5 The Results**

In Slovenia in recent years, especially during the global financial crisis (from 2007-2010), there has been an important shift in public awareness about the threat of various phenomena of irregularities, corruption, and fraud in general, and in health care and the health insurance system in particular. This increase in public sensitivity and attention to health care financing matters has encouraged several important changes.

The crisis was accompanied by fraudulent attempts by various economic and noneconomic actors to avoid their legal obligations or to gain illicit benefits. Several cases of embezzlement with the aim of obtaining CHI benefits, or of reducing and/or avoiding financial obligations, and intentional irregularities of health care providers and suppliers

were found to have either falsified accounting documents or made omissions in the contractually agreed-upon activities. These were exposed to the public as alleged frauds, and some of them were successfully prosecuted.

It is clear that HIIS will strengthen their control and auditing functions. According to its strategic plan, in the near future, HIIS plans to modernize the concept of financial/medical controls; strengthen fraud detection and prevention activities; develop an in-house business intelligence application for fraud detection and prevention; and increase public information and education about fraud and corruption.

## **PART VII – BASIC DEVELOPMENT CHALLENGES IN THE IMPLEMENTATION OF COMPULSORY HEALTH INSURANCE (CHI)**

### **Risks for the health and safety of the population**

In the period after the onset of the economic crisis of 2013, due to the instability of the labor market, HIIS faced a significant increase in applications for insurance arrangements. During this period, weaknesses in fulfilling the obligations of those persons liable for arranging compulsory insurance, and for paying mandatory contributions were identified. It is therefore necessary to provide increased electronic regulation of applications for health insurance for groups of insured persons that have not yet been covered. Also, HIIS should focus its efforts and activities to ensure that all persons in Slovenia are included in CHI.

### **Risks related to the accessibility of CHI rights**

Due to financial restrictions, some very favorable trends that had been developing in improving access to services and reducing waiting times have been stalled. With the deregulation of prices in the area of complementary voluntary insurance, the risk of deregistration from this insurance and the associated social security risks have increased. HIIS is increasingly faced with the problem of the irresponsible or excessive use of health care services due to the lack of adequate systemic incentives to contain costs.

### **The dissemination of e-services**

In the past, the conditions for expanding electronic information exchange with insured persons, liable persons, health care providers, suppliers, state authorities, and other parties have been improved. Nevertheless, there are still significant opportunities for improvement in this area that would enable additional digitization; the further elimination of administrative barriers; and the increased rationalization of the system.

### **Transparency and efficiency of the use of CHI funds**

The updating of accounting models for individual health care activities or programs is essential for the transparent and efficient distribution of CHI funds. Despite progress in this area, some programs are still being paid for according to capacity instead of according to results or effects. In the future, more attention should be devoted to cost monitoring and program evaluation. Control activities should also be strengthened. Data warehouses are useful in this respect; therefore, their use should be further increased. Moreover, employees should be trained to properly use the data.

### **Better use of data from complex databases**

HIIS enters into relationships with health care providers and other business partners more or less as customers or buyers of desired programs or services, which enforces certain requirements on the effectiveness and quality of the programs on behalf of insured persons and other financial contributors. The analytical capabilities for strategic planning are essential for this role. In the forthcoming development period, HIIS will improve and expand the use of data from complex databases; furthermore, it will have to provide a continual process of monitoring the strategic areas of the health care system at the national level.

**Expanding functionality of the web portal for insured persons**

Expanding the possibilities for electronic registration of insured persons and their family members for CHI; enabling the submission of electronic applications/forms for exercising various rights, for example filing forms for the reimbursement of travel expenses.

**Establishment of a national contact point for informing insured persons about treatment abroad**

Information on health care providers in EU countries regarding access to services; permits and licenses; quality and safety standards; information on the rights of insured persons and appeal procedures; and legal means for determining the responsibility of providers. In the field of eHealth, transferable and interoperable electronic health records should be provided.

**The expansion of paperless business**

Electronic data exchange with official registers, electronic inquiries, arranging insurance based on data obtained from the backend, and the further elimination of administrative barriers.

**Participation in the national eHealth project**

Better communication between stakeholders (ePrescription, eReferral, etc.); better quality of data on services, and exchange of data between stakeholders.

**Electronic archive arrangement**

Rationalization of archival document retention procedures; the possibility of remote access to archival materials; management of increasing quantities of archival material; facilitation of the acquisition of information from the electronic archive.

## 7.1 GENERAL DEVELOPMENT CHALLENGES IN THE FIELD OF ICT IN HEALTH CARE

It would make sense to focus resources and efforts on providing a single information system for health care providers, but in so doing, it is essential to avoid the risk of "vendor lock-in" (that is, attachment to a single provider). Therefore, it is necessary to develop a system for the certification of solutions for use in the health care system, and in particular to provide mechanisms that will actually enable the transition from one provider to another within the system.

According to EU guidelines (in the Green Paper on mHealth), attention should also be paid to the rapidly developing field of mHealth, where it should be ensured that users of the health care system have information about which of the many available mobile applications are actually medically and professionally verified.

Access to quality data and information within the health care system should be improved. In order to optimize the system, it is necessary to provide more advanced use of IT in health care. The appropriate health information infrastructure should enable the establishment of electronic connections between health care providers and the exchange of health documents at the national level, and thus a more efficient organization of the work of health care providers. The introduction of eHealth will increase the involvement of users by allowing patients access to their own health data.

Specific measures to achieve these objectives:

1. Renewal of the Health Care Databases Act (ZZPPZ);
2. Electronic health record upgrade;
3. Uniform information support for health care providers;
4. eHealth system upgrade;
5. The connectivity of eHealth and HIIS ICTs, other national ICTs, and social and other relevant ICTs;
6. The introduction of uniform standards for electronic data exchange in health care

These activities will provide unified and effective information support for health care monitoring and management, as well as accessible data for patient treatment and business.

## PART VIII – LESSONS LEARNED

### Consolidated Databases

When establishing IT solutions for the identification of persons (residents, insured persons) and issuing identification documents, it is crucial that the data in the records are consolidated and of good quality. This means that there is no replication of data (i.e., the same person should not have multiple identification numbers); there should be no missing data; and the data in the various records should be consistent and identical. The process of data consolidation in the CPR and in the register of insured persons at HIIS was lengthy, but crucial for the success of future IT services.

### Workshops with Users

In the introduction of any new service, it is necessary to conduct workshops with potential users of these services (citizens, patients, insured persons, health care professionals) in order to get their opinions and input, and thus verify whether the planned solutions will actually meet user needs. Often it turns out that the needs of users are different from what the service planners had imagined. Often the employees in offices and institutions such as HIIS who provide services for users solve their own internal problems and not the problems of users/customers, as they do not even know what they are.

### User Training

When introducing new solutions, the training of health care professionals, and written instructions for individual users should be carried out. When there were no simple, short, and clear instructions for use provided, the number of calls to the Help Desk increased. New information solutions include changes in business processes, especially the greater involvement of practitioners working directly with personal computers. Therefore, at the national level, it is necessary to ensure the computer literacy of health care professionals. The same applies to services that are intended for patients and/or insured persons. Short and clear instructions for the use of services on the portal for insured persons, for example, should be published.

### Data Security

In developing solutions related to confidential personal data, it is necessary to take into account the strict legislation in the field of personal data protection in Slovenia, and in the European guidelines, which in time will become legislation. HIIS always presents planned solutions to the Information Commissioner and obtains her opinion before they are introduced; and then adapts and updates the solutions in a timely manner. This prevents incidents in connection with the misuse of personal data and has enabled HIIS to maintain a good reputation as an institution that takes care of the security of the data it is managing.

### Inter-Ministerial Cooperation

A good example of the successful cooperation of several ministries is the introduction of the e-Birth system. The registration of persons falls under the Ministry of the Interior; the

health care system falls under the Ministry of Health; and the computerization of administrative services falls under the Ministry of Public Administration.

### **Ease of Service**

E-services should be easy to use, as potential users encompass different kinds of people including the elderly and the young; those who are computer literate and those who are not; those who have computers and those who do not (for whom additional equipment, such as card readers, may be required). Only in this way can e-services be made available as widely as possible, and thus achieve their primary goal, which is the removal of administrative barriers in enforcing the rights of citizens and other insured persons; and simplifying and speeding up procedures for everyone, thus relieving officials of an undue administrative burden.

### **The new processes must be simpler than the previous ones.**

When rebuilding administrative processes, the rule is that the new processes need to be simpler, faster, and more well-optimized than the previous ones. If the new procedures fail to bring benefits for employees in the offices (for example, less manual work); for customers (for example, fewer required visits to offices); or for institutions (for example, electronic data capture), their implementation is meaningless.

### **The use of multiple means of identification (HIC, HIN, qualified digital certificate, EMŠO)**

Solutions should be designed to ensure that a person can be identified in several different ways. For example, when using health services, the person is identified with their HIC. If, however, the HIC fails to work, the health care professional can check the insurance by means of the EMŠO number, which is indicated on the identity card or any other personal document.

### **Regulated Legal Bases**

For any registration of persons, the legal basis must first be regulated. In Slovenia, the legal basis for the registration of births is regulated, as described in this document,. However, this is not the case for the registration of deaths; therefore, there is still no electronic way of registering deaths. In the case of death registration, there is a discrepancy between the practice and the legislation; the practice is not uniform; who may access the data has not been clearly defined, and there is a possibility that unauthorized persons may come into contact with the health information of the deceased person. The legislation governing this area needs to be modernized and harmonized.

### **Actions in the Case of System Failure**

Solutions must be designed in such a way that the work process is not disturbed in the case of a failure of the system or any technical component of the system. There should also be backup solutions so that system users do not suffer damage. For example, if the online system for checking insurance fails to work due to a mistake on the part of HIIS, and therefore the health care professional cannot verify the arrangement of the patient's

health insurance prior to the provision of service, HIIS will guarantee payment of this service even if it later turns out that the person did not have health insurance.

### **Coverage of All Scenarios**

When preparing electronic solutions or services, all possible scenarios should be considered, although it is not necessary for all scenarios to be integrated into the electronic solution. For example, all newborns born in maternity hospitals and those born elsewhere (for example, at home or on the way to a maternity hospital) who are brought to the maternity hospital immediately after birth, are registered using the e-Birth application. For others—for example for those born abroad—it is envisaged that parents will visit the in-country administrative unit and register the newborn.

### **The inclusion of all stakeholders when developing new solutions.**

All stakeholders affected by the solutions should be involved in the initial decisions regarding the preparation of new solutions. For example, between 1996 and 2000, during the introduction of the HIC system, the interinstitutional project council, which was composed of representatives of HIIS, the NIJZ, the Medical Chamber, the Pharmacy Chamber, the Association of Health Institutes, the Ministry of Health, and the Health Council, supervised and made decisions together in connection with the project.

### **Strategic Planning**

Strategic solutions must be strategically planned, which means that, among other things, they must be in line with national policies and resolutions, such as the Resolution on a National Health Care Plan 2016-2025, and coordinated with other development activities. For example, in the preparation of eHealth solutions, they relied on the planned solutions of the HIC system.

## REFERENCES

- Bolka, A. and A. Žlender. 2008. "The Role of a New Professional Card in the Health Care System." *Proceedings of the Days of Slovene Informatics 2008 Conference*. Vol: Issue. 7. Ljubljana: Slovenian Association Informatika.
- Bolka, A., M. Velušček, and T. Marčun. 2015. "Closer to Insured Persons with a Portal." *Proceedings of the Ninth Informatics in Public Administration Conference*. Vol : Issue. 7. Ljubljana: Slovenian Association Informatika.
- Central Population Register. 2015. "Number of Exchanged Data has Reached 1 Billion." Retrieved August 7, 2019 from [http://www.mnz.gov.si/fileadmin/mnz.gov.si/pageuploads/SOJ/word/2016/CRP\\_e-publikacija.pdf](http://www.mnz.gov.si/fileadmin/mnz.gov.si/pageuploads/SOJ/word/2016/CRP_e-publikacija.pdf)
- Central Population Register Act. 2006 Official Gazette of the Republic of Slovenia, No. 72/06 – official consolidated text
- Civil Register Act. Official Gazette of the Republic of Slovenia, No. 11/11 – official consolidated text
- Civil Status Register, Retrieved August 7, 2019 from [http://www.mnz.gov.si/si/mnz\\_za\\_vas/maticni\\_register/](http://www.mnz.gov.si/si/mnz_za_vas/maticni_register/)
- Criminal Code. 2012 Official Gazette of the Republic of Slovenia, No. 50/12 – official consolidated text, 6/16 – popr., 54/15, 38/16 in 27/17
- Decision on Determining the Percentage of the Payment of Health Services Provided in the Compulsory Health Insurance. 2013 Official Gazette of the Republic of Slovenia, No. 1/13
- E- The Central Population Register Portal, Retrieved August 7, 2019 from <http://ecrp.gov.si/katalogPodatkovCRP.html>
- E-Health Project, Retrieved August 7, 2019 from [http://www.mz.gov.si/si/pogoste\\_vsebine\\_za\\_javnost/projekt\\_e\\_zdravje/](http://www.mz.gov.si/si/pogoste_vsebine_za_javnost/projekt_e_zdravje/)
- Electronic Business and Electronic Signature Act. 2006 Official Gazette of the Republic of Slovenia, No. 98/04 – official consolidated text, 61/06 – ZEPT and 46/14
- EMŠO, Retrieved August 7, 2019 from [http://www.mnz.gov.si/si/mnz\\_za\\_vas/osebni\\_in\\_tajni\\_podatki/emso/](http://www.mnz.gov.si/si/mnz_za_vas/osebni_in_tajni_podatki/emso/)
- Gaspari, I. and D. Božič. 2008. "Electronic Registration of Birth and Citizen Identification Numbers for Newborns in Hospitals." *Organization and Informatics in Health Care*, 24:2. 71-74. Ljubljana: Bilten Economics.
- Genis, D.O.O. 2007. Instructions for Using the e-Births Application (Internal material). Ljubljana: Genis, d.o.o.

\_\_\_\_\_. e-Births brochure, Retrieved August 7, 2019 from <https://www.genis.si/genisweb/ViewImage?unid=Kljuc45F61532A47C534BC1257EED00324EC8&item=RTDatoteka>

Getting a Tax Number for a Newborn, Retrieved August 7, 2019 from <https://e-uprava.gov.si/podrocja/davki/davcna-stevilka/pridobitev-davcne-stevilke-za-novorojencka.html>

Grom, K. and V. Mozetič. 2008. "HIIS 'Expenditures' Project." *Proceedings of the Congress of the Slovenian Society for Medical Informatics*. Volume and issue number?: 62-71. Zreče: Slovenian Society for Medical Informatics.

Grom, Kenk K. 2014. "Analytical System: A Strategic Tool for the Effective Implementation of Compulsory Health Insurance." *Proceedings of the Congress of the Slovenian Society for Medical Informatics*, Vol : Issue. 57-61. Zreče: Slovenian Society for Medical Informatics.

Health Care Databases Act. Official Gazette of the Republic of Slovenia, No. 65/00, 47/15 and 31/18

Health Insurance Institute of Slovenia. 2018. Business Report 2017. Retrieved August 8, 2019  
from [http://www.zzzs.si/ZZZS/info/egradiva.nsf/0/0ef1d12ac176b7a1c125825700349f7b/\\$FILE/Poslovno%20poro%C4%8Dilo%20ZZZS\\_12.4.2018.pdf](http://www.zzzs.si/ZZZS/info/egradiva.nsf/0/0ef1d12ac176b7a1c125825700349f7b/$FILE/Poslovno%20poro%C4%8Dilo%20ZZZS_12.4.2018.pdf)

Kramberger, B., J. Mrak, and A. Plesničar. 2015. "Fraud Resilience in Health Care in Europe: Slovenia." EHFCN Conference: Ensuring Financially Sustainable Healthcare in Europe: Countering Fraud, Waste & Corruption. November 5-6, 2015, The Hague.

Marčun, T. 2003. "From Integrated Databases to Online Services." *Proceedings of the INDO 2003 Conference*. Vol: Issue. 43-49. Ljubljana: Government of the Republic of Slovenia, Center for Informatics.

Marčun, T., I. Dovžan, and M. Zorko. 2008. "Online Health Insurance System." *Proceedings of the Days of Slovene Informatics 2008 Conference* Vol: Issue. 5. Ljubljana: Slovenian Association Informatika.

National Institute of Public Health. 2006. e-Medical Report on Death; and Report on the Establishment of the e-Birth System. (Internal material). Ljubljana: National Institute of Public Health.

National Institute of Public Health. 2007. Final Report on the E-EMŠO project.

\_\_\_\_\_. 2017. E-Referral: Instructions for Patients. Retrieved August 8, 2019 from [http://www.ezdrav.si/wp-content/uploads/sites/10/downloads/2017/03/eNarocanje-navodila-za-paciente\\_si-2017-03-31-final.pdf](http://www.ezdrav.si/wp-content/uploads/sites/10/downloads/2017/03/eNarocanje-navodila-za-paciente_si-2017-03-31-final.pdf)

\_\_\_\_\_. 2018. Annual Report on the Implementation of the SVIT Program. Retrieved August 8, 2019 from <http://www.program-svit.si/binary/show/5565>

OECD. 2017. *Health at a Glance 2017: OECD Indicators*. Paris: OECD. Retrieved August 8, 2019 from [https://doi.org/10.1787/health\\_glance-2017-en](https://doi.org/10.1787/health_glance-2017-en).

Personal Data in CPR. Retrieved August 7, 2019 from [http://www.mnz.gov.si/si/mnz\\_za\\_vas/osebni\\_in\\_tajni\\_podatki/osebni\\_podatki\\_iz\\_crp/](http://www.mnz.gov.si/si/mnz_za_vas/osebni_in_tajni_podatki/osebni_podatki_iz_crp/)

Personal Data Protection Act (ZVOP-1). 2007 Official Gazette of the Republic of Slovenia, No. 94/07 – Official Consolidated Text

Praća, R. and T. Poljšak. 2008. "E-VEM: Electronic Registration in Compulsory Health Insurance." *Proceedings of the Days of Slovene Informatics 2008 Conference*. Vol: Issue. 9. Ljubljana: Slovenian Association Informatika.

Praća, R., I. Žagar, I. Dovžan, and T. Marčun. 2015. "Electronic Registration for Compulsory Social Insurances: Preparation at HIIS." *Proceedings of the Ninth Informatics in Public Administration Conference*. Vol: Issue. 7. Ljubljana: Slovenian Association Informatika.

Resolution on the national healthcare plan 2016-2025 "Together for the Health Society". Official Gazette of the Republic of Slovenia, No. 25/16

Rules for Implementation of the Civil Register Act. Official Gazette of the Republic of Slovenia, No. 40/05, 69/09 and 77/16

Rules on health insurance cards, professional cards and authorisation to read and write data in back-office systems. Official Gazette of the Republic of Slovenia, No. 12/17

Sušelj, M., A. Bolka, and T. Marčun. 2008. "Renovation of the Health Insurance Card System." *Proceedings of the Days of Slovene Informatics 2008 Conference* Vol: Issue. 10. Ljubljana: Slovenian Association Informatika.

Svoljšak, J. and I. Dovžan. 1999. "Compulsory Health Insurance Databases." *Proceedings of Medical Informatiocs Europe 99 Conference*. Vol : Issue. 89-94. Amsterdam: IOS Press.

Tax Procedure Act. Official Gazette of the Republic of Slovenia, No. 13/11 – official consolidated text, 32/12, 94/12, 101/13 – ZDavNepr, 111/13, 25/14 – ZFU, 40/14 – ZIN-B, 90/14, 91/15, 63/16, 69/17 in 13/18 – ZJF-H

The Health Care and Health Insurance Act. Official Gazette of the Republic of Slovenia, No. 72/06. Official Consolidated Text, 114/06 – ZUTPG, 91/07, 76/08, 62/10 – ZUPJS, 87/11, 40/12 – ZUJF, 21/13 – ZUTD-A, 91/13, 99/13 – ZUPJS-C, 99/13 – ZSVarPre-C, 111/13 – ZMEPIZ-1, 95/14 – ZUJF-C, 47/15 – ZZSDT, 61/17 – ZUPŠ in 64/17 – ZZDej-K

Zorko, Kodelja M. 2014. "The SUSTAINS Project: Portal Solutions for Patients." *Proceedings of the Congress of the Slovenian Society for Medical Informatics*. Vol : Issue. 67-71. Zreče: Slovenian Society for Medical Informatics.

ZZDej. Official Gazette of the Republic of Slovenia, No. 23/05 – Official Consolidated Text,  
15/08 – ZPacP, 23/08, 58/08 – ZZdrS-E, 77/08 – ZDZdr, 40/12 –  
ZUJF, 14/13, 88/16 – ZdZPZD in 64/17)



A health protection system based on social health insurance has had a long tradition in Slovenia. Several forms of health insurance schemes were implemented from 1896 until 1992, when health care reform legislation was passed, establishing compulsory health insurance (CHI). CHI is provided by a single provider—the Health Insurance Institute of Slovenia (HIIS), which is a public legal entity. Everyone with permanent residency in Slovenia is covered under the unique CHI scheme, either as a mandatory member or as a family dependent. The system is funded through CHI contributions of employees and employers (for the active population), and other required contributions (by the self-employed, farmers, pensioners, etc.). The entire population is insured.

Since the establishment of HIIS in 1992, the implementation of information and communications technologies (ICTs) to support key CHI processes has been a matter of strategic importance.

HIIS has developed an information center to support CHI's key business processes. Infrastructure, applications, data, and security systems in the central public administration are being increasingly integrated to provide citizens with comprehensive services, and to facilitate their access to them.

E-government is the area in which the expectations, needs, and habits of citizens are linked to the business processes of the public sector, as well as to e-business technological solutions. Because e-government projects in Slovenia have been introducing e-business into public administration over the past decade, the exchange of data between institutions has been improved and technologically updated.

This document describes the solutions that have linked the systems for registration of newborns in the maternity hospital and for identifying all residents of Slovenia in various areas; and, above all, the improvements enabled by the unique identification of persons in the field of health insurance and health care.

## **ABOUT THIS SERIES:**

This series is produced by the Health, Nutrition, and Population Global Practice of the World Bank. The papers in this series aim to provide a vehicle for publishing preliminary results on HNP topics to encourage discussion and debate. The findings, interpretations, and conclusions expressed in this paper are entirely those of the author(s) and should not be attributed in any manner to the World Bank, to its affiliated organizations or to members of its Board of Executive Directors or the countries they represent. Citation and the use of material presented in this series should take into account this provisional character. For free copies of papers in this series please contact the individual author/s whose name appears on the paper. Enquiries about the series and submissions should be made directly to the Editor Martin Lutalo ([mlutalo@worldbank.org](mailto:mlutalo@worldbank.org)) or HNP Advisory Service ([askhnp@worldbank.org](mailto:askhnp@worldbank.org), tel 202 473-2256).

For more information, see also [www.worldbank.org/hnppublications](http://www.worldbank.org/hnppublications).

1818 H Street, NW  
Washington, DC USA 20433



Telephone: 202 473 1000  
Facsimile: 202 477 6391  
Internet: [www.worldbank.org](http://www.worldbank.org)  
E-mail: [feedback@worldbank.org](mailto:feedback@worldbank.org)