



## THE PROJECT KIK/35

# “PREVENTION OF HEPATITIS C VIRUS (HCV) INFECTIONS” AS AN EXAMPLE OF INTEGRATED PUBLIC HEALTH INTERVENTIONS TO REDUCE BLOOD-BORNE INFECTIONS IN POLAND

Collective work edited by:

Prof. Mirosław J. Wysocki, MD-PhD

Prof. Andrzej Zieliński, MD-PhD

Rafał Gierczyński, PhD

National Institute of Public Health

– National Institute of Hygiene

Warsaw 2017

NATIONAL INSTITUTE OF PUBLIC HEALTH  
– NATIONAL INSTITUTE OF HYGIENE

The Project KIK/35 “Prevention of Hepatitis C Virus  
(HCV) Infections” as an Example of Integrated  
Public Health Interventions to Reduce  
Blood-borne Infections in Poland

© Copyright by Narodowy Instytut Zdrowia Publicznego  
– Państwowy Zakład Higieny, 2017

ISBN 978-83-89379-64-1

Publication financed from the funds of The Project KIK/35  
“Prevention of Hepatitis C Virus (HCV) Infections”,  
co-financed by Switzerland  
under Swiss program of cooperation  
with new EU countries  
and by the Minister of Health

**Cover design:**  
Rafał Patoła and Eura7 Sp. z o. o.

**Graphical design and composition:**  
Anna Maciejewska and Maciej Ostojka-Lniski

**Publisher:**  
National Institute of Public Health  
– National Institute of Hygiene  
ul. Chocimska 24, 00-791 Warszawa  
Telephone: 22 54 21 202  
[www.pzh.gov.pl](http://www.pzh.gov.pl)

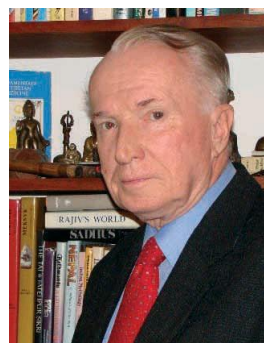
**Print and binding:**  
TOTEM.COM.PL  
ul. Jacewska 89, 88-100 Inowrocław

## TABLE OF CONTENTS

<b>1. Foreword</b>	<b>6</b>
Prof. MIROSLAW J. WYSOCKI, Director of NIZP-PZH	
<b>2. Commentary of the representatives of key institutions</b>	
JAROSLAW PINKAS, MD-PhD, Secretary of State in the Ministry of Health	10
ANDREJ MOTYL, Ambassador of Switzerland to Poland	12
MAREK POSOBKIEWICZ, Chief Sanitary Inspector	14
<b>3. HCV as an Epidemiological Issue and a Public Health Hazard in Poland and Around the World</b>	<b>18</b>
<b>4. Genesis, Assumptions, and Goals of Project KIK/35 "Prevention of hepatitis C virus (HCV) Infection" and Its Organisational Structure</b>	<b>27</b>
4.1 Main goal and assumptions of Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections”	29
4.2 Organisational structure of Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections”	30
4.3 Implementing entities appointed by the Executing Agency and Partners to Project KIK/35	32
4.4 Steering Committee of Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections”	34
4.5 Team of Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections”	36
4.6 Main objective and intermediate goals of individual content-related Projects within Project KIK/35	38
<b>5. Needs and Suggested Methods of Extending the HCV Diagnostics in General Population</b>	<b>42</b>
5.1 Incidence of diagnosed and undiagnosed HCV infections in Poland	44
5.2 Individual risk factors in general population in Poland	46
5.3 Readiness of primary care physicians for taking measures targeted at early detection of HCV infections	49
5.4 Programme implementation at the primary health care level – own experience, good practices, and barriers	51
5.5 Summary	53
<b>6. HCV Prevention Among Drug Users</b>	<b>59</b>
6.1 Prevalence and risk factors of HCV infections	60
6.2 Educational programme	63
6.3 Suggested solutions to be implemented	65
6.4 Summary	67
<b>7. HCV Testing of Pregnant Women as a Crucial Component of Mother and Child Care</b>	<b>71</b>

7.1	Estimation of the HCV prevalence and indication of infection risk factors based on studies conducted among pregnant women	72
7.2	Assessment of the purposefulness and feasibility of routine HCV tests in the group of pregnant women	78
7.3	Increasing the knowledge of obstetrics-gynecology specialists, family doctors, nurses and midwives on preventing vertical transmission of HCV and handling a child of an infected mother	80
7.4	Summary	81
<b>8.</b>	<b>Qualitative Evaluation of the Risk of HCV Infection Associated with Medical Procedures</b>	<b>86</b>
8.1	Project goal and research methods	87
8.2	Study results and their discussion	88
8.2.1	Inpatient health care	88
8.2.2	Outpatient health care	91
8.2.3	Dental clinics and practices	94
8.3	Assessment of knowledge of medical university students on HCV infection and procedures aimed at reducing the risk of transmission	96
8.2	Summary	99
<b>9.</b>	<b>Education of Medical and Non-Medical Professionals as a Key Element of Blood-Borne Infection Prevention</b>	<b>101</b>
9.1	Main assumptions of Project 5	102
9.2	Planning activities	103
9.3	Educational and information materials	108
9.4	Training for providers of services associated with a higher risk of blood-borne infection transmission	114
9.4.1	Traditional training courses	114
9.4.2	E-learning courses	115
9.5	Additional task – research projects supporting educational activities	116
9.5.1	Study regarding maps of blood-borne infection risk distribution in the sector of non-medical services	116
9.5.2	Pilot study regarding the assessment of knowledge and frequency of occupational exposure among laboratory diagnosticians	117
9.5.3	Opinion of expert epidemiologists and public health practitioners and experts within blood-borne infections	118
9.6	Summary	118
<b>10.</b>	<b>Social Campaign “HCV I Am Aware of” – Translation of Knowledge and Its Integrated Message to Target Groups</b>	<b>122</b>
10.1.	Information on the issue of HCV in Poland and their sample translations into a message that is comprehensive for the society	123
10.2.	Educational activities as a professional background for the social campaign	124
10.3.	HCV – awareness among the Polish society, studies of target audience	125
10.4.	Determining the goals of the social campaign	126
10.5.	Planning and formulating a creative strategy and elements of the social campaign	128
10.6.	Social Campaign “HCV I Am Aware of” in the media	129
10.6.1.	Social Campaign “HCV I Am Aware of” in the Internet	134
10.6.2.	Youtubers as ambassadors of the social campaign “HCV I’m aware of”	137
10.6.3	“HCV Campaign Face”	138
10.6.4	Map of Aware Places	139

10.7.	Summer with the “HCV I am aware of” social campaign – direct contact with the recipients	140
10.8.	Summary	144
<b>11.</b>	<b>System and Economic Aspects of hepatitis C in Poland against Europe</b>	<b>149</b>
11.1	Key reports and ratings comparing the organisation of diagnosis and health care provided to patients with viral hepatitis in European countries, including the situation in Poland	149
11.2	Health policy regarding viral hepatitis and hepatitis C	153
11.2.1	Health policy concerning viral hepatitis and hepatitis C from the perspective of WHO, the European Union and patient organisations	153
11.2.2	Health policy regarding viral hepatitis and hepatitis C in Poland	158
11.2.2.1	Recommendations for health policy within hepatitis C in Poland	159
11.3	Economic Aspects of hepatitis C in Poland against European Countries	161
11.3.1	Direct costs incurred by the National Health Fund (NFZ)	162
11.3.2	Indirect transfer costs incurred by the Social Insurance Company (ZUS)	162
11.3.3	Indirect costs associated with productivity loss	163
11.4.	Summary	164
<b>12.</b>	<b>Project KIK/35 Conclusions and Recommended Actions</b>	<b>167</b>
12.1	HCV diagnosis and treatment	169
12.2	Prevention of HCV infections in medical facilities and non-medical facilities performing procedures involving disruption of skin or mucosa continuity	170
12.3	Needs within education and professional training, and raising social awareness of blood-borne diseases	172
12.4	Prevention of HCV infections among injecting-drug users under harm reduction strategy	173
12.5	Summary	174
	<b>Terms and Abbreviations</b>	<b>177</b>
	<b>Authors</b>	<b>179</b>



## FOREWORD

Viral hepatitis is currently one of the key challenges for public health. In 2016 World Health Organisation presented a strategy the main purpose of which was to eliminate viral hepatitis by 2030. It is to be achieved by reducing transmission of viruses, as well as morbidity and mortality caused by viral hepatitis and its complications by providing equal access to comprehensive prevention, recommended diagnosis, care, and treatment for all the citizens. WHO recommends that the governments of European countries adjust their national viral hepatitis strategies to this strategy and the recommended action plans and empower national public health systems in terms of prevention, monitoring, and elimination of infections.

Initiated in 2012, Project KIK/35 entitled „Prevention of Hepatitis C Virus (HCV) Infections” aimed at people’s education and raising social awareness of HCV and hepatitis C. Its purpose was also to support the planning of long-term strategy of preventing HCV infections and controlling Hepatitis C in Poland compliant with the assumptions of the National Health Programme for the years 2016-2020. Project KIK/35 consisted of five modules – content-based projects: 1-5.

The first project, entitled “Improvement of HCV diagnosis, estimates of HCV prevalence in general population and analysis of factors associated with HCV prevalence”, aimed at achieving objectives specified in its title by engaging family doctors in preventing blood-borne infections, performing diagnostic (estimation of the infected population in Poland) and prophylactic tests, as well as – in cooperation with a specialist – in the process of follow-up care of an HCV-infected patient.

The second project, entitled “Reducing the risk of HCV infection for the population of Injecting Drug Users (IDUs)” was implemented jointly with the Institute of Psychiatry and Neurology in Warsaw. The project aimed at estimating the proportion of infected people and determining HCV risk factors among drug users, as well as the assessment of the needs for HCV infection risk reducing activities and treatment possibilities in this group. There was

## 7 Project KIK/35 - "Prevention of hepatitis C virus (HCV) infections"

also an attempt to elaborate a special strategy for the prevention of HCV infections for this population.

As a part of the third project, entitled "Pilot programme of routine HCV testing among pregnant women", more than eight thousand pregnant women were tested for HCV. The tests allowed estimation of HCV prevalence in this group, as well as follow-up care of both HCV-infected mothers and their children. It is extremely important from the perspective of public health.

The fourth project, entitled "Qualitative evaluation of the risk of HCV infection associated with medical procedures in selected health care units", was performed primarily by the Medical University of Lublin. The main activity taken up by this project was field investigation which involved surveys supplemented with observation of sanitary procedures in hospitals, outpatient clinics, and private practices. Data obtained were used to develop educational materials for medical staff and suggestions of new areas to be taken into account by sanitary services in the control of blood-borne infections.

The fifth project, entitled "Raising awareness of prevention of blood-borne infections (HCV, HBV, HIV) among providers of services associated with blood-to-blood contact and the general public" was jointly implemented with the Chief Sanitary Inspectorate. It was an extensive educational project on epidemiology and prophylaxis of blood-borne infections addressed to around 1,500 health care professionals, as well as to around 5,000 non-medical professionals. During the project, training courses were conducted (also with the use of modern e-learning methods) based on current knowledge adapted to the needs of target groups.

There was also a social information campaign organised as part of the Project KIK/35. We conducted the campaign in radio and television, participating in outdoor events held as part of "Lato z Radiem" tour. We also participated in the Great Test on Health on the public television.

Websites providing clear information on hepatitis C and HCV, [www.jestemswiadom.org](http://www.jestemswiadom.org) and [hcv.pzh.gov.pl](http://hcv.pzh.gov.pl), were visited by a total of million people. For the training and educational activities comprising the social information campaign "HCV I am aware of", we won the first award of the Termedia publishing house in the category of "Leader of 2016 in Health Care – training and educational activities."

It should be noted that the comprehensive activities of the Minister of Health, the Chief Sanitary Inspector and NIZP-PZH in the recent years achieved a great success of raising social awareness of HCV. Not only is the problem of hepatitis C better recognised by the general public (as much as 72% know that there is hepatitis C), but – what is more important – there are increasing expectations of the society regarding safe performance of medical and cosmetic procedures, determination to avoid blood-borne infection risk factors, and reasonableness of performing diagnostic tests.

From the perspective of hepatitis C, we can see how health care systems have been evolving in particular countries, leading to higher coordination of national actions – from health education, raising social awareness, diagnosis, monitoring of epidemiological situation, access to effective treatment, and analysis of system and economic indexes. Not only can the WHO recommendations be very useful in the planning of national strategies within Viral Hepatitis, but they also can support exchange of information and experience between countries. The higher significance of patient organisations and health awareness of society are very satisfactory in terms of public health. When it comes to hepatitis C, it gives us hope that government's actions towards investing in the optimisation of eradicating this disease will meet with support and responsible participation of the society. It seems that system stakeholders in Poland have been creating strong foundations for the elaboration and implementation of national strategy on hepatitis C for several years. Furthermore, Polish patients have access to effective treatment, which is particularly important when it comes to a disease against which there are no vaccines. Published in December 2016, Health Needs Maps within infectious diseases (viral hepatitis) constitute a strong basis for planning national and provincial actions. In accordance with the Ministry of Health, the most important directions of actions to reduce the number of HCV-infected people in Poland are: higher availability of diagnosis, reaching people unaware of their infection, and better accessibility of treatment of detected infections.

It is crucial that the results and conclusions of Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections” be used in the development of national strategy for HCV infection prevention and hepatitis C eradication that is consistent with the latest WHO recommendations and clinical standards.

At this point, I would like to give special thanks to the two crucial institutions without which all the actions conducted under Project KIK/35 “Prevention of Hepatitis C Virus Infections” would still remain in the sphere of imagination and expectations. It is the realisation of the importance of our efforts and their financial support from the Polish Minister of Health and the Government of Switzerland through the Swiss Polish Cooperation Program that allowed us to implement all the actions described in this monograph for the sake of the health of Polish population.

*Prof. Mirosław J. Wysocki, MD PhD*

Director of the National Institute of Public Health  
– National Institute of Hygiene,  
National Consultant in the area of Public Health





**DEAR READERS,**



I would like to encourage you to read this study on the issue of HCV in Polish society. The report includes a set of initiatives aiming at better understanding of the phenomenon and preventing HCV, as well as their assessment.

Observing how the health situation of the Polish population has been changing, the unquestionable conclusion is that chronic non-infectious diseases are the biggest health problem. It does not mean however that efforts to fight infectious diseases cannot be recognised as one of the priorities of the health policy.

The issues of HCV have been included in the Regulation of the Council of Ministers of 4 August 2016 on the National Health Programme (NPZ) for the years 2016-2020 (Journal of Laws, item 1492). Particularly, within operational target 2 of NPZ, i.e. Prevention and solution of problems related to the use of psychoactive substances, behavioural addictions, and other risk behaviours; and within operational target 4, i.e. Reduction of health risk arising out of physical, chemical, and biological hazards in external environment, workplace, place of residence, recreation, and education.

Objectives of operational target 2 include:

- educational activities addressed to drug addiction prevention staff, including the development and dissemination of information and educational materials on the prophylaxis and treatment of drug dependent persons and hazards related to HIV, HCV, and HBV infections and sexually

11 Project KIK/35 - "Prevention of hepatitis C virus (HCV) infections"

transmitted diseases among the users of psychoactive substances (2.2, item 5);

- support of the programmes of health and social harm reduction among people harmfully using and addicted to drugs, psychotropic substances and new psychoactive substances (NPS), including educational activities, social support, needle and syringe replacement programme (prevention of blood-borne infections – HIV, HBV, HCV, etc.), and tests for blood-borne infections (HIV, HBV, and HCV) (2.4.1 item 1);
- cross-sectional studies at least once in three years with regard to the prevalence of HIV, HBV, and HCV infections among the users of drugs, psychotropic substances, and NPS as part of an EMCDDA key indicator (2.5 item 5).

Objectives of operational target 4, on the other hand, include:

- prevention of infectious diseases and infections in people, taking into account the higher risk arising out of military service of professional soldiers and officers, including in particular hepatitis B and hepatitis C, sexually transmitted infections and diseases (HIV, syphilis, gonorrhoea, chlamydia, HPV), invasive bacterial infections (e.g. sepsis, meningitis, and pneumonia with bacteraemia), tuberculosis, and chosen parasite hazards (2.1, item 5).

I highly recommend reading this study with deep conviction that it will become a source of invaluable reflections, allow learning modern solutions in public health, and provide potential inspirations in planning and implementing health-promoting activities.

Jarosław Pinkas, MD PhD

Secretary of State at the Ministry of Health



**DEAR READERS,**

I am honoured to share with you the achievements of one of the projects which have been funded within the framework of the Swiss-Polish Cooperation Program. During the past five years, the project "Prevention of hepatitis C virus (HCV) infections" has played an important role in detecting HCV infections and has significantly raised awareness in the Polish Society on how to prevent this insidious disease.

The problem of HCV infections is globally significant. In Central Asia or Vietnam, where I have worked on the subject with SDC and Swiss Pharma Companies, shocking 10-15 % of the Population are carriers of the virus. Since time immemorial mothers have been transmitting the disease to the children, man and women to their spouses and badly run hospitals by uncontrolled blood transfusions to their patients.

Also in Poland, hepatitis C is a major health issue as it concerns approximately 200'000 people that live here. The HCV infection often leads to dangerous diseases - including hepatitis C, liver cirrhosis or even liver cancer. However, the majority of the infected persons are not aware of the potential threats, as the symptoms of the disease often remain unnoticed for a long period of time. Hepatitis C can be cured, but its early detection is crucial. At the same time, infections can be avoided - being aware of the potential sources of infection and maintaining proper hygienic procedures.

Therefore, when launching the Swiss-Polish Cooperation Program in 2007, both countries recognized the relevance of the problem of HCV infections in Poland and demonstrated the determination to tackle it. Early on, we have

realized that the lack of accurate epidemiological data and the low awareness on the potential sources and risks of infections are key challenges to be overcome first. At the same time, we also identified opportunities on how to reduce the number of infections. Against this background, the project "Prevention of hepatitis C virus infections" was selected for funding as a part of the Swiss-Polish Cooperation Program.

Dear Readers, for those, who are unfamiliar with the Program here a few facts: The so called Swiss Enlargement Contribution's starting point was Switzerland's Solidarity with the states that joined the European Union in 2004 and later. The support program for Poland is by far the largest Switzerland has ever started globally, since it amounts to 489 million Swiss Francs, which, as of today, corresponds to over 1.9 billion Polish Złoty. Out of this amount, around four million Swiss Francs have been allocated to detecting and preventing HCV infections.

The results presented in this publication prove that this money was spent in a very effective manner. Thanks to the project, the actual number of infected persons was correctly estimated; consequently the knowledge on risk factors and preventive procedures among doctors, nurses, midwives, but also cosmeticians, hairdressers and tattoo artists was improved; and as the following step best practices to decrease the infection rate were identified. A country-wide informational campaign addressed millions of people, which is particularly important, taking into account that 55% of Poles had never heard about the hepatitis C virus. The new knowledge and practices promoted by the project shall lead to an improved prevention of HCV infections. And I do hope and believe that the achievements presented in this publication will provide inspiration for further efforts in this respect.

I would like to express my gratitude to the National Institute of Public Health National Institute of Hygiene along with their partner institutions, the project team, the task leaders with their teams, and the local coordinators for their professionalism and true dedication, which have been essential elements for the successful implementation of the project.

I wish you interesting reading.

Andrej Motyl

Swiss Ambassador to Poland

**DEAR READERS,**



In 2016, during the meeting of the World Health Assembly, the Global Health Sector Strategy on Viral Hepatitis for 2016-2021 (GHSS) was approved.

Its target assumption is to eliminate Viral hepatitis as a public health hazard by 2030 by reducing the spread of Viral hepatitis and mortality caused by the disease.

Activities performed by the State Sanitary Inspection for many years within epidemiological supervision over the prevalence of infections and infectious diseases in people, current sanitary supervision, as well as health education play a crucial role in reducing the hazard arising out of hepatitis viruses in Poland. A substantial role in effective reduction of infections causing Viral hepatitis is that of proper regulatory framework allowing long-term preventive activities. Throughout the years, all the activities led to a definite improvement of epidemiological safety of health care services performed in medical entities.

However, considering the constantly and dynamically developing market of cosmetic services in Poland, which often involve disruption of tissue continuity and other risks of blood-borne infections, it is still necessary to conduct extensive and coordinated preventive actions.

The „Prevention of Hepatitis C Virus (HCV) Infections” programme co-financed by Switzerland under the Swiss Polish Cooperation Programme and the Minister of Health undoubtedly brings Poland closer to the goal specified in the global strategy of WHO. Preparing project assumptions, it was aptly recognised that the lack of vaccine against hepatitis C virus leads to the point that – besides early diagnosis of people from risk groups and supervision over

the compliance with procedures inhibiting the transmission of HCV infections – one of the most important preventive methods is educating the society. Educational and information activities for chosen population groups, whose operation or operations involve increased exposure of themselves or third parties to infection, are also significant. Effects achieved through the Project are impressive – which includes, for example, a range of dedicated training courses supplementing knowledge and skills within the relevant scope attended by several thousand people.

Studies carried out under Project KIK/35 constitute a considerable added value in the form of methodologically appropriate estimation of the number of people with HCV antibodies and people with active HCV infection, taking into account the assessment of hazards in risk groups of Polish population. Results of those studies may serve as a reliable reference standard for future assessment of the results of preventive actions and a basis for rational planning of screening tests. Investigation of the epidemiological situation of HCV infections among injecting drug users performed under the Programme and difficulties those people have in accessing treatment clearly indicate the necessity to extend and modernise Polish harm reduction programmes in this population group. Project results are also significant for the verification of blood-borne infection prevention procedures in medical, as well as non-medical entities where there is a higher risk of infection.

Regulations within national legislation is a crucial aspect that allows Poland, as a WHO member country, to achieve the global objective. One of the key documents authorising the national, comprehensive concept of preventing the spread of blood-borne infections that takes into account the knowledge on the factual spread of infections as a final effect of the many years of work on the "Prevention of hepatitis C virus infections" project, is the National Health Programme for 2016-2020 specified by the Regulation of the Council of Ministers of 4 August 2016, covering such issues as those related to control and prevention of HCV infections. Reverticalisation of the structures of the State Sanitary Inspection, i.e. appointing the bodies of the State Sanitary Inspection as the bodies of non-combined administration and their full subordination to the Minister of Health and the Chief Sanitary Inspector, expected by numerous environments, will be crucial for implementing long-term preventive and educational programmes and empowering epidemiological supervision. Thus, the Minister of Health and the Chief Sanitary Inspector will have all the instruments necessary for coordinated management within public health at their disposal.

Among the most important remaining aspects necessary to be regulated is development of detailed sanitary and hygienic requirements for the facilities providing hairdressing, cosmetic, tattooing, as well as spa and wellness services, especially within cleaning procedures and appropriate processes of disinfection and sterilisation of reusable equipment operated during the performance of services. It is also important to provide the possibility to

enforce the safety standards of procedures from owners of beauty salons. Legal provisions regulating the above issues are currently at an advanced stage of proceedings. When it comes to the health care personnel, requirements regarding epidemiological safety have already been authorised by law, among others in the provisions of the Act of 5 December 2008 on Preventing and Controlling Human Infections and Infectious Diseases.

I hope that the health-oriented activities taken up through close collaboration of the State Sanitary Inspection and the National Institute of Public Health – National Institute of Hygiene will contribute to effective implementation of public health objectives specified in the Act of 11 September 2015 on Public Health.

I wish determination in the actions for the sake of health.

Marek Posobkiewicz

Chief Sanitary Inspector





# HCV AS AN EPIDEMIOLOGICAL ISSUE AND A PUBLIC HEALTH HAZARD IN POLAND AND AROUND THE WORLD

Prof. Andrzej Zieliński, MD-PhD; Prof. Mirosław J. Wysocki,  
MD-PhD, National Institute of Public Health – National Institute of  
Hygiene

It is as early as in the '70s that it was suspected that there is a virus of unidentified type which could be an etiological factor of hepatitis occurring after blood transfusion, where results of tests for viral hepatitis B and A remained negative.

Hepatitis C virus was identified in 1989 by Choo et. al., who created DNA complementary to the RNA of the virus [1, 2]. EIA screening tests for detecting HCV antibodies were introduced in 1990.

The virus belongs to the Flaviviridae family, within which it represents a separate genus – Hepacivirus. It is a single-stranded virus with the same sequence as in m-RNA and the ability of fast replication with particularly high amount of errors. As a consequence, there is a high variety of sequences of nucleotides in the strands of virus units in a system of an infected person and large genetic diversity of viruses between persons infected at the same source. Because of such a diversity, hepatitis C viruses do not make up a single species, but rather a quasispecies [3].

Hepatitis C virus occurs on every continent. When their nucleotide sequence was determined, hepatitis C viruses were classified to six numbered, main genotypes with the identity of nucleotide sequences reaching 70% of complete genome sequences. Each genotype may be divided into subtypes (designated with letters) with an identity between 70 and 80%. Complete genome sequences were obtained for all the six types of HCV and several dozen subtypes. Prevalence of particular HCV genotypes is diversified across the globe. However, genotype 1 is most frequent. In South Asia (India), genotype 3 is most prevalent. In the western parts of the Sub-Saharan Africa, genotype 4 occurs most frequently; it also constitutes a high proportion in Egypt. In the Central Europe, where Poland belongs, genotype 1 is dominating

(80.2%), while genotype 3 and 4 is detected much more rarely, 9.4% and 1.3% of test cases respectively. Genotype 2 has been detected only once, while genotype 5 has never been observed in Poland [4]. An earlier study performed on materials from Polish laboratories demonstrates, in a cumulative report, a lower proportion of people infected with genotype 1, while higher with genotype 3 and 4. [5].

Genetic diversity of HCV types and subtypes may be one of the reasons for the diversity of immune reactions to an infection with this virus and effectiveness of antiviral drugs. It is also the reason for difficulties in producing a vaccine against HCV. As it turned out, however, the probability of acute infection developing into a chronic form of disease manifesting itself by fixed presence of HCV RNA in serum does not differ in a statistically significant way depending on the genotype with which the patient has been infected [6]. HCV infection may have very serious consequences, some of which may lead to death. According to CDC [7]: "Of every 100 persons infected with

HCV, approximately:

- 75-85 will go on to develop chronic infection
- 60-70 will go on to develop chronic liver disease
- 5-20 will go on to develop cirrhosis over a period of 20-30 years
- 1-5 will die from the consequences of chronic infection (liver cancer or cirrhosis)."

Although the source of the above data is very reliable, we should be aware of local differences in the epidemiology of the above hazards. The differences may depend on the presence of other viral infections, especially HBV and HIV, frequency of alcohol abuse, and the presence of environmental contamination, among which aflatoxins play a particularly crucial role.

Differences in HCV infection incidence rate and frequency of its effects on health on different continents, in different countries, and among different groups of people should be subject to permanent epidemiological studies. Detection and determination on a local scale of the spread and the impact of HCV infection risk factors, as well as factors influencing the possibility of infections developing into a chronic state and probability of developing serious disease consequences constitute a basis for planning an integrated system of HCV infection prevention, as well as for organising and financing its treatment.

HCV-induced diseases only occur in people and chimpanzees. Infections in chimpanzees are milder and more rarely lead to serious consequences. HCV infections are transmitted when body fluids of an infected person penetrate into the host body through disruption of tissue continuity. In simplified terminology, it is called a blood-borne infection. As opposed to hepatitis B virus, sexual intercourse plays a relatively small role in hepatitis C virus

transmission. Transmission occurs very rarely through vaginal intercourse, while through anal intercourse, HCV infections happen several times more frequently. Infections occurring during sexual intercourse may be connected with activities accompanying the intercourse and leading to a disruption of tissues or the infection may be transmitted by other route than the sexual intercourse itself [8].

Before introducing routine tests of blood donors for HCV antibodies, administration of blood products and blood transfusions had constituted the most frequent or one of the most frequent routes of HCV transmission. Routine tests of blood donors for HCV began in USA in 1992. In Poland, such tests of blood donors were introduced by the end of 1992. Since 1999, the scope of molecular tests for HCV-RNA was extended – at first in serum intended for fractionation, while since 2002 – in all blood donors [9]. Extensive explanation of activities aimed at ensuring protection against blood-borne diseases in blood donation and their legislative foundations were specified in a monograph entitled “Infection agents significant for transfusion medicine” edited by Brojer and Grabarczyk [10]. In countries where such tests are performed routinely, the hazard of HCV infection when administering blood products is extremely unusual.

According to CDC [11], the following persons are at a higher risk of HCV infection:

- Current or past injecting-drug users (IDU);
- Persons who were treated with clotting factor concentrates produced before 1987, which is when more advanced methods of making these products were developed;
- Recipients of blood transfusions or parenchymal organs before tests of blood and organ donors were introduced;
- Chronic haemodialysis patients;
- Employees of health care units who are exposed to professional hazard, e.g. needlestick injury during injection or blood collection;
- HIV-positive persons;
- Children born by HCV-positive mothers.

Studies on the HCV infection risk are focused both on the sole way the virus penetrates into the blood system or body fluids and situations in which it takes place, and population groups who are more exposed to risky situations [12]. While basic transmission mechanisms of blood-borne viruses are universal, the probability of the occurrence of various types of contacts in which these mechanisms are initiated is specifically dependent on technical and organisational circumstances arising out of the way the health care functions, as well as on the frequency of other transmission mechanisms of this virus, such as injecting drug use.

Although the methods of sterilisation of surgical equipment and the quality

of protective measures against blood-borne infections in health care units determine the level of HCV infection risk irrespective of the patient's will, there are still many situations posing a risk of infections that depend on the individuality of particular social groups and awareness of individual people.

Viral hepatitis infections are spread all over the world. There are large differences between countries or even continents in the proportion of infected persons. It arises out of local differences when it comes to circumstances in which the infections are most frequent and, as a result, out of different infection risk groups for different countries. In each case, however, despite their diversity, dominating causes of infections are related to accidental or negligent human activity.

As estimated by WHO, the number of people with chronic HCV infection – determined by the presence of the virus RNA in serum – is around 150 million on the global scale, while yearly number of deaths caused by HCV is estimated at seven thousand [12]. Depending on financial and technical capacities and diligence in following the principles of prophylaxis, the proportion of persons with HCV antibodies in serum fluctuate from fractions of a percent to more than 14% in Egypt and some regions of Italy. In Poland, a range of previous studies showed excessive results, because those studies did not take into account the specificity error of tests and the tests were not repeated in persons with initially positive result. In many previous studies, there were sample selection bias errors. The first study that allowed correcting the above methodological errors estimated the seroprevalence of HCV antibodies in the population of Poland at around 1% [13].

In Poland, the epidemiological supervision over HCV infections was preceded by the supervision over viral hepatitides conducted already in the '70s. The diseases were then called infectious jaundice. From 1979, the registration included hepatitis B and viral hepatitides in general, which allowed separate supervision over HBsAg(+) persons and persons with hepatitis other than B. From 1997, new cases of hepatitis A, B, C, and other – specified as viral hepatitis with undefined aetiology – were recorded. In 2005, the supervision over hepatitis A, B, and C was further specified by using case definition.

Due to a high proportion of asymptomatic infections or infections with mild symptoms, where newly infected persons do not go to the doctor, registration of newly detected cases is – to a large extent – connected with cases which are identified incidentally when serological tests are performed for other reasons than confirmation of acute infection or are performed for persons diagnosed due to symptoms related to chronic infection. Such conducted routine supervision does not provide sufficient grounds for the evaluation of morbidity, which would allow us to specify the current threats to the population posed by HCV infections. Therefore, it was necessary to perform serological tests detecting HCV antibodies, which indicate persons that have undergone acute infection and eliminated it or have chronic infection

documented by tests for HCV-RNA in serum.

Studies on the spread of HCV infections in adult population in Poland conducted under Project 1 of the Project: “KIK/35. Prevention of hepatitis C virus (HCV) infections” focused especially on the methodological correctness by: representative sample selection, its standardisation in age groups, and correction of the test specificity error.

Based on the current data of epidemiological supervision and epidemiological tests in Poland in the recent decades, the highest number of HCV infections was related to medical procedures performed under the health care system. As disposable equipment became widespread and hot-air “sterilisers” were eliminated from hospitals and replaced with autoclaves, the situation has considerably improved in the last decade. However, there are still cases of non-compliance with aseptic techniques, especially in smaller, outpatient treatment rooms, such as dentist operatories. HCV infections or even foci of HCV infections arising out of non-compliance with procedures happen in hospitals as well. In several cases, such events were successfully associated with the fact that procedures were allowed to be performed by persons without sufficient training.

Still, among patients who are subject to regular procedures involving disruption of tissue continuity, a particularly large proportion of HCV-positive persons is detected among those undergoing dialysis, although we have observed a significant drop in new infections in the recent years.

A large group of people who we can expect to be HCV-positive due to the lack of carefully followed procedures of infection prevention are customers of beauty salons, hair salons, and tattoo studios. Therefore, permanent and thorough control by the State Sanitary Inspection over those service providers is necessary. It is also crucial that such non-medical service units as tattoo and piercing studios, where procedures involve disruption of skin tissue continuity, follow the same blood-borne infection prevention procedures as apply in medical units.

Exposure to blood-borne infections constitute an occupational risk for medical staff, as well as emergency services, paramedical, police, and fire brigade personnel, as well as contact sport players. Those groups of people must have and follow procedures of preventing such threats and code of conduct in case a person comes in contact with blood.

Persons taking injection drugs are especially exposed to the risk of blood-borne infections. According to various reports, the proportion of HCV-positive persons is the highest in this group and may even reach several dozen percent. Therefore, HCV infection monitoring for drug dependent people is crucial. It is a basis for a harm reduction policy that involves introduction of educational systems and other prophylactic activities addressed to drug dependent persons, as well as technical solutions allowing and facilitating blood-borne infection prevention for drug dependent persons for whom all the

attempts to help overcome the addiction turned out to be futile. Such activities, conducted in various countries, prove that a proper harm reduction policy allows extending the group of persons admitted for HCV infection treatment programmes to drug dependent persons in whom rehab or substitution treatment failed, but who remain under medical care and take drug preparations subject to pharmaceutical control in special outpatient clinics in the conditions of full hygienic control.

A basic criterion for determining public health priorities and providing special care to persons suffering from a particular disease is the burden of such a disease on the society. The basic burden is measured by the number of life years lost or years lived with disability related to the disease or its chronic state. Those indicators, however, do not embrace the entire burden of disease, as it entails material costs as well: direct costs arising out of treatment and care expenses and indirect costs related to loss of productivity of a healthy citizen for the society.

Most of the direct costs of incidence of certain diseases may be calculated approximately. Those are expenses of insurance companies, costs of hospitalisation, expenses for drugs, purchase, and operation of diagnostic equipment, medical personnel remuneration, and expenses for social care. It is more difficult to estimate disease-related costs of reduced professional activity period, absence from work, and lower productivity at work of persons who are chronically ill, but still go to work. It also concerns, to some extent, the closest ones of a person who is ill. The main difficulty for such calculations is the estimation of the value of professional activity of different people. Losses arising out of sick leave may differ depending on who takes the leave.

Besides the possibility of any measurable estimation, there remains the sufferings of persons affected with a disease and their family, which serves as a key moral justification for eradication of diseases.

Efficient prevention and detection of infected persons and providing them with accessible treatment require the knowledge of local spread of the disease in different social groups and local conditions and circumstances of spreading HCV infection in a given population. It is important to provide the society with information on the situations potentially leading to infection and its potential consequences, as well as to raise awareness in terms of avoiding the risk of infection. Such a situation requires studies on prevalence and transmission of HCV infections with local epidemiological and custom specificity taken into account. It also needs preventive and educational actions adapted to the target population. Strong association of the suggested integrated system of HCV infection prevention with the local specificity of risks of such infections constitutes one of the substantial priorities of Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections”.

The need for creating a wide front of preventing HCV infections was

recognised a long time ago. Cases of viral hepatitis B and C were a driver for introducing new technical solutions, such as disposable equipment and requirements on handling sharp objects in medical facilities, as well as more rigorous regulations on sterilisation of reusable equipment. Situations in which families and friends had to see their closest ones die due to liver failure or primary hepatic cancer arising out of HCV infection contributed to the foundation of non-governmental organisations with the aim of promoting HCV infection prevention and wider availability of early treatment of diseases related to this infection.

HCV infection prevention is facilitated by field educational programmes and prophylactic programmes. The activities of the State Sanitary Inspection and non-governmental organisations deserve particular attention. The Polish HCV Expert Group, which has been active for many years and which consists of experienced doctors and recognised scientists with deep knowledge on HCV-related diseases and their treatment, has been carrying out intensive activities within the training of doctors on modern diagnostic methods and standards of treatment. The group has also been actively operating within epidemiological studies and promotion of the role of treatment in HCV infection prophylaxis.

Despite the above activities within HCV infection prophylaxis, higher numbers of newly detected infections with these viruses have been recorded in the recent years. It indicates an urgent need both to extend the area of prophylactic activities and to intensify the actions that have been carried out so far.

The fundamental purpose of Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections” is to propose system solutions that could contribute to the reduction of new HCV infections in Poland. This purpose requires more thorough insight of the scale of the problem and basic mechanisms leading to HCV infections than the one obtained in earlier studies. Each of the modules of Project KIK/35 contained elements of insight into the situation in the scope falling within their domain of activities. They were epidemiological studies and risk factor analysis in general population (Project 1) or in more narrowly defined subpopulations. The Project 2, on the other hand, involved drug dependent persons, while Project 3 – pregnant women. Analyses carried out as part of those projects, especially the extensive epidemiological analysis under Project 1, provided basic data for the direction of prophylactic activities by determining relevant risk factors in the Polish population. Those data will also be fundamental to the rationalisation of screening test programmes.

Not only does the reliable insight into the epidemiological situation of HCV infections in our country constitute a basis for the above activities, but it also should serve as a reference for assessing the effectiveness of system solutions proposed under Project KIK/35, as well as other activities aiming at HCV infection prevention in the future. Such assessments should be performed in



subsequent epidemiological studies conducted regularly every several years.

Project KIK/35 involved surveys to check the knowledge of various social groups on HCV infections, as well as the society's knowledge on the availability of diagnosis and treatment of those infections.

Insight into threats posed by HCV infections in health care units was the object of the surveys and experimental studies carried out in hospitals under Project 4. Project 5 focused on educational activities addressed to medical personnel and persons performing the broadly defined cosmetic procedures, while thanks to the e-learning platform, education on the issues of HCV infections is accessible for people whose occupation is not associated with public health or conventional medicine. As part of the project, numerous materials promoting prevention of HCV infections were prepared and training programmes were developed in the field of HCV infections and basic preventive solutions for these infections. Among those materials, there are ready-to-use e-learning courses, lectures by experts, and interviews with patients led by a renowned specialist in infectious diseases, providing useful insights into the problems of HCV-positive persons with an indication of solutions to these problems.

Project 2 was concerned with studies on HCV infection transmission among drug dependent persons, especially injecting drug users. This group, where the proportion of HCV-positive persons is particularly high, could not be well-represented in the studies on general population due to relatively low number and – probably mainly – due to the lack of trust which made it difficult to obtain data. Conclusions drawn from the project indicate a necessity of extending organised actions for harm reduction and greater openness of our society to health and life problems of this group of mostly very unhappy people.

## REFERENCES

1. Walker CM. Adaptive Immunity to the hepatitis C virus. W: Advances in virus Research. Red Maramorosch K, Shatkin AJ, Murphy FA. Tom 78 str. 43-86. Elsevier, Boston 2010.
2. Choo QL, Kuo G, Weiner AJ, et al. (1989) Isolation of a cDNA clone derived from blood borne non-A, non-B viral hepatitis genome. Science 222:359.
3. Smith DB, Simmonds P (1999) hepatitis C virus: types, subtypes, and beyond. Methods Mol Med. 19:133.
4. Messina JP, Humphreys I, Abraham Flaxman A, et al. (2015) Global Distribution and Prevalence of hepatitis C virus Genotypes. Hepatology 61:77-87.
5. Panasiuk A, Flisiak R, Mozer-Lisewska I, et al. (2013) Występowanie genotypów HCV w Polsce. Przegl Epidemiol; 67:99-103.
6. Adinolfi LE, Utili R, Andreana A, et al. (2000) Relationship between genotypes of hepatitis C virus and histopathological manifestations in chronic hepatitis C

- patients. Eur J Gastroenterol Hepatol 12:299-304.
7. hepatitis C FAQs for the Public. <http://www.cdc.gov/hepatitis/hcv/hcvfaq.htm> WHO.
  8. Zieliński A (2014) Sexual behaviour and the risk of HCV infection. Przegl Epidemiol 68:1-3.
  9. Grabarczyk P, Kopacz A, Sulkowska E, et al. (2015) Badania wirusów przenoszonych przez krew u dawców krwi w Polsce. Przegl Epidemiol 69:591-5.
  10. Brojer E, Grabarczyk P red. Czynniki zakaźne istotne w transfuzjologii. Fundacja Pro Pharmacia Futura. Warszawa 2015.
  11. Recommendations for Prevention and Control of hepatitis C virus (HCV): Infection and HCV-Related Chronic Disease. MMWR 1998; 47(RR19):1-39 <https://www.cdc.gov/mmwr/preview/mmwrhtml/00055154.htm>.
  12. hepatitis C. <http://www.who.int/mediacentre/factsheets/fs164/en/>.
  13. Godzik P, Kołakowska A, Madaliński K, et al. (2012) Rozpowszechnienie przeciwciał anty-HCV wśród osób dorosłych w Polsce - wyniki badań przekrojowych w populacji ogólnej. Przegl Epidemiol 66:575-80.

## GENESIS, ASSUMPTIONS, AND GOALS OF PROJECT KIK/35 "PREVENTION OF HEPATITIS C VIRUS (HCV) INFECTIONS" AND ITS ORGANISATIONAL STRUCTURE

Rafał Gierczyński, PhD; Rafał Patoła, MEng; Anna Małek  
National Institute of Public Health – National Institute of Hygiene

Hepatitis C, which is a serious and not fully identified problem of public health in Poland, constituted a social and research challenge requiring complex and multidimensional actions, the scale of which was much higher than the financial and organisational capacities of patient associations, expert groups, single foundations or typical research projects the country could bear.

When the works on the assumptions of Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections” – which was then expected to result in proposed system solutions within effective actions preventing the spread of the virus responsible for hepatitis C – were launched, available data on the scale of the problem in Poland indicated that the number of potentially HCV-positive persons amounted to as much as 2% according to WHO. Apart from such a high number of persons that could be a reservoir for HCV in Poland, the lack of vaccine against hepatitis C along with a low effectiveness of then available HCV infection therapy was an equally relevant challenge. An additional factor that made it more difficult to conduct extensive prophylactic actions – which for HCV infections basically had to come down to educational activities and limited screening tests – was a high cost of treatment of people with hepatitis C, which led to a quite common belief in Poland that allocating any funds to preventive actions means reducing the number of persons who can be provided with treatment. Although the need of focusing temporarily on the treatment of patients with hepatitis C is understandable, it often obscured the fact that HCV infections are a hidden epidemic in Poland with a scale so great that it is impossible to reduce only by treating people with identified hepatitis C. What is more, threats to public health in Poland posed by this epidemic is aggravated by the fact that only almost 20% of HCV-positive persons know of their disease.

Due to the large scale of required prophylactic activities, arising out of the

#### 4. Genesis, assumptions, and goals of Project KIK/35... 28

above reasons, and necessity to conduct extensive scientific research in order to estimate the number of HCV-positive persons in Poland, including pregnant women and injecting-drug users (IDUs), necessity to establish HCV infection risk factors, and assessment of medical procedures in terms of protection against blood-borne infection transmission, it was necessary to search for sources of sufficient funding.

The scale of planned expenses rose significantly due to the necessity to conduct extensive educational actions connected with the basics of HCV epidemiology with an emphasis on transmission routes and transmission prevention measures for HCV and other blood-borne infections, including HBV and HIV. Drawing on HCV infection prevention programmes implemented in other countries, an assumption was adopted that the training should cover a wide group of medical professionals, including nurses and doctors. What is more, as the number of cosmetic procedures involving disruption of skin and mucosa continuity – such as piercing, tattoos, and intracutaneous administration of various types of preparations, dermabrasion, and other cosmetic procedures using techniques almost directly taken from medical treatment rooms – increased in Poland, it served as grounds for including persons performing such procedures in the training programme. Such an innovative approach to HCV prophylaxis was based on the fact that the virus is transmitted through blood as well as preparations and instruments contaminated with it, irrespective of whether the procedures are intended for treating people or improving their appearance.

Encouraging non-medical professionals to take part in the training constituted a separate challenge. It required an information campaign encouraging participation in the training and a campaign intended for raising awareness in the society of the threats posed by HCV and how to reduce them, for example by adopting an active attitude when it comes to the expectation of safe performance of cosmetic and medical procedures. In order for the above information campaign to be effective, it had to be made available to the society through widely accessible communication channels, such as radio, television, and the Internet, including social media. Such actions require large financial outlays, which could not be forget at the stage of planning the Project „Prevention of Hepatitis C Virus (HCV) Infections”.

Considering the expected high cost of effective implementation of the above actions, it was as early as at the initial stage of searching for sources of funding that it was known that there were slim chances of finding an institution in the country that would be capable of bearing the costs by itself. Therefore, it was decided that international support funds will be used which Poland could draw on in the years 2012-2016 – the planned period of implementation of the project „Prevention of Hepatitis C Virus (HCV) Infections”.

One of such funds was at that time the Swiss Polish Cooperation Programme (SPCP), which aimed at reducing socioeconomic differences

between Poland and other countries of the enlarged European Union. SPCP was launched on 20 December 2007 upon executing the Framework Agreement on implementing the programme between the Polish Government and the Swiss Federal Council.

SPCP involved, among others, aid actions within health care under Goal 1 related to the promotion of healthy lifestyle and prevention of infectious diseases on the national level and in the areas of geographical concentration, and it was capable of funding large projects, covering the vast majority of their costs. Following an application process lasting many months and consisting of several negotiation rounds, Agreement No. 5/SPPW/KIK/35 on the Implementation of Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections” was executed between the then Office for Foreign Aid Programs in Health Care (Intermediate Body – since 1 January 2013, the Ministry of Health because of liquidation of the Office for Foreign Aid Programs in Health Care) and the National Institute of Public Health – National Institute of Hygiene in Warsaw (Executing Agency). Under the said agreement, an amount of CHF 4,669,907 was granted by Switzerland (85%) and the Minister of Health (15%) for the performance of goals.

#### **4.1 Main goal and assumptions of Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections”**

The fundamental goal of the project was to create a basis for planning a long-term strategy of preventing HCV infections and controlling hepatitis C in Poland, as well as for developing assumptions for the “National HCV Prevention and Control Strategy”.

This goal was expected to be achieved through a range of activities, including: evaluation of an epidemiological situation of HCV infections in Poland, infection risk assessment in medical facilities and in sectors with increased risks of transmission of blood-borne infections, preparation of guidelines for routine diagnostic tests for HCV, especially among the users of psychoactive substances, as well as development and implementation of an educational programme within social awareness of the issues of HCV infections and the methods of prevention with an emphasis on health care professionals.

A social campaign oriented at promoting various types of actions and behaviour for the reduction of the HCV infection risk, which was intended to be launched at the final stage of the project implementation, supported the efforts towards achieving the goals of Project KIK/35. The campaign took into account the necessity to conduct a public opinion survey within the knowledge on HCV and various aspects of perceiving this health problem by

the Polish society.

## **4.2 Organisational structure of Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections”**

Project „Prevention of Hepatitis C Virus (HCV) Infections” was composed of 5 task-oriented modules, which – due to their separate fields of content-related activities, considerable independence of performance, and individual management and separate personnel structure – were called content-based projects and numbered from 1 to 5:

- Project 1** – “Improvement of HCV diagnosis, estimation of HCV prevalence in general population and analysis of factors associated with HCV prevalence”;
- Project 2** – “Developing evidence-based HCV prevention Program for injecting drug users (IDUs) and assessing needs for prevention in this population”;
- Project 3** – “Preliminary programme of routine HCV testing among pregnant women”;
- Project 4** – “Qualitative evaluation of the risk of HCV infection associated with medical procedures in selected health care units”;
- Project 5** – “Raising awareness of prevention of blood-borne infections (HCV, HBV, HIV) among providers of services associated with blood-to-blood contact and the general public”.

What is more, during the performance of Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections”, the social campaign entitled „HCV I’m aware of” was conducted under the operation “Information and promotion”. Due to organisational complexity of the social campaign, its specificity, and necessity to draw on the knowledge and experience of experts from outside the Executing Agency, as well as necessity to synthesise knowledge acquired during the implementation of the above five projects and then expressing the knowledge in a way that is comprehensive for the society, the social campaign was a considerable organisational challenge and played a very important role in Project KIK/35.

Mr Rafał Patoła, the Manager of Project KIK/35 – who reported directly to Prof. Mirosław J. Wysocki, PhD, the Director of NIZP-PZH – was responsible for the proper performance of Project KIK/35 in accordance with the assumed agenda and budget.

Mr Rafał Gierczyński, PhD, Associate Professor of NIZP-PZH, a Member of Project Team, was responsible for a risk factor analysis for the performance of content-related tasks under Project KIK/35. The Steering Committee

31      Project KIK/35 - "Prevention of hepatitis C virus (HCV) infections"

chaired by Prof. Andrzej Zieliński, MD-PhD, supervised the proper performance of the fundamental goal of Project KIK/35.

### 4.3 Implementing entities appointed by the Executing Agency and Partners to Project KIK/35

Due to the already mentioned wide scope of activities performed under Project KIK/35 and diversity of their content, Project KIK/35 was not only implemented by the Executing Agency (NIZP-PZH), but also the following Partner institutions:

- Institute of Psychiatry and Neurology in Warsaw (IPIN), responsible for Project 2;
- Medical University of Lublin (UML), responsible for Project 4;
- Chief Sanitary Inspectorate (GIS), co-responsible for Project 5;
- Centre of Postgraduate Medical Education (CMKP), co-responsible for Project 1 (since 2016).

Logotypes of the Executing Agency and Partners to Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections” are illustrated in **Figure 4.1.**

EXECUTING AGENCY:



National Institute of Public Health  
– National Institute of Hygiene

PARTNERS:



Institute of  
Psychiatry and  
Neurology in Warsaw



Medical University of  
Lublin



Chief Sanitary  
Inspectorate



Centre of  
Postgraduate Medical  
Education

**Figure 4.1.**

Logotypes of the Executing Agency and Partners to Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections”

Persons in charge of individual projects and leading representatives of the Partners cooperating with them in Project KIK/35 are listed in **Table 4.1.**



Table 4.1.

Information on institutions implementing individual projects as part of Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections” and managers of particular projects, including key representatives of the Partners – valid as at 31.12.2016

Project number	Project title	Abbreviated name of implementing institution	Project managers
1.	Improvement of HCV diagnosis, estimation of HCV prevalence in general population and analysis of factors associated with HCV prevalence	NIZP-PZH + CMKP (since 2016)	Magdalena Rosińska, PhD (NIZP-PZH) Mateusz Mokrzyś, PhD (CMKP)
2.	Developing evidence-based HCV prevention Program for injecting drug users (IDUs) and assessing needs for prevention in this population	IPIN	Janusz Sierostawski, MA
3.	Preliminary programme of routine HCV testing among pregnant women	NIZP-PZH	Prof. Kazimierz Madaliński, MD-PhD
4.	Qualitative evaluation of the risk of HCV infection associated with medical procedures in selected healthcare units	UML	Krzysztof Tomasiewicz, MD-PhD
5.	Raising awareness of prevention of blood-borne infections (HCV, HBV, HIV) among providers of services associated with blood-to-blood contact and the general public	NIZP-PZH + GIS	Anita Gębska-Kuczerowska, MD-PhD (NIZP-PZH) Izabela Kucharska, MA (GIS)
6.	Social campaign "HCV I'm aware of"	NIZP-PZH	Rafał Patoła, ME Izabela Rusak, MA

#### **4.4 Steering Committee of Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections”**

The Steering Committee under Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections” was a supporting body of the Director of NIZP-PZH appointed for the period of the project implementation and responsible for evaluation and supervision at a strategic level of Project KIK/35.

The Steering Committee of Project KIK/35 chaired by Prof. Andrzej Zieliński, MD-PhD, was composed of: representatives of the Minister of Health representing the Department of Public Health, the Department of Health Policy, and the Department of Drug and Pharmaceutical Policy of the Ministry of Health, external experts within the fields related to epidemiology and treatment of hepatitis C, representatives of non-governmental organisations operating within the areas of interest of Project KIK/35. Composition of the Steering Committee under Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections” is presented in **Table 4.2**. Apart from the listed members of the Steering Committee with voting rights, the meetings of the Steering Committee were attended by the representatives of NIZP-PZH (Executing Agency) and Partner Institutions, while the representatives of SCO, National Coordinating Body (the Ministry of Development), and Intermediate Body (Department of European Funds and e-Health of the Ministry of Health), as well as the representatives of scientific institutions and organisations and entities performing or coparticipating in the performance of Project KIK/35 also participated in the meetings of the Steering Committee as observers.

Besides monitoring the performance of Project KIK/35, the Steering Committee was also entitled to accept significant changes within content-related matters of the Project implementation. During Project KIK/35, the Steering Committee promoted strategic approach, which allowed eliminating obstacles to the performance of assumptions adopted, for example, in Project 2 and Project 3.

When it comes to Project 2, the Steering Committee approved of the use of non-invasive diagnostic test for HCV antibodies for injecting-drug users (IDU). This decision led to the non-invasive diagnostic test for HCV being used in Poland for the first time, which allowed effective field screening of IDU and performance of tests for the number of people that was initially assumed. In Project 3, the Steering Committee gave their consent to increasing the number of entities performing screening of pregnant women, allowing medical entities which were not hospitals, and extended the pregnancy period during which patients could be qualified for HCV tests from 12 to 24 weeks. It turned out to be necessary in order to perform the number of tests assumed in Project 3.

### 35 Project KIK/35 - "Prevention of hepatitis C virus (HCV) infections"

**Table 4.2.**

Composition of the Steering Committee of Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections” – valid as at 31.12.2016. Only persons with voting rights are listed.

No.	Name and surname	Institution	Function
1.	Prof. Andrzej Zieliński, PhD	NIZP-PZH	Chairman of the Steering Committee
2.	Marzena Drewniacka Marta Wojciechowska (from 10.12.2013) Edward Włodarczyk (from 18.12.2016)	Ministry of Health, Department of Public Health	Representation of the Minister of Health
3.	Ratowska Anna Marta Kacprzak (from 24.09.2013) Anna Chmielewska (from 20.01.2017)	Ministry of Health, Department of Health Policy	Representation of the Minister of Health
4.	Łukasz Pera Joanna Tunia (from 16.11.2016)	Ministry of Health, Department of Drug and Pharmaceutical Policy	Representation of the Minister of Health
5.	Elżbieta Puacz, PhD	Polish Federation of Patients "Dialtransplant"	Representation of non-governmental organisations
6.	Mirosława Malara	Polish Association of Epidemiological Nurses	Representation of non-governmental organisations
7.	Prof. Waldemar Halota, PhD	Nicolaus Copernicus University Ludwik Rydygier Collegium Medicum in Bydgoszcz, Tadeusz Borowicz Provincial Hospital for Infectious Diseases and Observation in Bydgoszcz	Expert
8.	Prof. Robert Flisiak, PhD	Medical University of Białystok	Expert, Deputy Chairman of the Steering Committee

#### 4.5 Team of Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections”

In order to provide professional support for the Manager of Project KIK/35 within the performance of tasks related to Project management, supervision over its feasibility, ongoing control of progression and works, including identification of obstacles to the performance of tasks and implementation of corrective measures, as well as related to financial and material performance of the Project, and relevant financial reporting for the Intermediate Body, a Project Management Team was created within the Executing Agency. Members of the Team had specialist knowledge and professional experience in terms of human resources, finance and accounting, public procurement, including substantive assessment of compliance of goods and services ordered with the scope of tasks intended for performance, as well as capable of general assessment whether goods and services ordered which related directly to the substantive performance of Project KIK/35 meet the generally accepted standards. A list of persons who participated in the performance of Project KIK/35 “Prevention of hepatitis C virus (HCV) infections” is presented in **Table 4.3**. The table contains only permanent members of Project KIK/35.

**Table 4.3.**

List of persons who participated in the performance of Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections” in the years 2012-2017.

No.	Project name	Project managers	Implementers
1.	<b>KIK/35</b> „Prevention of Hepatitis C Virus (HCV) Infections”	Rafał Patola, MA	Anna Małek Izabela Rusak, MA Danuta Masiak Wiesława Lipert Marcin Burzyński, Eng Monika Wróbel-Harmas, MA
2.	<b>Project 1</b> “Improvement of HCV diagnosis, estimation of HCV prevalence in general population and analysis of factors associated with HCV prevalence”	Magdalena Rosińska, PhD	Małgorzata Stępień, MD Natalia Parda, MA Prof. Kazimierz Madaliński, PhD Paulina Godzik, PhD Agnieszka Kołakowska, MA Rafał Gierczyński, PhD Janusz Kaczmarek, MA Agnieszka Masiak, MA Joanna Rosiak, MA Marcin Burzyński, Eng Mateusz Mokrzyś, MD (CMKP)

37 Project KIK/35 - "Prevention of hepatitis C virus (HCV) infections"

3.	<b>Project 2</b> Developing evidence-based HCV prevention Program for injecting drug users (IDUs) and assessing needs for prevention in this population" – implemented by a partner – Institute of Psychiatry and Neurology in Warsaw	Janusz Sierosławski, MA	Katarzyna Dąbrowska, PhD Aldona Taras Renata Jagiełło Monika Sobolewska Edyta Włodarczyk Łukasz Wieczorek, PhD
4.	<b>Project 3</b> "Preliminary programme of routine HCV testing among pregnant women"	Prof. Kazimierz Madaliński, PhD	Paulina Godzik, PhD Agnieszka Kotakowska, MA Karolina Zakrzewska, MA Magdalena Rosińska, PhD Małgorzata Stępień, MD PhD Rafał Gierczyński, PhD Janusz Kaczmarek, MA Agnieszka Masiak, MA Joanna Rosiak, MA Marcin Burzyński, Eng
5.	<b>Project 4</b> "Qualitative evaluation of the risk of HCV infection associated with medical procedures in selected healthcare units" – implemented by a partner – Medical University of Lublin	Krzysztof Tomaszewicz, MD PhD	Sławomir Kiciak, MD PhD Elżbieta Murias-Bryłowska, MD Agnieszka Myszkowska, MA Genowefa Irena Jaszcak, MA
6.	<b>Project 5</b> "Raising awareness of prevention of blood-borne infections (HCV, HBV, HIV) among providers of services associated with blood-to-blood contact and the general public"	Anita Gębska-Kuczerowska, PhD	<b>Representatives of NIZP-PZH:</b> Lidia Rakow, MA Anna Gaber, MA Rafał Gierczyński, PhD Janusz Kaczmarek, MA Agnieszka Masiak, MA Joanna Rosiak, MA Marcin Burzyński, Eng Mirosława Półgrabia, PhD Olga Kotakowska, MA Małgorzata Znyk, MA <b>Representatives of the Chief Sanitary Inspectorate:</b> Marek Posobkiewicz, MD – Chief Sanitary Inspector Izabela Kucharska, MA Aleksandra Czyrznikowska, MA Mateusz Szewczyk, MA Joanna Sujka, VS

## **4.6 Main objective and intermediate goals of individual content-related Projects within Project KIK/35**

Each of the Projects implemented as part of Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections” had main objective and intermediate goals as set out below.

### **PROJECT 1**

#### **“Improvement of HCV diagnosis, estimation of HCV prevalence in general population and analysis of factors associated with HCV prevalence”**

Main objective: Improvement of the strategy of HCV diagnosis in general population through studies performed for the first time based on individual risk assessment.

Intermediate goals:

- 1) Supply of targeted information on risk factors of a group selected from general population.
- 2) Study on risk factors and HCV status of a group selected from general population.
- 3) Consultation and referring for follow-up tests of persons diagnosed with HCV.
- 4) Better understanding of the HCV epidemiology in Poland, including the burden of disease and related risk factors.

### **PROJECT 2**

#### **“Developing evidence-based HCV prevention Program for injecting drug users (IDUs) and assessing needs for prevention in this population”**

Main objectives: Reduction of the HCV infection risk in the population of injecting-drug users (IDUs).

Intermediate goals:

- 1) HCV prophylaxis for the IDU population based on verified experience.
- 2) Building institutional capacity for the reaction to the issue of HCV among IDUs.

Expected results:

- 1) Assessment of needs related to prevention and treatment of HCV through estimation of HCV prevalence among IDUs and determination of infection risk factors.
- 2) Model Programme of HCV infection prevention addressed to IDUs.
- 3) Evaluation of the Model Programme of HCV prevention.

4) Dissemination of the Model Programme of HCV prevention.

**PROJECT 3**

**"Preliminary program of routine HCV testing among pregnant women"**

Main objective: Improvement of prophylaxis against vertical transmission of HCV infections and harmful clinical consequences of HCV infections in children vertically infected with HCV.

Intermediate goals:

- 1) Assessment of the purposefulness and feasibility of routine HCV tests in the group of pregnant women or in its specific subgroups based on pilot implementation of the screening tests in prenatal care facilities located in the 5 provinces: Mazowieckie, Małopolskie, Świętokrzyskie, Lubelskie, and Kujawsko-Pomorskie.
- 2) Estimation of the prevalence of HCV infection and risk factors based on screening of pregnant women in the five above listed provinces.
- 3) Higher awareness of obstetrics-gynaecology specialists and family doctors on the prevention of vertical transmission of HCV and the health care of a child born by an HCV-positive mother.

**PROJECT 4**

**"Qualitative evaluation of the risk of HCV infection associated with medical procedures in selected healthcare units"**

Main objective:

- 1) Determination of procedures and behaviours associated or potentially associated with a higher risk of HCV infection transmission in health care facilities in Poland
- 2) Modernisation and modification of occupational health and safety rules for medical personnel.
- 3) Modification of the procedures of supervision and control conducted by sanitary services in medical facilities.

**PROJECT 5**

**"Raising awareness of prevention of blood-borne infections (HCV, HBV, HIV) among providers of services associated with blood-to-blood contact and the general public".**

Main objective: Improvement of the effectiveness of infection prevention and preventing the spread of infections in health care facilities by broadening knowledge on the epidemiology of blood-borne infections and improving skills of preventing infections within medical procedures.

Specific goals:

#### 4. Genesis, assumptions, and goals of Project KIK/35... 40

- 1) Training courses for health care professionals from 11 provinces of the country.
- 2) Training courses for providers of services associated with blood-to-blood contact from outside the health care sector (e.g. tattoo studios, beauty salons) from 11 provinces of the country.
- 3) Higher effectiveness of blood-borne infection prevention through raising awareness and counteracting social stigma of HCV-positive persons – as a contribution to the social campaign.

The “HCV I’m aware of” Social Campaign plan set out the following leading objectives:

- 1) Raising awareness on the prevention of HCV infections and shaping appropriate health-related attitudes and behaviours;
- 2) Transfer of information and knowledge regarding HCV infection prevention and encouraging people to undergo tests for HCV.
- 3) Adaptation of information channels regarding HCV and prevention against HCV infection to specific groups, e.g.: youth (developing model attitudes with regard to the prevention and prophylaxis against HCV, which will reduce the number of infected people in the future);
- 4) Improving working standards, e.g. in tattoo studios, beauty, hair, and acupuncture salons, and dental practices, as well as improving the quality of health care provided by medical professionals in terms of prevention and prophylaxis against HCV infections, for example through promotion of e-learning courses;
- 5) Drawing the attention of policy-makers within public health care and NGO sector to the issues regarding HCV infections (many organisations from the third sector operates alone within matters related to HCV, there is no platform for exchange of experience and cooperation).

The results of activities carried out in order to achieve planned effects in individual projects are specified in the following chapters of this publication.



## ACKNOWLEDGMENTS

We would like to give special thanks to the Members of the Steering Committee of Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections”, which – as a supporting body of the Director of NIZP-PZH – was responsible for evaluation and supervision at a strategic level of the Project. We would also like to thank the representatives of SCO (Swiss side), the National Coordinating Body (the Ministry of Development), and the Intermediate Body (Department of European Funds and e-Health at the Ministry of Health), who actively supported the works of the Steering Committee. The involvement of all the Members of the Steering Committee demonstrates the magnitude of responsibility towards the problem of HCV and recognition of its importance.

# NEEDS AND RECOMMENDED METHODS OF EXPANDING THE HCV DIAGNOSTICS IN GENERAL POPULATION

Magdalena Rosińska, MD-PhD; Natalia Parda, MA;  
Małgorzata Stępień, MD; Karolina Zakrzewska, MA;  
National Institute of Public Health – National Institute of Hygiene

## PROJECT 1

### **“Improvement of HCV diagnosis, estimation of HCV prevalence in general population and analysis of factors associated with HCV prevalence”**

Epidemiological studies demonstrate that around 200 thousand people in Poland may be HCV-positive [1-3]. The vast majority of them is unaware of their infection. Not only does it lead to progressing liver damage in infected persons, but it also contributes to further spread of the infection in the population. Considering the breakthrough in the treatment of chronic hepatitis C in the recent years (90-100% curability), improving the situation in terms of HCV infection detection is fundamental.

Among the solutions adopted in other countries with regard to HCV screening strategies, most frequent are screening of risk groups (e.g. injecting-drug users), screening of persons with identified HCV infection risk factor (based on individual risk assessment), and screening of persons in specific age groups or living in areas where HCV infection prevalence is especially high. The choice of particular strategies and their cost effectiveness depend on the specific epidemiological situation in a given country [4-5]. A significant feature of the HCV infection epidemiology in Poland is an extensive spread of the infection in general population, which arises from the still unsolved problem of virus transmission during medical procedures performed without strict compliance with standard precautions [6-7]. A particularly high risk of HCV infection arises from drug use, especially by injection. Prevalence of HCV infection in people who use drugs is many times higher than it is the case with general population [8]. However, considering the transmission also happening in medical facilities, it would not be

sufficient to limit screening test to that group only. Therefore, it seems necessary to implement actions addressed to general population.

In Poland, screening for HCV is performed for candidate blood donors (since 1992) and dialysis patients. Tests for HCV were also incorporated into the recommended package of prophylactic services, health-promoting activities, diagnostic tests and medical consultations for pregnant women (since 2011). Such tests are also performed in drug treatment facilities, prisons, and sometimes as part of routine tests before planned surgeries. Periodically, free serological tests (HCV antibodies) are offered under health policy programmes implemented by local authorities, as well as during campaigns organised by foundations/associations. However, there is lack of system solutions leading to higher rates of HCV detection in general population.

In order to ensure the sustainability of implemented actions and equal access to prophylactic services, as well as taking into account the stable position of the primary health care (POZ) in the health care system in Poland, it seems that the incorporation of HCV screening into the catalogue of medical laboratory diagnostics related to the performance of services by primary care physicians is an optimum action towards the improvement of HCV diagnostics in Poland. At present, tests for HCV are not included in the catalogue (Notice of the Minister of Health of 17 December 2015 on the Announcement of Consolidated Text of the Regulation of the Minister of Health on Guaranteed Primary Health Care Services, Journal of Laws 2016.86).

In Project 1, "Improvement of HCV diagnosis, estimates of HCV prevalence in general population and analysis of factors associated with HCV prevalence", a pilot programme of screening for a random group selected from adult population was implemented. The programme was carried out in Primary Health Care facilities. A total of 45 Primary Health Care facilities participated in it (58, including branches). **Figure 5.1** summarises the Project.

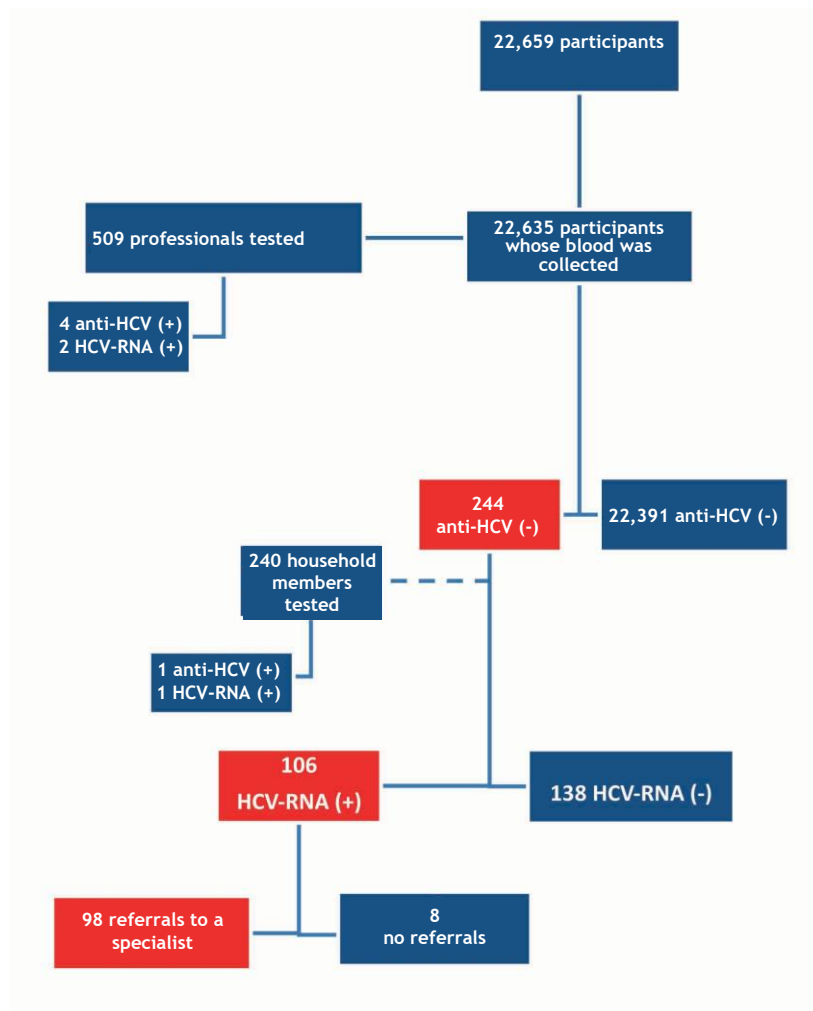


Figure 5.1.

Number of persons screened under Project 1 and screening results

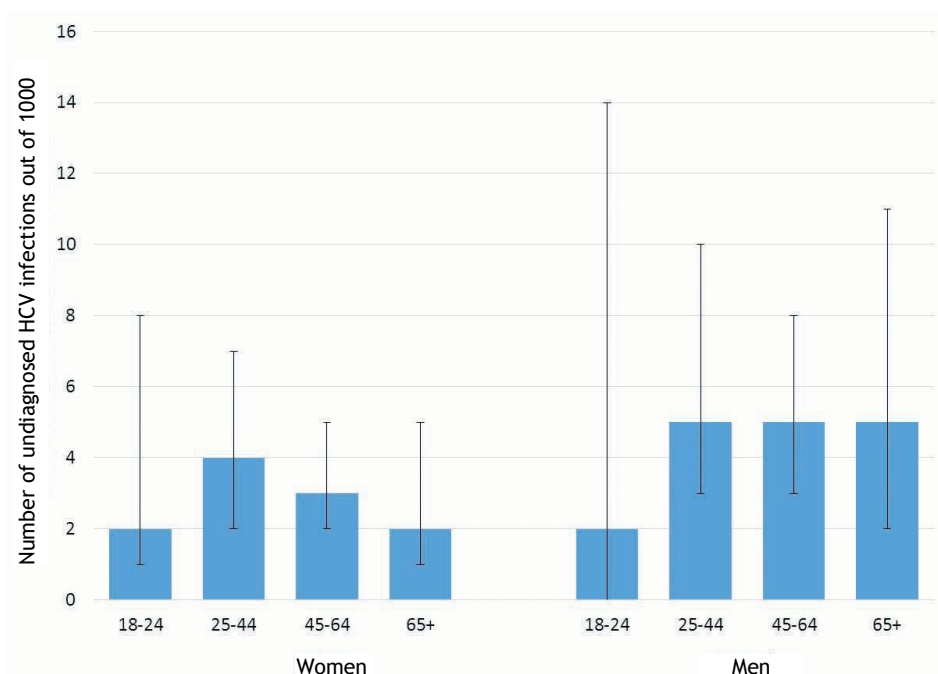
### 5.1 Prevalence of diagnosed and undiagnosed HCV infections in Poland

Out of nearly 23 thousand of randomly chosen adults who were screened between 2012 and 2016 under Project 1, the virus was detected in the blood (HCV-RNA) of 106 persons. Based on those data, we estimate that among adults in Poland, 7 out of 1000 men and 4 out of 1000 women are HCV-positive. HCV infections in Poland occur in all age groups, with relatively less infections in the 18-24 age group (3 out of 1000) and slightly more than the average in the 25-44 age group (6 out of 1000), especially in men (8 out of 1000). Marginally more infections were recorded for urban areas (5 out of 1000) than for rural areas (4 out of 1000). The prevalence observed in the study corresponds to around 165 thousand adults living with chronic hepatitis

C in Poland (95% CI 127 thousand 190 thousand). The prevalence among children is probably lower, but it was not determined during the study as it did not fall within the scope of Project 1.

Our study also shows that the majority of infections remain undetected. In the questionnaire, the participants were asked about previous tests for HCV and the results of these tests (earlier detection of HCV antibodies and/or HCV-RNA did not exclude from the participation in the study if the patient was not currently under specialist care). Out of persons who were diagnosed with HCV during the Project, 22.5% revealed in the survey that they had a positive HCV result in the past, which means that the undiagnosed infection fraction amounts to 78%. The fraction differed depending on sex and amounted to 71% for men and 84% for women. Prevalence of undiagnosed HCV infections amounted to 0.3% for women and 0.5% for men, while for all adults – 0.4%. It corresponds to ca. 125 thousand people in Poland who are unaware of their HCV infection. It is worth noting that, if we compare this number to the number of newly diagnosed infections per year (around 3000) recorded between 2013 and 2014, we can come to the conclusion that there are just 25 infections detected every year out of 1000 existing undiagnosed infections in population. What is more, according to our survey, only 6.2% of adults in Poland have ever been tested for HCV. The above values illustrate the scale of needs with regard to HCV infection diagnosis in Poland.

Considering distribution of undiagnosed infections according to sex and age (Fig. 5.2.), we cannot distinguish a group where the prevalence of undiagnosed infections is particularly high. Thus it is impossible in Poland to implement a solution involving screening targeted at a population group identified according to age or sex and age. For example, screening program targeted at a specific birth cohort is implemented in the United States, as more than 75% of undiagnosed chronic infections occur in the group of people born between 1945-1965 [5]. Results of an analysis carried out for selected European countries in terms of implementation of screening tests of people born in a specific period (birth cohorts) indicate, just like in Poland, the lack of possibility to identify a sufficiently narrow birth cohorts with the highest number of infections [9]. Thus, the tests should cover the entire adult population, which, obviously, would not be possible because of too high costs.



**Figure 5.2.**

Number of undiagnosed HCV infections per 1000 (with 95% confidence interval) among men and women in age groups

## 5.2 Individual risk factors in general population in Poland

Experience of other countries indicates that pre-selection of patients according to risk factors may significantly increase the effectiveness of screening programs carried out in general population with a low prevalence of HCV infections [10]. However, tests performed on the basis of individual risk assessment of HCV infection require a prior interview with the patient. Therefore, such tests should be performed in medical facilities or other places providing appropriate conditions not only for the test, but also for consultation. The said screening initiative should be preceded by an information campaign addressed to general public that would emphasise special indications for the HCV tests.

Based on answers given by the participants of the survey, factors related to more frequent incidence of HCV were analysed. Questions connected with HCV infection risk factors were grouped in three sections: medical exposure, non-medical exposure (non-medical procedure, injecting-drug use, risky sexual behaviours, close relations with persons who are subject to a higher risk of infection, and risky behaviours in household conditions (only for household/partners of persons with HCV antibodies detected)).

Having referenced the survey participant's answers to the results of the laboratory tests, the following factors associated with a higher prevalence of HCV infections were determined: transfusions before 1992, injecting drug use (at least once), having an HCV-positive sexual partner, caesarean section in women, and biopsies and tattoos in men. The above factors are not the only transmission routes of HCV infection. The results of the analyses of cases notified to surveillance confirm that HCV infections often arise from various medical procedures. It is worth noting, however, that those are sporadic cases, which require individual intervention, but do not lead to a population level increase of risk associated with a given procedure.

Before 1992, blood donations were not tested for HCV due to unavailability of diagnostic tests. This probably led to a significant spread of the virus in Poland. Among people who underwent transfusion of blood or blood products before 1992, 11 out of 1000 women and 34 out of 1000 men are HCV-positive. Meanwhile, still only 9.8% percent of people who revealed in the survey that they underwent blood transfusion at that time have ever been tested for HCV. Transfusions before the introduction of screening tests in blood donation were performed in 5.4% of our respondents. It corresponds to ca. 1.7 million on the national level, while this factor is brought up in the interview of 17% of HCV-positive people.

Caesarean sections constituted an additional factor associated with a higher prevalence of HCV among women. Among the tested respondents who have undergone at least two caesarean sections, 1.3% were diagnosed with HCV (in comparison with 0.4% of all the tested women). This observation may stem from the fact that in some cases of C-section delivery complications, blood transfusion is necessary. If the C-section took place before the introduction of routine tests of blood donations for HCV, then it could involve transfusion transmitted infection.

One of the basic HCV infection risk factors is injecting-drug use. 0.3% of the screened population admitted to having used an injection drug at least once, which corresponds to 95 thousand people in Poland. At this point, we must draw a line between problematic drug users (persons who use drugs regularly for a long period and for whom, the drug use involves serious consequences, including social exclusion) and persons who take drugs sporadically and recreationally and have no problems functioning in the society. Persons who took part in our study are most likely to belong to the latter of the above groups. However, even in this group, the prevalence of HCV infection was considerably higher than among other study participants, i.e. 8.1%. This factor was brought up in the interview of 5% of HCV-positive persons. Among those who have ever taken injection drug, 21.7% have ever been tested for HCV. It is a significantly higher value than the average for the population. Nevertheless, it is a definitely unsatisfactory value. Guidelines on screening tests for injecting drug users identify the HCV test as one of the fundamental tests, which, in the case of active drug users, should be

performed every year [11].

Tattoos turned out to be an HCV infection risk factor mainly among men. Tattoos are currently a quite common form of body modification. Among men who participated in the study, around 8% had a tattoo. However, out of all the men who had a tattoo, 1.9% were HCV-positive and, conversely, 22% of HCV-positive men had a tattoo. In many countries (in Poland it is also being implemented), tattoo studios are subject to detailed inspections of the compliance with hygienic standards of tattoo-making, including the autoclaving of reusable tattoo equipment that may come into contact with a customer's blood, as well as portioning of ink for an individual use. As a result of compliance with those rules, HCV transmission risk in professional tattoo studios is low, while infections mainly happen in relation to tattoos made in prisons or at home [12].

Having an HCV-infected sexual partner was also associated with a higher prevalence of HCV infection. 4.3% of the respondents diagnosed with HCV revealed in the interview that they had engaged in sexual intercourse with an HCV-positive partner. This factor was brought up in the interview of 4 out of 1000 respondents. HCV infection was detected in 4 out of 100 respondents who indicated this factor. Sexual transmission route does not belong to the primary routes of HCV transmission. Nevertheless, sexual activity may entail a higher risk of HCV infection [13]. Additionally, it is worth emphasising that living with an HCV-positive person (other than sexual partner) in the same household did not constitute an HCV infection risk factor. Results of tests in a group of household contacts of the persons who were diagnosed with HCV during the Project confirmed the above conclusion. In a group of 240 household contacts of the HCV-positive persons, HCV antibodies were detected in two people, with one person confirmed with active HCV infection. As a results of an additional review of documentation, two more contact persons were found to have tested positive (virus detected in one person, the other person was tested positive for HCV antibodies only). These persons were not covered by household member testing in our study.



### 5.3 Readiness of primary care physicians for taking measures targeted at early detection of HCV infections

Considering the organisation of the health care system, with crucial role of primary health care and the experience acquired during Project 1 indicating that primary care physicians know the local population very well, the involvement of primary care personnel in the HCV screening programme could considerably increase its effectiveness. In order to assess the preparation and readiness of primary care physicians for the activities oriented at early detection of HCV, as well as for identifying barriers in that respect, a survey was conducted among 500 primary care physicians working in health care facilities in urban areas and in the countryside across the country (16 provinces) and holding managerial positions in their facilities.

The survey results demonstrate that the level of knowledge of primary care physicians on hepatitis C is relatively satisfactory, although there are aspects that turned out to be problematic for the respondents, including the scale of the problem, HCV infection diagnosis, and possibilities within the treatment of hepatitis C. Only 5.2% of the respondents were aware that there are currently treatment regimens which allow curing 90-100% of HCV-positive persons (Fig. 5.3.).

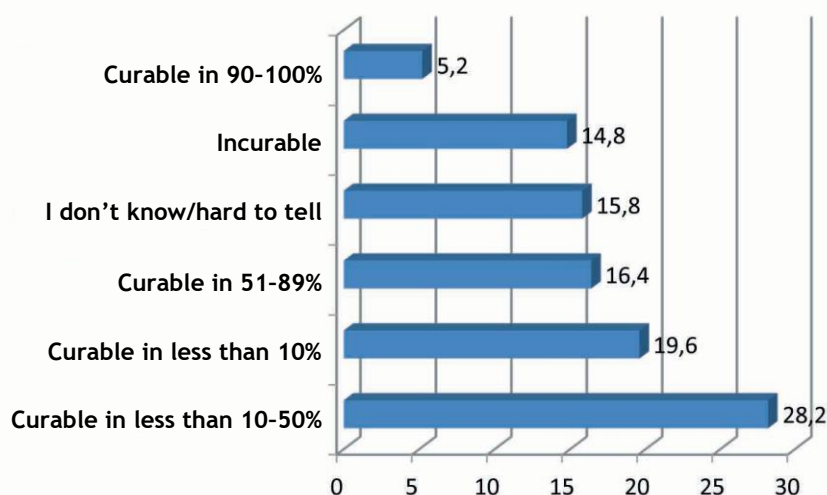


Figure 5.3.

Proportion of answers given by primary care physician to the question whether hepatitis C is currently a curable disease

Slightly more than half of the respondents (52%) had encountered the HCV infection problem during their clinical practice. Out of them, 56% had encountered difficulties, including anxiety or depression of patients (39.7%), lack of possibility to perform some diagnostic tests (37.7%), lack of algorithm

to deal with an HCV-positive patient at the primary health care level (37.0%), and difficulties in cooperating with specialists (36.3%) mainly because it takes a long time for a patient to get an appointment and there is no feedback from a specialist. The respondents indicated various practices in case they suspected HCV infection in their patients, with the most frequent practice being referral of a patient to a specialist (74.9%). Around 25% of the respondents recommended a test for HCV at a patient's own cost.

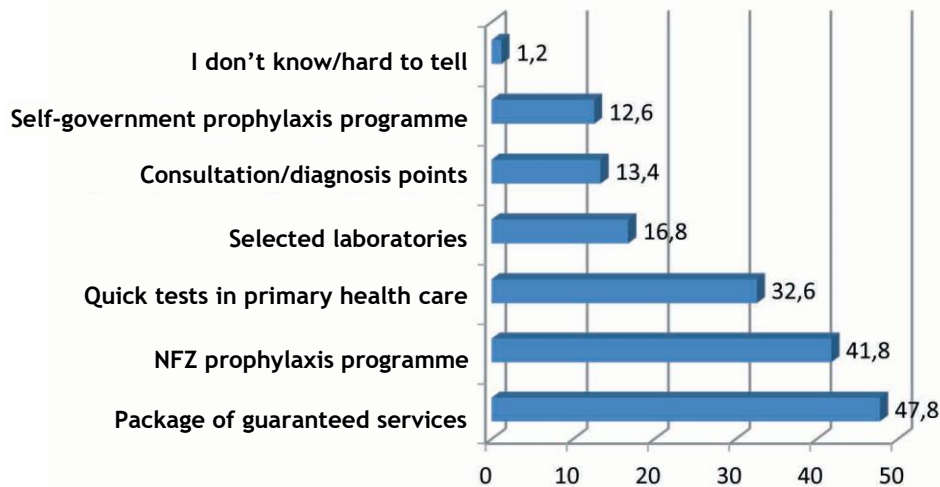


Figure 5.4.

Solutions preferred by physicians in terms of HCV diagnosis (up to three best options)

The vast majority of the respondents (88.6%) perceived HCV infection as a significant public health problem in Poland. The vast majority of the respondents were also of the opinion that primary care physicians should be involved in activities aimed at increasing the HCV detection rate in Poland (93%). In the opinion of the majority of the respondents (83.4%), limited funds for laboratory tests were a main obstacle for increasing the availability of tests for HCV at the primary health care level, although some also mentioned lack of primary care personnel's time (19.5%), and insufficient preparation of primary care physicians (17.6%).

Physicians were also asked to indicate three solutions which could be implemented in order to improve the HCV diagnosis in Poland and which they think could bring the most optimum results. The most frequently indicated solutions were inclusion of the test for HCV antibodies into the list of tests offered under the package of guaranteed primary health care services (47.8%), availability of the test for HCV antibodies in a prophylaxis programme funded by the National Health Fund (41.8%), and primary health care implementation of rapid diagnostic tests detecting HCV antibodies (32.6%)

(Fig. 5.4.).

#### **5.4 Programme implementation at the primary health care level – own experience, good practices, and barriers**

Implementation of Project 1 was planned in health care entities providing primary health care services through, inter alia, general practitioners. It is a level of health care most frequently used by the majority of general population. Hence, it was found that the primary health care level would be an optimum place for the study. Project, in fact, generated much interest among the target group. Only 15% of persons invited to the project refused to participate. Refusals were recorded more frequently among men and young people, especially the working ones. A small proportion of refusals suggests that sufficient resources were allocated for the study (e.g. number of employees delegated for Project 1, time allocated) and effective methods of encouraging people to participate in the study based on personal contact (invitation by phone or direct contact, promotional activities) were used. An importance of personal interview with a patient and matching the appointment time to possibilities/preferences of patients was also emphasised.

Patient recruitment was a time-consuming process. On average, primary health care units needed 1.8 year (min. 0.96 - max. 2.78) to perform activities that the Project involved, meaning enrolment and tests of 400 patients on average (min. 55 persons - max. 849 persons). The average enrolment rate amounted to 14 patients per month per unit. The average workload for primary care personnel was estimated at 9 hours per week (min. 4.6 - max. 21). Most of the units (58%) allocated 5-10 hours per week for the Project. Units indicated that the process of inviting patients was the most burdensome. Their work was made more difficult due to the lack of telephone numbers or current telephone numbers of patients, as well as the lack of trust and scepticism of some patients during the telephone invitation. In the opinion of the units themselves, the positive effects of implementing the project in primary health care required deep involvement of the personnel, good rapport with patients, patients' trust towards the personnel, and the knowledge of local population.

Many primary health care facilities invited to the project refused because of lack of interest, no personnel capacities or lack of logistic capacities (lack of appropriate infrastructure). However, there was a positive reaction of the personnel of most of the primary health care units which decided to participate in the project, although every third unit reported initial concerns regarding organisation of work and additional workload for the personnel. Similar barriers may also occur when implementing a possible prophylaxis programme or other solution aimed at increasing HCV diagnosis at the primary

health care level. Experience gained during the initial phase of the project shows that it is necessary to publicise the problem and proposed actions properly before its implementers are recruited. A primary difficulty during the project arose out of a quite rigorous patient selection for the study (random selection). When it comes to implementing a routine prophylaxis programme, a more flexible method of recruitment may be taken into account, e.g. conducting enrolment among patients visiting the outpatient clinic for other health reasons or after the prophylaxis campaign is publicised.

Experience of other countries allows us to identify several good practices related to planning and implementation of prophylaxis programmes. It should be remembered during development of programmes implemented at the primary health care level that these programmes will constitute additional workload for the medical personnel. Therefore, programmes which use simple eligibility criteria, harmonised with guidelines applied by other specialists and holistic programmes of prophylactic tests targeted at a given group of people prove better. It must be noted that scientific databases do not constitute the most important source of information for many medical professionals. Implementation of recommendations requires that the guidelines be specifically designed and actively implemented among those medical professionals who are to perform them [16]. Dedicated electronic devices integrated with patient electronic databases may facilitate the process. For example, one of the primary health care facilities in USA used a supporting programme which automatically referred eligible patients for HCV tests during an appointment. It allowed increasing the number of tests for HCV infection [17]. Another possible solution is to hire a person exclusively for prophylactic programmes, who would coordinate the programmes and provide educational support at the same time [18]. Rapid diagnostic tests may also facilitate the process when it comes to units without their own sample collection facilities. Rapid diagnostic tests allow reaching a wider population and accelerate diagnosis with acceptable sensitivity and specificity.

HCV infection diagnosis is a multi-stage process. Infection confirmation scheme initially uses a screening test (e.g. ELISA) detecting virus antibodies which may still be positive for many years after spontaneous elimination of the virus (self-treatment). Then, a test for the presence of the virus itself (HCV-RNA) with the PCR technique [19] is performed. Only persons in whom the RNA of the virus has been detected are subject to further clinical proceedings and, as a result, treatment. At present, confirmatory tests are performed no earlier than under specialist care. However, in typical cases, the test is not difficult to interpret. Meanwhile, screening tests performed under the project demonstrated that, in Poland's general population, HCV-RNA was detected only in 43% of persons for whom the initial test for HCV antibodies was reactive. Taking into account the workload of specialist care and waiting time for an appointment with a specialist, the HCV-RNA test done at the primary health care level should be considered. Moreover the time of

waiting for test results in the present project (around 1 month) was one of the aspects to be improved according to the participants.

Finally, it should be emphasised that almost all the patients (92%) with HCV infection detected during the project were referred to a specialist and were already under the specialist care at the end of the project or were signed up and waited for an appointment. Reasons why some persons were not referred to a specialist were mostly related to a patient refusing to be under specialist care.

## 5.5 Summary

To sum up the results of the Project 1 entitled "Improvement of HCV diagnosis, estimates of HCV prevalence in general population and analysis of factors associated with HCV prevalence", the exceptionally low proportion of HCV infections detected (22%) calls for special attention. It indicates an immediate necessity to implement an extensive programme of screening targeted at general population.

Prevalence of HCV infections demonstrates low variability in adult population in Poland. The situation is different in the United States and some Western European countries, where most of the infections are concentrated around a small number of birth cohorts. It was possible in those countries to implement birth cohorts based screening. The above solution, however, cannot be used in Poland. Considering the specificity of epidemiological situation of HCV infections in Poland, active screening (test offered by health care facility personnel) based on chosen risk factors seems to be the most effective approach. As part of the „Prevention of Hepatitis C Virus (HCV) Infections” project, several key factors associated with the HCV infection prevalence were identified. The most important epidemiological indications for HCV tests in general population are transfusion performed before 1992 and injecting-drug use (even on one occasion only). Additionally, HCV tests should be performed in women with a history of many caesarean sections, especially if the sections were performed before 1992, and in men with tattoos. If HCV infection is detected, it is advisable to test sexual partners of the infected person.

Activities performed under the „Prevention of Hepatitis C Virus (HCV) Infections” indicate that HCV diagnosis at the primary health care level is feasible and may improve HCV diagnosis in general population. The above conclusion is especially supported by a positive reaction to the project of both personnel and patients (low refusal rate to screening tests) and competent procedures towards those persons who have been detected with infection, which led to putting them efficiently under specialist care. Results of the survey conducted among primary care physicians suggest that implementation of tasks aimed at detecting and preventing HCV infections at the primary

health care level should be preceded by appropriate activities which would facilitate the process, particularly including higher funds for laboratory tests and organisation of training and/or issuance of detailed guidelines within indications for HCV testing and algorithms to deal with an HCV-positive patient in order to ensure optimum effectiveness of such activities. Those indications are consistent with general observations and suggestions on how to reinforce health prophylaxis developed by the team appointed by the Minister of Health in 2016 in order to develop proposed system solutions within primary health care [20].

## ACKNOWLEDGMENTS

Laboratory tests were performed by a team at the Virology Department of NIZP-PZH (Prof. Kazimierz Madaliński, PhD; Paulina Godzik, PhD; Agnieszka Kołakowska, MA; Anna Żuk-Wasek, PhD; and Barbara Łagosz and Mirosława Pyzel (technicians)).

Special thanks go to the primary care facilities personnel for their involvement and diligent work under Project 1 and to all the persons who participated in the screening.

**Table 6.1.**

List of units cooperating in the performance of Project 1

Province	Primary Health Care Unit	Number of Patients
DOLNOŚLĄSKIE	1. SP ZOZ Zakład Lecznictwa Ambulatoryjnego w Trzebnicy	706
	2. Niepubliczny Zakład Opieki Zdrowotnej „Medicus” sp. z o.o. w Żarowie	607
	3. Dolnośląskie Centrum Medyczne „DOLMED” S.A we Wrocławiu	444
	4. Centrum Medyczne „ASTRA” Niepubliczny Zakład Opieki Zdrowotnej w Bielawie	400
KUJAWSKO-POMORSKIE	1. Szpital Uniwersytecki Nr 2 im. dr Jana Biziela w Bydgoszczy	800
	2. Wojewódzki Ośrodek Medycyny Pracy w Toruniu	500
	3. Niepubliczny Zakład Opieki Zdrowotnej „NOVAMED” Przychodnia Rodzinna w Brodnicy	547
LUBELSKIE	1. Niepubliczny Zakład Opieki Zdrowotnej „Dziesiąta” w Lublinie	823

55 Project KIK/35 - "Prevention of hepatitis C virus (HCV) infections"

	2. Samodzielny Publiczny Zakład Opieki Zdrowotnej w Kurowie	800
	3. Niepubliczny Zakład Opieki Zdrowotnej „Medicus” s.c. w Rykach	200
	4. Niepubliczny Zakład Opieki Zdrowotnej Ośrodek Zdrowia w Wisznicach	799
ŁÓDZKIE	1. Niepubliczny Zakład Opieki Zdrowotnej „HIPOKRATES” w Wieluniu	849
	2. Samorządowa Przychodnia Zdrowia w Tuszynie	536
	3. Niepubliczny Zakład Opieki Zdrowotnej Medicus Sp. z o.o. w Zduńskiej Woli	350
	4. Przychodnia Fundacji „Swoboda” w Głownie	400
MAŁOPOLSKIE	1. Miejska Przychodnia Zdrowia w Makowie Podhalańskim	300
	2. Niepubliczny Zakład Opieki Zdrowotnej “GAMED” w Ropie	806
	3. Niepubliczny Zakład Opieki Zdrowotnej w Jodłowniku	402
	4. Niepubliczny Zakład Opieki Zdrowotnej “BERGER I SAJDAK” w Zalasowej	503
	5. FALCK MEDYCYNĄ Sp. z o.o. Centrum Medyczne FALCK KRAKÓW	801
	6. Niepubliczny Zakład Opieki Zdrowotnej w Osielcu	343
MAZOWIECKIE	1. Specjalistyczna Przychodnia Lekarska Internistyczno-Pediatryczna “Juniperus” w Izabelinie	110
	2. Niepubliczny Zakład Opieki Zdrowotnej “Lekarz Rodziny” w Sannikach	801
	3. Niepubliczny Zakład Opieki Zdrowotnej “ESKULAP” s.c. w Pruszkowie	414
	4. Samodzielny Publiczny Gminny Zakład Opieki Zdrowotnej w Nadarzynie	400
	5. Niepubliczny Zakład Opieki Zdrowotnej “Medical Center” s.c. w Warszawie	511
PODKARPACKIE	1. Niepubliczny Zakład Opieki Zdrowotnej Nr 3 w Nisku	500
	2. Niepubliczny Zakład Opieki Zdrowotnej Ośrodek Zdrowia w Brzozie Królewskiej	403
	3. Zespół Lekarzy Rodzinnych Niepubliczny Zakład Opieki Zdrowotnej w Czudcu	650

## 5. Needs and suggested methods of extending... (Project 1) 56

	4. Niepubliczny Zakład Opieki Zdrowotnej KEMED Sp. z o.o. w Jaśle	447
PODLASKIE	1. Praktyka Lekarza Rodzinnego Zuzanna Grażyna Ginel w Grajewie	305
	2. Niepubliczny Zakład Opieki Zdrowotnej Przychodnia Rodzinna i Specjalistyczna "FALMED" w Sejnach	312
	3. Niepubliczny Zakład Opieki Zdrowotnej - Grażyna Biruta Pawłowska w Grabowie	350
	4. Niepubliczny Zakład Opieki Zdrowotnej Zespół Lekarzy Rodzinnych Nr 2 s.c. w Siemiatyczach	500
	5. Niepubliczny Zakład Opieki Zdrowotnej "VITA-MED" sp.p. w Suwałkach	602
POMORSKIE	1. NZOZ MEDIART Centrum Zdrowia Matarnia - Port Lotniczy - Stare Miasto Gdańsk	800
	2. PROMEDICA Sp. z o.o. Niepubliczny Zakład Opieki Zdrowotnej "GEMINI" w Chojnicach	800
	3. Niepubliczny Zakład Opieki Zdrowotnej "PRO VITA" w Ryjewie	55
	4. Samodzielny Publiczny Zakład Opieki Zdrowotnej w Człuchowie	400
	5. Niepubliczny Zakład Opieki Zdrowotnej w Kobylnicy	300
ZACHODNIO-POMORSKIE	1. Niepubliczny Zakład Opieki Zdrowotnej Doktor Ewa w Ińsku	501
	2. Niepubliczny Samodzielny Zakład Opieki Zdrowotnej "ESKULAP" s.c. w Kamieniu Pomorskim	407
	3. Niepubliczny Zakład Opieki Zdrowotnej "PRZY PARKU" w Wolinie	420
	4. Poradnia Medycyny Rodzinnej Cztery Pory Roku w Pęzinie	267
	5. Niepubliczny Zakład Opieki Zdrowotnej "ZDROWIE" w Dębnie	488
TOTAL	45	22,659



## REFERENCES

1. Godzik P, Kotakowska A, Madaliński K, Stepień M, Zieliński A, et al. (2012) Prevalence of anti-HCV antibodies among adults in Poland - results of cross-sectional study in general population. *Przegl Epidemiol.* 66(4):575-80.
2. Flisiak R, Halota W, Horban A, Juszczak J, Pawłowska M, et al. (2011) Prevalence and risk factors of HCV infection in Poland. *Eur J Gastroenterol Hepatol.* 23(12):1213-7. doi: 10.1097/MEG.0b013e32834d173c.
3. Parda N, Stepień M, Zakrzewska K, Madaliński K, Kotakowska A, et al. (2016). What affects response rates in primary healthcare-based programmes? An analysis of individual and unit-related factors associated with increased odds of non-response based on HCV screening in the general population in Poland. *BMJ Open.* 6(12):e013359. doi: 10.1136/bmjopen-2016-013359.
4. Coward S, Leggett L, Kaplan GG, Clement F. (2016) Cost-effectiveness of screening for hepatitis C virus: a systematic review of economic evaluations. *BMJ Open.* 6(9):e011821.
5. Smith BD, Morgan RL, Beckett GA, Falck-Ytter Y, Holtzman D, et al. (2012) Recommendations for the identification of chronic hepatitis C virus infection among persons born during 1945-1965. *MMWR Recomm Rep Morb Mortal Wkly Rep Recomm Rep.* 61(RR-4):1-32.
6. Sakem B, Madaliński K, Nydegger U, Stepień M, Godzik P, et al. (2016) Hepatitis C virus epidemiology and prevention in Polish and Swiss population - similar and contrasting experiences. *Ann Agric Environ Med.* 23(3):425-31. doi: 10.5604/12321966.1219181.
7. Stepień M, Rosińska M. (2015) Hepatitis C outbreaks in Poland in 2003-2013. Medical procedures as a dominant route of HCV transmission. *Przegl Epidemiol.* 69(3):465-72, 585-90.
8. Rosińska M, Sierosławski J, Wiessing L. (2015) High regional variability of HIV, HCV and injecting risks among people who inject drugs in Poland: comparing a cross-sectional bio-behavioural study with case-based surveillance. *BMC Infect Dis.* 15:83. doi: 10.1186/s12879-015-0828-9.
9. Wedemeyer H, Duberg AS, Buti M, Rosenberg WM, Frankova S, et al. (2014) Strategies to manage hepatitis C virus (HCV) disease burden. *J Viral Hepat.* 21 Suppl 1:60-89. doi: 10.1111/jvh.12249.
10. Zuure FR, Urbanus AT, Langendam MW, Helsper CW, van den Berg CH, et al. (2014) Outcomes of hepatitis C screening programs targeted at risk groups hidden in the general population: a systematic review. *BMC Public Health.* 14:66. doi: 10.1186/1471-2458-14-66.
11. Wiessing L, Blystad H. (2010) EMCDDA publishes guidelines on testing for HIV, viral hepatitis and other infections in injecting drug users. *Euro Surveill.* 15(48). pii: 19735.
12. Tohme RA, Holmberg SD. (2012) Transmission of hepatitis C virus infection through tattooing and piercing: a critical review. *Clin Infect Dis.* 54(8):1167-78. doi: 10.1093/cid/cir991.
13. Zieliński A. (2014) Sexual behaviour and the risk of HCV infection. *Przegl Epidemiol.* 68(1):1-3, 99-100.
14. Cullen BL, Hutchinson SJ, Cameron SO, Anderson E, Ahmed S, et al. (2012)

Identifying former injecting drug users infected with hepatitis C: an evaluation of a general practice-based case-finding intervention. *J Public Health Oxf Engl.* 34(1):14-23.

15. Kallman JB, Arsalla A, Park V, Dhungel S, Bhatia P, i in. (2009) Screening for hepatitis B, C and non-alcoholic fatty liver disease: a survey of community-based physicians. *Aliment Pharmacol Ther.* 29(9):1019-24.
16. Bechini A, Falla A, Ahmad A, Veldhuijzen I, Boccalini S, et al. (2015) Identification of hepatitis B and C screening and patient management guidelines and availability of training for chronic viral hepatitis among health professionals in six European countries: results of a semi-quantitative survey. *BMC Infect Dis.* 15:353.
17. Sidlow R, Msaouel P. (2015) Improving hepatitis C virus Screening Rates in Primary Care: A Targeted Intervention Using the Electronic Health Record. *J Healthc Qual Off Publ Natl Assoc Healthc Qual.* 37(5):319-23.
18. Nagykaldi Z, Mold JW, Aspy CB. (2005) Practice facilitators: a review of the literature. *Fam Med.* 37(8):581-8.
19. Madaliński K, Flisiak R, Halota W i in. (2013) Diagnostyka laboratoryjna zakażeń wirusem zapalenia wątroby typu C. Rekomendacje Polskiej Grupy Roboczej 2012/2013. *Diagnostyka Laboratoryjna* 49 (1):65-70.
20. Zespół do opracowania strategii rozwiązań systemowych w zakresie podstawowej opieki zdrowotnej. „Analiza funkcjonowania podstawowej opieki zdrowotnej w Polsce oraz propozycje strategii rozwiązań systemowych”. Warszawa, 2016.

# HCV PREVENTION AMONG DRUG USERS

Janusz Sierosławski, MA; Katarzyna Dąbrowska, PhD in Humanities,  
Institute of Psychiatry and Neurology

## PROJECT 2

### **“Developing evidence-based HCV prevention Program for injecting drug users (IDUs) and assessing needs for prevention in this population”**

Drug users, especially injecting-drug users (IDUs), are one of the social groups most exposed to HCV infection. In countries with a high standard of health care, IDUs constitute a group that determine the dynamics of HCV epidemic. Local surveys conducted in Poland between 2004 and 2005 in 14 locations in 6 provinces of our country indicated a high spread of HCV among IDUs. It ranged from 43.7% in the Lubelskie Province to 68.3% in the Śląskie Province and everywhere it was several times higher than the spread of HIV [1].

Problematic drug users are one of the groups that are subject to social and economic exclusion to the highest extent. Because of social stigma and legal threats, they constitute a hidden population in Poland, which leads to a limited access to medical services. Attitudes of those people towards health and, in general, towards the society and its institutions, as well as towards commonly accepted norms, are an additional factor reducing their chances to take advantage of services of prevention and treatment of diseases.

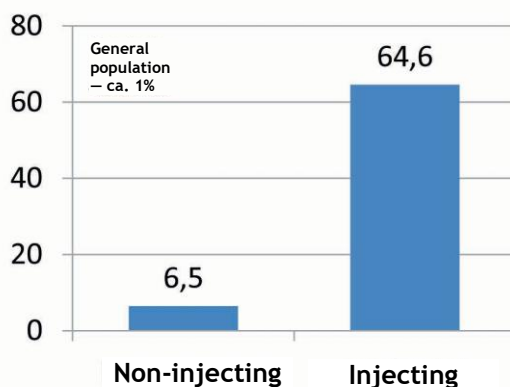
Specific routes of transmission and considerable intensification of risk factors encourage development of preventive activities oriented at this group. Furthermore, IDUs are a particularly difficult population to be embraced by preventive actions due to a limited access to this group (hidden population), lack of trust, and specific system of norms and values characteristic of this population. Hence, this group needs to have a separate strategy of preventing HCV infections developed and a properly customised prevention programme aimed at them.

Preventive strategy is a set of institutional solutions at a national level facilitating access to health care services dealing with HCV infections for drug users, while a prevention programme means more or less formalised procedures based on evidence aimed at reaching this group with an appropriate message of HCV infection prevention in a way to ensure healthy behaviour of the target group.

A long-term objective of the programme is to reduce the risk of HCV infection in the population of problematic drug users, especially injecting-drug users. It is to be achieved by embracing the population of problematic drug users with HCV prevention and increasing institutional capacity for the response to the issue of HCV among IDUs. These objectives are to be achieved through the assessment of needs related to prevention and treatment of HCV by estimating the prevalence of HCV among IDUs and specifying infection risk factors, as well as developing assumptions for National HCV Prevention and Control Strategy with regard to IDUs and a model HCV prevention programme aimed at this group.

## 6.1 Prevalence and risk factors of HCV infections

Study conducted among 1,219 problematic drug users comprised of structured interviews and saliva tests for HCV antibodies. It confirmed a very high prevalence of HCV in this group. It is estimated that 65% of injecting-drug users in Poland have HCV antibodies, which means that they have had contact with HCV (Fig. 6.1.). Among problematic drug users who do not use syringes, this proportion amounts to 6.5%. It is worth noting that there is ca. 1% of such persons in the entire society. In each of those groups, at least half is infected with HCV, meaning they have HCV in their blood.

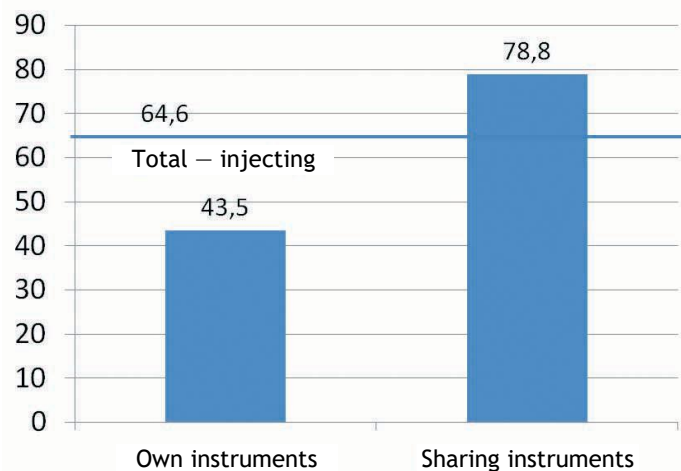


**Figure 6.1.**  
Prevalence of HCV antibodies among injecting- and non-injecting-drug users (proportions of the subjects)

Results put together in **Figure 6.2.** not only confirm the importance of the risk factor of using substances in injections, but also indicate that the group of non-injecting-drug users is considerably more exposed to having HCV antibodies than general population.

Higher proportions of HCV infections recorded for the population of drug users who have never taken an injection drug in comparison with population not using drugs are supported by other studies as well [2-4].

Risk of infections is particularly high in the group of injecting-drug users who have ever shared needles or syringes with others. Such prevalence amounts to 79%.



**Figure 6.2.**

Prevalence of HCV antibodies through sharing injection tools (proportion of the subjects)

Sharing injection tools increases the probability of finding oneself in the group with HCV antibodies four times in comparison with injecting-drug users who have always used their own instruments only. In addition, nearly 60% of injecting-drug users have used needles or syringes used previously by other people at least once in their lifetime. Significant role of sharing needles and syringes as a risk factor is confirmed by study results in other countries [5].

A proportion of those who declared that they had shared their injection instruments may be underestimated. Respondents do not like to admit to having shared needles and syringes, as it entails embarrassment and fear of condemnation. Answering this question, respondents also tend not to take into consideration irregular or unintentional sharing with others, sharing with someone trusted or other exceptional circumstances [6].

Infected persons are more frequently encountered among those injecting-drug users who have been in penal institutions, experienced homelessness, performed injections in particularly risky places, such as public toilettes,

streets or abandoned buildings. The lack of capacity to meet fundamental sanitary requirements while injecting drugs increases the risk of infection considerably.

The majority of HCV-positive drug users are not aware of their infection, as the practice of testing oneself for HCV antibodies is rare. It arises from both lack of knowledge on the need of testing and limited availability (difficulty in getting an appointment with a doctor, necessity to pay for tests). Problematic drug users, especially those who are drug dependent, live on the margins of society and are subject to social exclusion and deprivation. Many of them are homeless, unemployed, and deprived of any social support.

Problematic drug users face social stigma based on the fact that addiction is perceived as a social deviation – not a chronic disease. Even those who are inclined to accept the definition of addiction as a disease, it is often perceived as a disease which is caused through a person's own fault. Social stigma leads to discriminating practices which limit the access of drug dependent people to social and health care services, including to HCV diagnosis and treatment. The possibility to undergo HCV treatment tends to be made conditional upon undergoing an abstinence-based treatment of addiction. Drug users who are HCV-positive may constitute a source of infection for others; therefore, there is an enormous preventive potential in reducing any barriers in the access to HCV treatment.

Harm reduction programmes, which – apart from raising awareness of the avoidance of particularly risky behaviours – involve needles and syringes exchange, are not sufficiently developed. There is lack of modern solutions, such as injection rooms, already used in many European countries. Injecting-drug users report difficulties in accessing sterile instruments in pharmacies; it happens that they are refused to be serviced when they are identified as "addicts".

## 6.2 Educational programme

The educational programme was planned on the basis of the results of studies performed among problematic drug users using qualitative methods. Data collected during individual in-depth interviews and in focus groups served as a basis for determining conditions for the success of HCV prevention. Because of various types of difficulties in reaching drug users with a prophylactic message (specific value system and lifestyle, lack of trust in institutions etc.), it seems that identifying needs of this groups is fundamental to the planning of prophylactic intervention. The completed study demonstrated that both the users of psychoactive substances and professionals noted similar aspects to be taken into account at the stage of planning, as well as implementing prophylactic intervention dedicated to the issue of HCV infections. Thus, the physical availability, ensuring the sense of safety and anonymity for persons taking advantage of the offer, adjusting the duration and nature of intervention to the conditions in which it is implemented, interactive nature of intervention and possibility of asking questions and reproducibility and comprehensiveness of activities launched seems to be crucial factors when it comes to the success of the intervention.

When planning a prophylactic intervention, it was also necessary to take into consideration changes that have occurred in the recent years both within the environment of the users of psychoactive substances and within the market of psychoactive substances. The respondents also mentioned that tendencies or trends in the consumption of psychoactive substances are changing rapidly and depend on the changing availability of substances and fads. New Psychoactive Substances also used in injections may serve as an example [7]. As demonstrated by the review of studies evaluating prophylactic interventions, the chance of success rises if combined preventive strategies are used [8].

Two types of scenarios of a prophylactic programme were prepared as part of the educational programme: intervention scenario to be performed in health care facilities, especially outpatient facilities; and a scenario intended for harm reduction facilities. Intervention implementers received a written guidelines on how to perform it. They were obliged to report their work on special forms. Apart from that, an educational brochure on HCV addressed to the users of psychoactive substances was created and used during interventions.

Educational intervention was, in principle, made up of one or optionally two meetings with a client depending on the possibilities to reach them for the second time with a prophylactic message. The second meeting was used to remind and reinforce the prophylactic message.

Educators received guidelines that the interventions should possibly cover all the clients of the facility where the educators are employed (including

users of new psychoactive substances – the so-called “designer drugs”) who could be reached during the project – both those included in the study and others.

The meetings were individual. As the intervention was of a pilot nature, the educators were asked to record any notes, comments, and possible suggestions of what could be modified. Their role was to develop and hand over a summary report of the experience from the intervention, taking into account any notes, comments, and possible suggestions of what could be modified, after the programme was completed.

Educational intervention scenario consisted of:

- aim of the action,
- tasks to complete,
- expected results,
- meeting plan,
- performance notes.

The aim of the first meeting was to increase the knowledge of intervention recipients on HCV and start to motivate them to take up actions to reduce the risk of infection and its health-related consequences. The second meeting aimed at reinforcing the knowledge and continuing the motivation to take up actions to reduce the risk of infection and its health-related consequences.

Tasks of the educators as part of the first meeting included provision of information (to compensate the knowledge deficit) with a view to achieving the understanding of HCV infection risk by drug users and information with regard to the methods of preventing infections. Furthermore, the educators were responsible for motivating the intervention recipients to make necessary changes in order to minimise the risk of infection and to undergo a test for HCV. The purpose of the second meeting was to reinforce the knowledge provided and check the understanding of HCV infection risk, to encourage further the use of means reducing the risk of infecting oneself and other people, to check whether the patient was tested and establish reasons for not doing it (if the patient was not tested), and finally to help and provide support to persons who tested positive.

As a result of such an intervention, the recipient should gain awareness of the HCV infection risks and health consequences of the infection, as well as acquire knowledge on the methods of reducing the infection risk. Following the relevant activities, the intervention recipients were to be motivated to apply measures aimed at reducing HCV infection risk.

The meeting plan consisted of detailed steps of educational intervention. Consecutive steps of the first meeting were as follows:

1. Assessing the baseline level of knowledge on HCV of the intervention recipient.



2. Conveying information provided in an educational brochure (set of information adjusted to the patient's knowledge).
3. Conveying information on the methods of risk reduction, especially through less risky self-administration of drugs.
4. Raising the benefits of testing oneself for HCV and attempting to convince the patient to test themselves in the near future.

The second meeting consisted of the following steps:

1. Checking how much information on HCV the patient remembered and then discussing basic issues once again.
2. Checking whether the patient had had themselves tested for HCV and whether they had collected the test results (it does not apply to patients participating in the study). If the patient tested positive (HCV+), the patient was reminded that it was just a screening test, the result of which must be confirmed in a laboratory test for diagnostic purposes.
3. Guaranteeing psychological support to patients who tested positive.
4. Discussing the necessity to protect oneself from infection for persons who tested negative.
5. Discussing the reasons for not doing the test with persons who still had not had themselves tested for HCV.
6. Further motivating the patient to reduce risky behaviours in terms of HCV infection, which began during the first meeting.
7. Informing on existing treatment possibilities, its availability, and ways to receive such services.

Performance notes concerned the way the intervention was conducted. It was suggested that, as far as possible, the intervention should be based on an interaction with the recipient – not through informing, but rather through coming to conclusions together. It was also noted that the message should be personalised depending on the knowledge and experience of the recipient.

Educational intervention was performed by 48 educators in 14 provinces. A total of 650 problematic drug users were covered by the intervention.

### **6.3 Suggested solutions to be implemented**

In order to reduce the HCV infection prevalence within the group of problematic drug users, we need to:

- intensify and extend the scope of activities within the field of harm reduction;
- provide problematic drug users with full access to HCV diagnosis and treatment;
- reduce the level of social deprivation of problematic drug users and

provide them with care in terms of satisfying their basic life needs;

- reduce social stigma by reinforcing the society's perception of addiction as a disease.

In order to reduce HCV prevalence and infection risk in the population, activities in all the above areas need to be implemented.

Harm reduction programmes play a special role in preventing HCV infections arising out of injecting-drug use, which – apart from raising awareness within avoiding particularly risky behaviours – involve exchange of needles and syringes. Providing full availability of sterile disposable injection instruments is fundamental to the reduction of risk. In some European countries, such as Switzerland, the Netherlands, Germany, Spain, Luxembourg, Norway, Denmark, Greece, harm reduction measures involve creating injection rooms where drug users may inject themselves a substance they brought under supervision of a qualified person [9]. Effectiveness of such a solution in preventing infections, not only HCV, but also HIV infections, have been confirmed by studies and is recognised by international organisations, such as World Health Organisation (WHO), Pompidou Group (Council of Europe), and European Monitoring Centre for Drugs and Drug Addiction (EMCDDA). Note also that a positive side effect of such a solution is also reduction of the risk of death caused by overdose. As shown by the experience of European metropolises (Frankfurt, Zurich), injection rooms contribute to lessening the nuisance arising out of the presence of injecting-drug users in urban spaces. It should be remembered that used needles and syringes left by drug users on the streets pose a threat of HCV infection for local residents, especially children. Injection rooms usually offer not only the possibility to inject a drug in safe conditions, but also a wide range of harm reduction (education, psychological help) and social support.

Providing treatment to HCV-positive drug users, especially those who do not stop using the drugs, shows a significant preventive potential in reducing the spread of HCV infection. HCV treatment of active injecting-drug users is recommended by European Centre for Disease Prevention and Control (ECDC) and EMCDDA [10]. From the point of view of the number of new HCV infections and HCV prevalence in the population, treatment of active injecting-drug users is more effective than treatment of persons who have given up injection drugs [11]. HCV treatment results (SVR) in active injecting-drug users are acceptable and do not deviate from the results in other clinical samples. Reinfection rate is low [12-13]. Economic models suggest that treating HCV in active injecting-drug users may be more cost-effective than treating former injecting-drug users if the prevalence of chronic HCV infections among injecting-drug users is lower than 60%, which corresponds to ca. 80% of HCV antibodies [14-15]. Note that we have such a situation in our country.

Starting the treatment is conditional upon detecting an infection.

Providing injecting-drug users with access to free testing for HCV antibodies and then persons who tested positive with full diagnosis is a basic requirement of an efficient prevention. What is more, it is necessary to take up actions aimed at encouraging the use of this offer.

When it comes to reducing the scale of social exclusion, access to social welfare services needs to be provided, especially in terms of basic human needs, such as shelter and food. Without satisfying those two basic needs, we cannot talk about the possibility of starting healthy behaviours [16]. Activities aimed at bringing back drug dependent persons to society, helping them find a job, supporting in the settlement of their legal affairs, and reinforcing social relations may play a significant role. All those activities should be in the form of coordinated, comprehensive care and support (case management).

Social stigma, which problematic drug users have to deal with, constitutes a considerable barrier in accessing treatment and negatively affects the cooperation of drug users themselves necessary in implementing efficient HCV prevention. Social stigma is a root cause of discriminating practices in health care, social aid, and other institutions. Therefore, it is necessary to start extensive public education activities aimed at preventing stigma against drug users addressed to professionals (physicians, police officers, social welfare workers, pharmacists), politicians of various levels, and finally to general population.

Strategy of reducing HCV infections among IDUs requires the following measures:

- legislative changes creating legal bases for injection rooms;
- introduction of appropriate provisions to the National Health Programme (NPZ);
- involving the civil society (non-governmental organisations);
- close cooperation with the drug addiction treatment facilities and harm reduction programmes.

Local communities and mass media will play a significant role in performing the strategy. Activities of the former are especially important in terms of lowering the level of social exclusion and deprivation of drug dependent persons, while without the participation of the latter, it is hard to imagine educating the public within reducing social stigma against drug users.

## 6.4 Summary

According to the study on problematic drug users, prevalence of HCV antibodies in this group is very high, especially when it comes to injecting-drug users. HCV infection risk factors among injecting-drug users are: episodes of imprisonment, experiences of homelessness, injections in particularly risky places (such as public toilettes, streets or abandoned buildings), and little

knowledge on HCV. These factors arise out of attitudes and behaviours of drug users, as well as out of circumstances of injections. The educational prevention programme developed as part of Project KIK/35 and performed on a pilot basis in 14 locations across the country constitutes a response to the risk factors connected with the target group's awareness. Proposed activities aimed at creating conditions for safe injections, recommended as a result of the project, attempt to address the need of making the circumstances of injections safer. It is not sufficient to convince drug users to follow basic rules of reducing HCV injection risk, we need to help them in following those rules by creating conducive conditions.

## ACKNOWLEDGMENTS

The management of Project 2 gives thanks to all the coordinators of field screening tests for their commitment and diligent fulfilment of tasks.

**Table 6.1.**

List of field screening test coordinators in Project 2

Province	Name	Surname
Dolnośląskie	Andrzej	Turek
Kujawsko-Pomorskie	Elżbieta	Rachowska
Lubelskie	Ireneusz	Siudem
Lubuskie	Jolanta	Serbakowska
Łódzkie	Aleksandra	Majdańska
Małopolskie	Bartosz	Michalewski
Podlaskie	Agata	Niemczynowicz
Podkarpackie	Jadwiga	Mroczek
Pomorskie	Anita	Powąta
Śląskie	Edward	Bożek
Świętokrzyskie	Grażyna	Jabłońska
Warmińsko-Mazurskie	Ludmiła	Strzelecka
Wielkopolskie	Maria	Chartampowicz
Zachodniopomorskie	Anna	Wiśniewska

## REFERENCES

1. Rosińska M, Sierosławski J, Wiessing L (2015) High regional variability of HIV, HCV and injecting risks among people who inject drugs in Poland: comparing a cross-sectional bio-behavioural study with case-based surveillance. *BMC Infectious Diseases*, DOI 10. 1186/s12879-015-0828-9.
2. Ferreira RC, Rodrigues FP, Teles SA, Lopes CL, Motta-Castro AR, et al. (2009) Prevalence of hepatitis B virus and risk factors in Brazilian non-injecting drug users. *Journal of Medical Virology* 4:602-9.
3. Vallejo F, Toro C, de la Fuente L, Brugal MT, Soriano V, et al. (2008) Prevalence of and risk factors for hepatitis B virus infection among street-recruited young injection and non-injection heroin users in Barcelona, Madrid and Seville. *European Addiction Research* 3:116-24.
4. Rich JD, Anderson BJ, Schwartzapfel B, Stein MD (2006) Sexual risk for hepatitis B virus infection among hepatitis C virus-negative heroin and cocaine users. *Epidemiology & Infection* 3:478-484.
5. Giraudon I, Hedrich D, Duffell E, Kalamara E, Wiessing L (2016) Hepatitis C virus infection among people who inject drugs: epidemiology and coverage of prevention measures in Europe. In *hepatitis C among drug users in Europe: epidemiology, treatment and prevention*, EMCDDA Insights 23, Publications Office of the European Union, Luxembourg, pp. 17-30.
6. Rhodes T, Davis M, Judd A (2004) Hepatitis C and its risk management among drug injectors in London: renewing harm reduction in the context of uncertainty. *Addiction*; 99:621-33.
7. Jabłoński P, Malczewski A (2014) *Dopalacze. Skala zjawiska i przeciwdziałanie*. Warszawa: Krajowe Biuro ds Przeciwdziałania Narkomanii.
8. Hagan H, Thiede H, Weiss NS, Hopkins SG, Duchin JS, et al. (2001) Sharing of drug preparation equipment as a risk factor for hepatitis C. *American Journal of Public Health* 1:42-6.
9. Hedrich D (2004) *European report on drug consumption rooms*. Lisbon: EMCDDA.
10. ECDC and EMCDDA guidance (2011) *Prevention and control of infectious diseases among people who inject drugs*, Stockholm, ([http://ecdc.europa.eu/en/publications/Publications/111012\\_Guidance\\_Infectious\\_diseases\\_IDU\\_brief.pdf](http://ecdc.europa.eu/en/publications/Publications/111012_Guidance_Infectious_diseases_IDU_brief.pdf)).
11. Grebely J, Matthews GV, Lloyd AR, Dore GJ (2013) Elimination of hepatitis C virus Infection Among People Who Inject Drugs Through Treatment as Prevention: Feasibility and Future Requirements. *CID* 57:S1014-20.
12. Hildsten RJ (2013) Directly observed pegylated interferon plus self-administered ribavirin for the treatment of hepatitis C virus infection in people actively using drugs: a randomized controlled trial. *Clin Infect Dis* 57 Suppl 2:S90-96.
13. Aspinall EJ, Corson S, Doyle JS, Grebely J, Hutchinson SJ, et al. (2013) Treatment of hepatitis C virus infection among people who are actively injecting drugs: a systematic review and meta-analysis. *Clin Infect Dis* 57 Suppl 2:S80-89.
14. Martin NK (2012) Cost-effectiveness of hepatitis C virus antiviral treatment for injection drug user population, *Hepatology* 55:49-57.
15. Martin NK (2013) Hepatitis C virus treatment for prevention among people who inject drugs: Modeling treatment scale-up in the age of direct-acting antivirals, *Hepatology* 58:1598-1609.

16. Karlińska A (2015) Iniekcijni użytkownicy substancji psychoaktywnych - identyfikacja problemów i potrzeb na przykładzie pięciu polskich miast: Warszawa, Kraków, Gdańsk, Poznań i Lublin. Raport końcowy. Warszawa, Fundacja Redukcji Szkód.

# HCV TESTING OF PREGNANT WOMEN AS A SUBSTACIAL COMPONENT OF MOTHER AND CHILD CARE

Prof. Kazimierz Madaliński, MD-PhD; Karolina Zakrzewska, MA;  
Paulina Godzik, PhD; Agnieszka Kołakowska, MA;  
National Institute of Public Health – National Institute of Hygiene

## PROJECT 3

### “Preliminary programme of routine HCV testing among pregnant women”

HCV infection does not pose a particular threat for a woman during pregnancy. Concomitant pregnancy and HCV infection does not increase the risk of congenital defects in the foetus, preterm birth or miscarriage. HCV-positive women and their foetuses face the same risk of perinatal or pregnancy complications as other women do [1]. However, pregnant women with advanced viral hepatitis C in which advanced liver disease with complications may develop are an exception [2]. The gravest effect of HCV infection in a pregnant woman is a possibility of vertical transmission of the virus to the child. In developed countries, the risk of transmitting HCV infection from mother to child is estimated at max. 5-6% (if there is no HIV co-infection) [1,3]. HCV and HIV co-infection increases the risk of transmission to above 25% [1,3]. HCV may be transmitted through intrauterine route and during labour. Intrauterine transmission is more probable [4]. The latest studies indicate that placenta is not a sufficient barrier for HCV, but it allows and regulates the contact of the mother's cells with the foetus. During pregnancy, there is a possibility of diaplacental transmission of some bacteria and viruses, including HCV [5].

The main risk factor for HCV transmission to the child is the presence of the virus' genetic material (HCV-RNA) in the mother's peripheral blood [3].

The risk of infection transmission is higher in HCV-positive women who showed a considerably higher concentration of ALT within 1 year before conception and during pregnancy. This phenomenon means the infection is more serious and may be accompanied by a high HCV viremia, which directly increases the risk of vertical transmission [6].

Studies demonstrated that the time span of more than 6 hours from water breaking to birth considerably increases the risk of virus transmission from mother to child [7]. Vertical HCV infection was recorded more frequently in girls [8]. It is thought to be caused by differences in hormonal responses to viral infection of fetuses of different sexes. Androgens enhance the immune response, while estrogens inhibit the apoptosis of infected cells.

The influence of amniocentesis and caesarean section as risk factors of vertical transmission of HCV are also debated [8-10]. It was demonstrated that caesarean section performed urgently may increase the risk of infecting the newborn, which arises from the risk of damaging the child's skin during the procedure performed under time pressure [11].

HCV infections of pregnant women constitute a significant problem from the point of view of public health because the virus may be transmitted to a newborn. Vertical transmission is considered a main route of HCV infection in children [12].

### **7.1 Estimation of the HCV prevalence and indication of infection risk factors based on studies conducted among pregnant women**

Studies performed under Project 3 covered 8,006 pregnant women from 48 health care units chosen through open competition (Fig. 7.1.). The programme was performed in 5 provinces:

- Kujawsko-Pomorskie,
- Lubelskie,
- Mazowieckie,
- Małopolskie,
- Świętokrzyskie.

Pregnant women under care of units involved in Project 3 were invited to participate in the study – all the patients who agreed to participate were tested for HCV antibodies in blood. Reactive samples were tested for HCV-RNA.



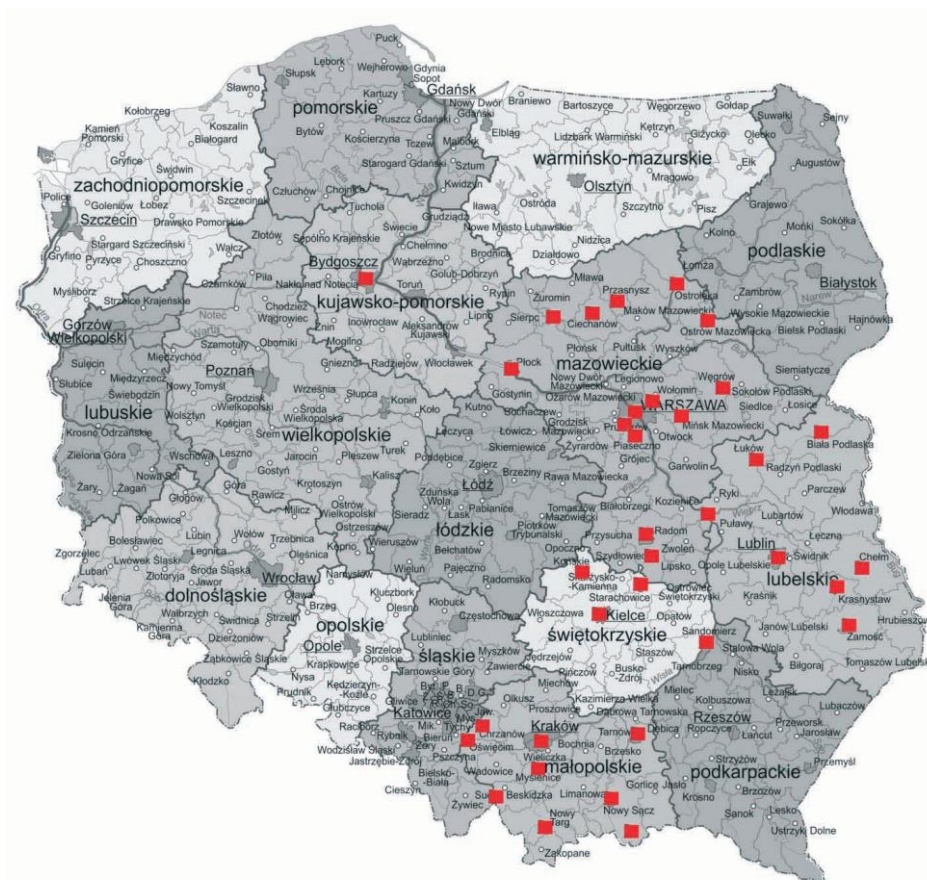


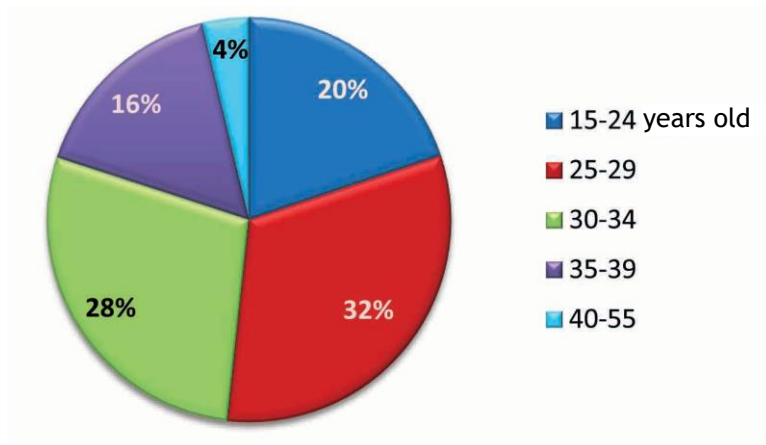
Figure 7.1.

Location of units participating in Project 3

All the women who participated in the study filled-in an anonymous questionnaire regarding HCV infection risk factors, prior tests for HCV, and knowledge on HCV infections. Designating the serum samples and questionnaire of the same patient with an individual ID allowed us to associate the questionnaire with blood tests results and, at the same time, maintain full anonymity of women participating in the study.

Blood was collected from the pregnant women from 1 July 2013 to 30 November 2015. Laboratory tests were performed at the Department of Virology of NIZP-PZH according to an algorithm proposed by the Polish Working Group [13]. Presence of HCV antibodies was defined as a reactive result of a screening test (ECLIA). However, HCV infection was defined as a presence of HCV genetic material (HCV-RNA) determined with the Real-Time PCR method.

Age of the women who participated in the study ranged from 15 to 54; the majority of the women belonged to the 25-29 age group (32%, 2,342 women); the least women were  $\geq 40$  years old (3.8%, 301 women) (Fig. 7.2.). Of all the women participating in the study, 44% were pregnant for the first time.



**Figure 7.2.**

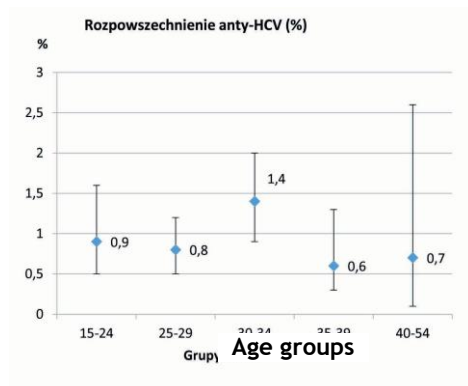
Age of women tested under Project 3

Prevalence of HCV antibodies amounted to 0.95% (95% CI: 0.8-1.2). HCV antibodies in a diagnostically significant titre were detected in 76 women. Proportion of women who tested positive oscillated depending on age group: from 0.6% in the 35-39 age group to 1.4% in the 30-34 age group. Genetic material of hepatitis C virus (HCV-RNA) was detected in 25 women. HCV-RNA prevalence in particular age groups was less diversified in comparison to the prevalence of HCV antibodies and amounted to 0.2% in the 15-29 age group and 0.5% among women aged between 30 and 39; in general – 0.31% (95% CI: 0.2-0.5); In the oldest (and smallest) group over 40 years old no HCV-RNA was detected, while HCV antibodies were detected in 0.7% of the subjects (Fig. 7.3.).

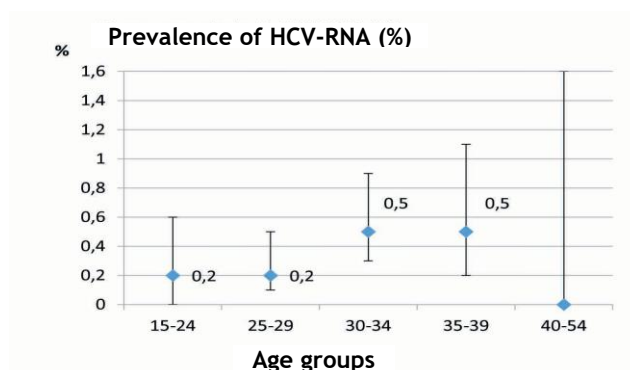
Prevalence of HCV antibodies among women living in cities and in the countryside was 0.95% and 0.96% respectively, while HCV-RNA was detected in 0.24% of women living in cities and 0.38% of women living in the countryside (difference not statistically significant).

In the five relevant provinces, HCV infection prevalence (HCV-RNA) among pregnant women ranged from 0.11% in the Małopolskie Province (2/1801) to 0.53% in the Lubelskie Province (7/1318), while in total it amounted to 0.31% and was slightly lower than HCV infection prevalence among women in general population in this age group (0.31% vs 0.35%). Prevalence of HCV antibodies ranged from 0.7% in the Małopolskie Province and the Mazowieckie Province to 1.2% in the Kujawsko-Pomorskie Province and it was slightly lower than the prevalence of HCV antibodies among women of general population in this age group (0.95% vs 0.99%).

### A Prevalence of anti-HCV (%)



### B



**Figure 7.3.**

Prevalence of HCV antibodies (A) and HCV-RNA (B) in particular age groups

HCV infection risk factors were determined on the basis of anonymous questionnaire filled in personally by all the women participating in the study. The questionnaire consisted of 23 questions (semi-open-ended and closed-ended questions – 9 and 14 respectively). Besides questions regarding potential medical and non-medical exposure to HCV infection, the survey also included questions connected with sociodemographic data, questions concerned with the current pregnancy, prior HCV tests, and knowledge on HCV.

Multiple factor analysis indicated four main factors related to the presence of HCV antibodies in pregnant women: transfusion before 1992, work in prevention and security service, chronic disease requiring hospitalisation on numerous occasions (other than: haemophilia, diabetes, renal disease requiring dialyses – those diseases were the subjects of separate questions),

and a history of surgeries (Table 7.1.). Three of those factors were also confirmed as predictors for HCV-RNA prevalence: transfusion before 1992, work in prevention and security service, chronic disease requiring hospitalisation on numerous occasions. Additionally, women who had undergone numerous perinatal procedures (three or more) became infected over eight times more frequently (Table 7.1.).

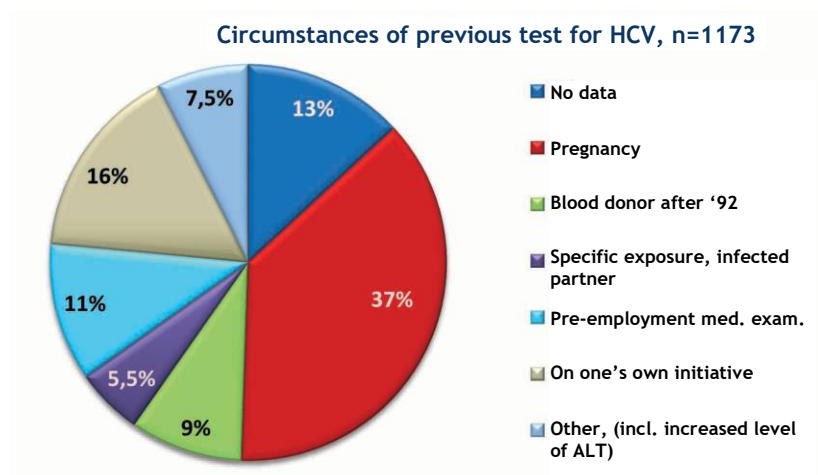
**Table 7.1.**

HCV infection risk factors in a group of pregnant women ( $p < 0.05$ )

	HCV antibodies	HCV-RNA
blood transfusions before 1992	+	+
surgeries	+	
three and more perinatal procedures		+
disease requiring frequent hospitalisation	+	+
work in prevention and security service	+	+

Out of all the women participating in the study, only 14.7% (1,173/8,006) gave positive answer to the question about an earlier HCV test ("Have you ever been tested for hepatitis C (HCV)?"). The total percentage of women who had been tested before could be higher, since 19.8% (1,589/8,006) of the subjects replied: "I don't know". Such a high proportion of women unaware of the tests could mean that patients were insufficiently informed of the tests ordered in connection with pregnancy or during other appointments with a doctor. A clear negative answer was given by 61.8% of women (4,947/8,006).

In the group of women who confirmed a previous HCV test, 37.4% (439/1,173) were tested in connection with pregnancy (previous, planned, before in vitro fertilisation (IVF) or during current pregnancy) before enrolment for the screening, which was the most frequently cited circumstance of the previous test. The second most frequent circumstance of an HCV test was being tested by own choice (16%, 188/1,173) (Fig. 7.4.).



**Figure 7.4.**

Circumstances of a prior HCV test reported by pregnant women screened under Project 3

The total ratio of women previously tested for HCV in connection with pregnancy was 5.5% (439/8,006) and women with a second or subsequent pregnancy – 8.6% (360/4,207). The analysis of responses with regard to prior tests for HCV infection given by women in the second or subsequent pregnancy showed a high diversification depending on the province – the Małopolskie Province was the one with the highest percentage of women giving positive answer to the question on a prior test (12.8%; 121/949), while in the Kujawsko-Pomorskie Province, the percentage was the lowest (4.1%; 38/923). However, these results should be treated with caution, given the large number of "I don't know" responses (to the question about a prior HCV test) and the lack of information on the year of the previous pregnancy.

Among women with HCV-RNA detected, four women knew of their infection thanks to previous tests (16%; 4/25); in two of them, HCV infection was detected in connection with pregnancy; one of them during tests out of her own initiative and the other in connection with an increased level of transaminases. In the group of 76 women with HCV antibodies, 13% (10/76) had had HCV antibodies detected in previous tests (three of them in connection with pregnancy; four of them in tests out of their own initiative; two of them in connection with an increased level of ALT; one of them – no data available).

Survey conducted under Project 3 was also used to evaluate the level of knowledge of the studied population with regard to HCV – a total of 54% (4,330/8,006) of subjects answered "Yes" to the question: "Have you ever heard about hepatitis C or HCV before participating in this screening?". In this group, the Internet was the basic source of knowledge for 15% (641/4,330) of the subjects, while 21% (911/4330) acquired knowledge from various media,

such as TV, the press, the Internet, radio; 12% of the subjects (507/4330) did not provide any source of knowledge although they gave positive answer to the previous question. Knowledge on HCV among the screened women was significantly associated with the level of education: women with secondary or higher education more frequently gave positive answer to the question about the prior knowledge of HCV than women with primary or middle-school education (59.5% vs 26.3%;  $p < 0.001$ ,  $OR = 4.1$ ).

## **7.2 Assessment of the purposefulness and feasibility of routine HCV tests in the group of pregnant women**

Results of Project 3 "Preliminary program of routine HCV testing among pregnant women" allowed us to confirm the feasibility and purposefulness of routine tests for hepatitis C for pregnant women. Among women with HCV infection detected (presence of HCV-RNA), 84% were unaware of their infection. Among all the pregnant women participating in the screening who declared to have been previously tested for HCV, 37.4% had been tested in connection with pregnancy (previous, planned, before IVF or during the current pregnancy before participating in the screening). At the same time, pregnancy was the most frequently reported circumstance of a prior HCV test. Among four patients with HCV-RNA (+) who were aware of their infection, two of them had their HCV infection detected in tests performed during pregnancy.

Assuming the number of live births in a given year as the closest approximation of the number of pregnant women, based on the established HCV-RNA prevalence, we may estimate that, in 2014, 1,147 pregnant women were infected with HCV ( $0.31\% \times \sim 370,000$ ; where 370,000 is equal to live births, including twin pregnancies). A similar number of detected infections among pregnant women may be expected every year if recommended tests for HCV were to be performed for all pregnant women. It means that every year, 1147 children are born at risk of HCV infection.

Screening tests of pregnant women for HCV infections have been recommended in Poland since 2005 based on the Recommendation of the Polish Gynaecological Society within prenatal care of pregnancy with normal course. However, it is no earlier than since 2011 that tests for HCV should be performed free of charge for all pregnant women (up to the 10th week of pregnancy) in accordance with the Regulation of the Minister of Health

Screening tests of pregnant women under National Health Fund (NFZ) are performed ([Table 7.2.](#)) and their rate is higher every year. In 2015, the dynamics of growth reached even 180% in comparison with the baseline year 2012. We should approach the data indicating that HCV tests during pregnancy covered from 10% patients in 2012 to 18% in 2015 with a certain degree of

caution. It must be remembered that pregnant women could undergo tests for HCV out of their own initiative or take advantage of HCV tests under an additional health insurance. Data provided by the National Health Fund (NFZ) only contain the number of tests performed – therefore, on that basis, we cannot exclude the possibility that some of the patients underwent the test more than one.

**Table 7.2.**

HCV tests reported by service providers during settlement of services of outpatient specialist care provided to pregnant women (data from NFZ)

	2012	2013	2014	2015
Number of pregnant women under outpatient obstetrics and gynaecological care	378,670	372,514	370,578	364,902
Overall number of HCV tests ordered:	36,830	47,596	58,559	66,347
1. Tests for HCV Ag	17,657	19,682	20,162	20,268
2. Tests for HCV-RNA	581	581	555	580

It should be emphasised (as confirmed by the results of Project 3) that positive (reactive) results of the tests for HCV antibodies should be followed by further diagnosis in order to confirm the infection. According to recommended procedure within the prophylaxis of HBV and HCV vertical infections, HCV-positive pregnant women should have HCV-RNA level determined at the end of the second trimester [14]. In case of a high viremia, the authors of the recommended procedure propose elective caesarean section [14].

As opposed to HBsAg tests for hepatitis B, which have been performed for pregnant women in all European countries for many years, tests for HCV antibodies in this group are only carried out in three countries: Spain, Malta, and Norway [15]. In the remaining countries, tests for HCV antibodies are not recommended for all pregnant women, but only for those at a higher risk of HCV infection, especially women with HIV infection. The lack of recommendation for wide screening tests for HCV in pregnancy is most frequently justified by the lack of interventions allowing efficient reduction of vertical transmission and insufficient knowledge of the benefits arising out of early detection and treatment of the infection in the children of HCV-positive mothers.

An analysis which demonstrated that screening tests of pregnant women do not show effectiveness of costs incurred was frequently cited [16]. However, as pointed out by the authors of the said studies themselves, availability of new treatment methods could change the effectiveness in that respect. The analysis was published in 2005; therefore, considering new treatment options



available in Poland since 2015, conclusions of this analysis may no longer be adequate for the current situation. It is also indicated by recent observations of dynamic changes in immune reactions of a mother to HCV during pregnancy and after the birth, which allow us to predict some situations, e.g. which child will be able to overcome the viremia and which one should receive treatment [17]. The treatment (PEG-IFN+RBV) may be started relatively early, in children over the age of 2 (because of undesired side effects). Direct-acting antivirals (DAA) give hope of future effective treatment of children vertically infected with HCV [18]. However, please note that none of the direct-acting antivirals (DAA) have been authorised for children. Despite this restriction, HCV tests for pregnant women in Poland can be deemed justified.

Since 2015, new treatment options for HCV-positive patients have been available in Poland – interferon-free treatment. Hepatitis C treatments with direct-acting antivirals (DAA) were shorter and were characterised by a high response rate (>95%) and low toxicity, which makes them attractive in terms of potential use in pregnant women [19]. Most of DAA treatments combined with RBV received category X (contraindicated in pregnancy) according to the qualification of Food and Drug Administration (FDA). However, sofosbuvir and ledipasvir were classified as category B – animal studies have failed to demonstrate damage to the foetus [19]. According to Polish eligibility criteria for interferon-free treatment, pregnancy or breastfeeding are criteria that disqualify from treatment programme.

Since there are new interferon-free treatments available, it becomes justifiable that one of the methods to prevent vertical transmission of HCV should be treatment of infected women before planned pregnancy. Screening tests of women in reproductive age or those planning pregnancy seems reasonable – so that the package of guaranteed services under outpatient specialist gynaecological care includes HCV tests for women planning pregnancy or women in reproductive age from groups with higher risk of HCV infection. Experience of others may also be used – screening tests for HCV tests have been combined with screening of women under primary health care for cervical cancer and sexually transmitted diseases [20].

### **7.3 Increasing the knowledge of obstetrics-gynaecology specialists, family doctors, nurses and midwives on preventing vertical transmission of HCV and handling a child of an infected mother**

Project 3 was preceded by five training courses conducted in each of the provinces where the Project was to be implemented. Training courses entitled "Handling a patient with hepatitis C and epidemiology and prevention of HCV infections" were conducted from November 2010 to March 2013. The courses were attended by gynaecologists, family doctors, nurses, and midwives. The



training was aimed at familiarising participants with the subject of HCV infections and hepatitis C (epidemiology, routes of transmission, no vaccine, treatment possibilities) and highlighting the role of screening tests (especially in pregnant women). In total, the training was attended by 608 persons. During meetings with gynaecologists, obstetricians, nurses, and midwives, the significant role of screening tests for HCV among pregnant women was emphasised.

Additionally, educational activities were conducted among pregnant women. Each patient who was invited to screening for HCV under Project 3 received a leaflet providing basic information on HCV, the disease caused by the virus (hepatitis C), routes of transmission, and benefits of tests for HCV during pregnancy. In health care units implementing Project 3, posters informing of a free test for HCV infection were hanged.

## 7.4 Summary

The screening tests indicate that 0.31% of pregnant women in Poland may be infected with HCV and thus constitute a threat for their children. However, 0.95% of pregnant women had contact with HCV, which is reflected by the presence of HCV antibodies. It should be emphasised that 84% of tested women were not aware of their infection. Results of Project 3 entitled “Preliminary program of routine HCV testing among pregnant women” allowed us to confirm the feasibility and purposefulness of routine tests for HCV among pregnant women. Pregnancy is a perfect circumstance to perform a test for HCV infection in women in reproductive age. However, since there are new and efficient treatment options available, from which pregnancy disqualifies, we should consider testing women for HCV infection before pregnancy. Detection of infections and treatment of future mothers will constitute a key method of preventing vertical transmission in children and thus, obviously, reduce treatment costs.

## ACKNOWLEDGMENTS

We would like to give warm thanks to Clinical Experts: Prof. Marek Grabiec, Prof. Mirosław Wielgoś, Prof. Jan Oleszczuk, Prof. Krzysztof Rytlewski, and Rafał Rudziński, PhD, for substantive cooperation during the performance of Project 3, to Persons implementing the Project in 48 Units (Table 7.3.), who demonstrated high commitment in organising blood collection and enrolling patients for Project 3. The authors would like to thank Anna Żuk-Wasek, PhD, Barbara Łagosz, and Mirosława Pyzel for contribution into the laboratory part of Project 3 and to Magdalena Rosińska,

82 Project KIK/35 - "Prevention of hepatitis C virus (HCV) infections"

PhD, and Małgorzata Stępień, MD, for performing a single factor and multiple factor analysis of HCV infection risk factors in pregnant women.

Table 7.3.

List of units cooperating in the performance of Project 3

Item	Name of unit	City	Province
1.	Wojewódzki Szpital Specjalistyczny	Biała Podlaska	Lubelskie
2.	Samodzielny Publiczny Wojewódzki Szpital Specjalistyczny w Chełmie	Chełm	Lubelskie
3.	Specjalistyczne Gabinety Lekarskie ZDROWIE	Dęblin	Lubelskie
4.	Samodzielny Publiczny Zakład Opieki Zdrowotnej w Dęblinie	Dęblin	Lubelskie
5.	Samodzielny Publiczny Zespół Opieki Zdrowotnej w Krasnymstawie	Krasnymstaw	Lubelskie
6.	Samodzielny Publiczny Szpital Kliniczny Nr 4	Lublin	Lubelskie
7.	Samodzielny Publiczny Zakład Opieki Zdrowotnej w Łukowie	Łuków	Lubelskie
8.	Samodzielny Publiczny Szpital Wojewódzki im. Papieża Jana Pawła II	Zamość	Lubelskie
9.	Falck Medycyna Sp. z o.o. Centrum Medyczne	Cracow	Małopolskie
10.	Samodzielny Publiczny Zakład Opieki Zdrowotnej Szpital Uniwersytecki	Cracow	Małopolskie
11.	Samodzielny Publiczny Zakład Opieki Zdrowotnej im. dr J. Dietla w Krynicy-Zdroju	Krynica-Zdrój	Małopolskie
12.	Miejskie Centrum Medyczne Sp. z o.o.	Libiąż	Małopolskie
13.	Miejska Przychodnia Zdrowia	Maków Podhalański	Małopolskie
14.	Samodzielny Publiczny Zakład Opieki Zdrowotnej w Myślenicach	Myślenice	Małopolskie
15.	Medikor	Nowy Sącz	Małopolskie
16.	Szpital Specjalistyczny im. J. Śniadeckiego	Nowy Sącz	Małopolskie
17.	Podhalański Szpital Specjalistyczny im. Jana Pawła II	Nowy Targ	Małopolskie
18.	Zespół Opieki Zdrowotnej w Oświęcimiu	Oświęcim	Małopolskie
19.	CenterMed Sp. z o.o.	Tarnów	Małopolskie
20.	Szpital Uniwersytecki nr 2 im. Dr J. Biziela	Bydgoszcz	Kujawsko-Pomorskie

21.	Specjalistyczny Szpital Wojewódzki w Ciechanowie	Ciechanów	Mazowieckie
22.	Samodzielny Publiczny Zespół Zakładów Opieki Zdrowotnej	Głinojeck	Mazowieckie
23.	Samodzielny Publiczny Zespół Zakładów Opieki Zdrowotnej Szpital w Itży	Itża	Mazowieckie
24.	Samodzielny Publiczny Zakład Opieki Zdrowotnej w Mińsku Mazowieckim	Mińsk Mazowiecki	Mazowieckie
25.	Samodzielny Publiczny Gminny Zakład Opieki Zdrowotnej w Nadarzynie	Nadarzyn	Mazowieckie
26.	Mazowiecki Szpital Specjalistyczny im. dr J. Psarskiego w Ostrołęce	Ostrołęka	Mazowieckie
27.	Samodzielny Publiczny Zespół Zakładów Opieki Zdrowotnej w Ostrowi Mazowieckiej	Ostrów Mazowiecka	Mazowieckie
28.	EMS Piaseczno Sp. z o.o. Niepubliczny Zakład Opieki Zdrowotnej Szpital Św. Anny	Piaseczno	Mazowieckie
29.	Centrum Medycznym Medica Sp. z o.o.	Płock	Mazowieckie
30.	Samodzielny Publiczny Zespół Zakładów Opieki Zdrowotnej w Przasnyszu	Przasnysz	Mazowieckie
31.	Mazowiecki Szpital Specjalistyczny Sp. z o.o.	Radom	Mazowieckie
32.	GRAVMED Sp. z o.o.	Radom	Mazowieckie
33.	Centralny Szpital Kliniczny MSWiA w Warszawie	Warsaw	Mazowieckie
34.	Samodzielny Publiczny Zakład Opieki Zdrowotnej Warszawa-Ursynów	Warsaw	Mazowieckie
35.	Renata Blukacz, Justyna Grzywacz, Tomasz Matarka „Medical Office” s.c. NZOZ Medical Center S.C.	Warsaw	Mazowieckie
36.	Szpital Specjalistyczny im Świętej Rodziny Samodzielny Publiczny Zakład Opieki Zdrowotnej	Warsaw	Mazowieckie
37.	Szpital Kliniczny im ks. Anny Mazowieckiej	Warsaw	Mazowieckie
38.	Szpital Specjalistyczny INFLANCKA im. Krysi Niżyńskiej „Zakurzonej”	Warsaw	Mazowieckie
39.	Niepubliczny Zakład Opieki Zdrowotnej Lecznica Medea	Warsaw	Mazowieckie
40.	Uniwersyteckie Centrum Zdrowia Kobiety i Noworodka WUM	Warsaw	Mazowieckie
41.	Samodzielny Powiatowy Zakład Opieki Zdrowotnej w Węgrowie	Węgrów	Mazowieckie

42.	Samodzielny Powiatowy Zakład Opieki Zdrowotnej Miejski Ośrodek Zdrowia w Zielonce	Zielonka	Mazowieckie
43.	Wojewódzki Szpital Zespolony	Kielce	Świętokrzyskie
44.	Centralne Laboratorium Analityki Medycznej - Anna Bądel	Kielce	Świętokrzyskie
45.	Świętokrzyskie Centrum Matki i Noworodka	Kielce	Świętokrzyskie
46.	Niepubliczny Zakład Opieki Zdrowotnej Południowa Sp. z o.o.	Końskie	Świętokrzyskie
47.	Szpital Specjalistyczny Ducha Świętego	Sandomierz	Świętokrzyskie
48.	Powiatowy Zakład Opieki Zdrowotnej	Starachowice	Świętokrzyskie

## REFERENCES

1. Boucher M, Gruslin A. (2000) The Reproductive care of women living with hepatitis C Infection. *Journal Socg*; 96.
2. Kołakowska A, Godzik P, Madaliński K. (2014) Zakażenia wirusem HCV u kobiet w ciąży. *Med Dosw Mikrobiol*; 66(3-4):215-22.
3. Mast EE, Hwang LY, Seto DS, Nolte FS, Nainan OV et al. (2005) Risk factors for perinatal transmission of hepatitis C virus (HCV) and the natural history of HCV infection acquired in infancy. *J Infect Dis*; 192(11):1880-9.
4. Mok J, Pembrey L, Tovo PA et al. (2005) When does mother to child transmission of hepatitis C virus occur? *Arch Dis Child Fetal Neonatal Ed*; 90: 156-60.
5. Mor G, Cardenas I. (2010) The Immune System in Pregnancy: A Unique Complexity. *Am J Reprod Immunol*; 63: 425-33.
6. Indolfi G, Azzari C, Moriondo M. et al. (2006) Alanine transaminase levels in the year before pregnancy predict the risk of hepatitis C virus vertical transmission. *J Med Virol*; 78: 911-4.
7. Prasad MR, Hongger JR. (2013) Hepatitis C virus in pregnancy. *Am J Perinatol* 30: doi:10.1055/s-0033-1334459.
8. European Paediatric Hepatitis C Virus Network. (2005) A significant sex - but not elective cesarean section effect on mother-to-child transmission of hepatitis C virus infection. *JID* 192:1872-9.
9. Minola E, Maccabruni A, Pacati I, et al. (2001) Amniocentesis as a possible risk factor for mother-to-infant transmission of hepatitis C virus. *Hepatology* 33:1341-2.
10. Aniszewska M, Kowalik-Mikołajewska B, Pokorska-Lis M, et al. (2010) Zakażenie odmatczyne HCV - czy możemy mieć wpływ na częstość zakażenia i jego przebieg? *Przegl Lek* 67: 9-12.
11. Aniszewska M, Kowalik-Mikołajewska B, Pokorska-Lis M, et al. (2007) Zakażenie wertykalne HCV - ocena częstości i przebiegu zakażenia u dzieci. *Przegl Epidemiol*

61:7-15.

12. Khaderi S, Shepherd R, Goss JA, Leung DH (2014) Hepatitis C in the pediatric population: transmission, natural history, treatment and liver transplantation. *World J Gastroenterol* 20:11281-6.
13. Madaliński K, Flisiak R, Halota W et al. (2013) Diagnostyka laboratoryjna zakażeń wirusem zapalenia wątroby typu C. Rekomendacje Polskiej Grupy Roboczej 2012/2013. *Diagnostyka Laboratoryjna* 49:65-70.
14. Pawłowska M, Sobolewska-Pilarczyk M (2016) Rekomendacje postępowania w profilaktyce wertykalnych zakażeń HBV i HCV. *Przegl Epidemiol* 70:119-120.
15. European Centre for Disease Prevention and Control. Surveillance and prevention of hepatitis B and C in Europe. Stockholm: ECDC; 2010.
16. Plunkett BA, Grobman WA (2005) Routine hepatitis C virus screening in pregnancy: a cost-effectiveness analysis. *Am J Obstet Gynecol* 192:1153-61.
17. Jhaveri R, Swamy GK. (2014) Hepatitis C virus in Pregnancy and Early Childhood: Current Understanding and Knowledge Deficits. *J Pediatric Infect Dis Soc* 3(Suppl 1): 13-18.
18. Tosone G, Maraolo AE, Mascolo S et al. (2014) Vertical hepatitis C virus transmission: Main questions and answers. *World J Hepatol* 6:538-48.
19. Kanninen TT, Dieterich D, Asciutti S. (2015) HCV vertical transmission in pregnancy: New horizons in the era of DAAs. *Hepatology* 62:1656-8.
20. Bogler T, Farber A, Stall N et al. (2015) Missed connections: Unintended consequences of updated cervical cancer screening guidelines on screening rates for sexually transmitted infections. *Can Fam Physician* 61(10):e459-66.

# QUALITATIVE EVALUATION OF THE RISK OF HCV INFECTION ASSOCIATED WITH MEDICAL PROCEDURES

Krzysztof Tomasiewicz, PhD; Sławomir Kiciak, MD PhD  
Medical University of Lublin

## PROJECT 4

### **“Qualitative evaluation of the risk of HCV infection associated with medical procedures in selected health care units”**

Despite significant development in diagnostics and treatment of blood-borne infections, as well as in methods of preventing nosocomial infections, those infections still represent a significant problem in Poland and around the world. Discussing the issue of blood-borne infections in health care facilities, two aspects of this phenomenon must be taken into account. Firstly, there is a risk of transmitting an infection to a patient who is receiving medical help. Secondly, there is a problem of occupational infection of medical and non-medical personnel employed in a given facility.

When it comes to infections likely or proved to have been connected with a stay at a medical facility or with using its services, data available in reports of supervision institutions (e.g. sanitary and epidemiological centres) and in epidemiological literature are limited to very general expressions, such as “hospitalisation”, “using dental services”. On the other hand, there are methods which analyse the mechanisms responsible for infection transmission in a very detailed way. It takes place especially in case of foci of nosocomial infections or in persons with acute HCV infection. The methods allow us to deduce the cause and effect relationships with a very high probability on the basis of epidemiological data without using rarely available molecular studies (genetic material sequencing). Drawing on literature data and own experience, “critical points” were specified which may be responsible for a transmission of infection. Knowledge on this subject allowed us to create, under Project 4, our own analysis of possible “critical points” occurring in the current Polish conditions, which led to more precise specification of prophylactic recommendations that are to be one of the main effects of the “Prevention of hepatitis C virus (HCV) infections” Project.

### 8.1 Project goal and research methods

Project 4 aimed at analysing the current situation regarding the risk of transmission of HCV infection and, indirectly, other blood-borne infections as well in health care facilities – within both hospitals and entities providing outpatient health care.

Research methods involved surveys conducted in hospitals, outpatient clinics and units, and practices, supported by observation of the situation at the site. During the second phase, employees of the Department of Forensic Medicine of the Medical University of Lublin conducted experimental studies in selected medical facilities the main assumption of which was to search for traces of blood in the working environment of medical personnel and places where patients stayed using laboratory methods.

Among the survey routine questions aimed at assessing the compliance with safety procedures, the following activities and behaviours of medical personnel were given special attention.

- Use of gloves and change of gloves after each procedure provided to a patient and after each potential contact with infectious material.
- Contact with any disposable components of drug and diagnostic preparation infusion kit and the method of replacing these components.
- Use of multiple-dose preparations and use of the same syringes for different patients, even if we assume that handling procedure excludes the possibility of contamination.
- Preliminary testing for HCV infection for patients and personnel at selected departments (are performed?).
- Use of personal protective equipment specific for each field of medicine (safety glasses, reinforced gloves, scrubs).
- Handling contaminated medical equipment, especially by paramedical personnel.
- Reporting accidents and exposures to infectious material.
- Reusable equipment cleaning and sterilisation procedures, including diagnostic instruments.
- Training for personnel and presence of written handling procedures.

Scale of this venture is reflected by the fact that the study covered 1,580 health care entities, both inpatient (the number also includes separate surveys for nosocomial infection teams) and outpatient ones (primary and specialist health care, and dental care) – a number that is unprecedented in epidemiological studies in Poland.

The studies were performed by experienced employees of the State Sanitary Inspections and were completely anonymous. What is more, the results obtained were coded, so that the respondents did not have to worry

that the results would be used for other purposes than the study. An additional task of the team responsible for Project 4 was to assess the knowledge of students of medicine and medical and dental fields on HCV infection and transmission of HCV and other blood-borne pathogens and methods for preventing the transmission. Surveys were conducted among students of the first and the last year of studies at universities located in various regions of the country. Eleven medical universities participated in the study, with a total of 4,083 students at medical faculties and 1,828 students at medical and dental faculties taking part in the survey, which gives the survey response rate at a level of 61% and 69% respectively. The participants were ensured full anonymity and the lack of possibility of identifying the respondent of a given survey.

## 8.2 Study results and their discussion

### 8.2.1 Inpatient health care

Data from surveys conducted in inpatient health care facilities are very comprehensive. The data are connected with the organisation of departments, the number of procedures performed or patients admitted to hospital, the number of endoscopy procedures, the presence of sterilisation equipment, as well as washbasins, disinfectants, and personal protective equipment. No differences were observed in that respect between particular provinces and types of hospital departments. It can be unquestionably stated that gone are the days of difficulties in the supply or availability of disinfectants and personal protective equipment. Can we, then, say that the level of sanitary safety entirely eliminates the risk of blood-borne pathogen transmission? Below, there are basic areas presented in which improper activities or negligence may increase the risk of HCV transmission and solutions are proposed.

- a) Obligating all health care facilities to execute post-exposure procedure service agreements. At the same time, training of employees within the necessity of exposure reporting and legal aspects of this matter. Despite a quite high awareness, a certain proportion of health care personnel still does not report occupational exposure.
- b) An analysis of answers to questions about handling HCV-positive patients demonstrates that despite reiterating the necessity to use the same prophylactic procedures for all patients on numerous occasions, the approach to a patient with known HCV serological status remains incorrect. During own studies, it was demonstrated that in five hospitals HCV-positive patients stay in isolation rooms. In ten hospitals, such patients are marked and the personnel puts on double gloves. However, in the remaining 26



hospitals, patients with HCV are treated in the same way as others. The situation is even worse in obstetrics and gynaecology departments. In 5 hospitals, attempts are made to move a pregnant woman with HCV to another facility. Furthermore, specially designated endoscopes for HCV-positive persons and placing them at the end of a line to a test is, in the opinion of the respondents, a good method to protect themselves and other patients from infection. Above all, such answers reflect the lack of knowledge or even a fear of an HCV-positive patient. Therefore, regular training courses both on the undergraduate level and during professional carrier highlighting that such an approach to the issue of blood-borne infection transmission is absolutely wrong are necessary. It will help in avoiding irrational behaviours which may even increase the risk of infection (e.g. double gloves in case of certain procedures even increase the risk of exposure). Unification of procedure site for an HCV-positive patient should also concern endoscopy rooms. Because the procedures of handling, decontamination, cleaning, disinfection, and storage of equipment in endoscopy rooms are very strict and frequently automated and are subject to rigorous inspections, there are no indications for using separate endoscopes or procedure sites dedicated to HCV-positive patients. Such an approach promotes a false sense of safety for persons who are not infected or those with unknown serological status.

- c) The majority of hospitals follow the procedures of sterilisation, but there is a certain discrepancy when it comes to the personnel responsible for preparing equipment for sterilisation. It is mostly done by a scrub nurse, although in some of the hospitals, this task is performed by a ward sister or a sterilisation room employee. There are also large differences when it comes to the frequency of tests checking the sterilisation correctness and training courses improving the skills of the personnel in charge of sterilisation. In some of the studied hospitals, no such training is conducted. Therefore, strict compliance with sterilisation procedures and obligation to employ appropriate personnel, as well as documented training within this scope are necessary.
- d) The issues of hand disinfection and the use of disposable gloves and other personal protective measures require separate discussion. As mentioned above, all the hospitals declared that there are no difficulties in accessing those measures or cleaning and disinfection products. Also, the majority of the respondents declares appropriate hand hygiene. The relatively high proportion (even up to 28%) of answers “I sometimes tend not to use protective gloves when performing a procedure on a patient” is disturbing. Leaving aside whether the gloves are used correctly or not, the sole fact of allowing the possibility of not using them may be a link in the chain of infection transmission. There are no reservations regarding hand

disinfection and disposal of instruments (needles) to a safety container with rigid walls (100% of the respondents). However, many of the respondents had difficulty specifying the procedure in case of founding a sharp item in a place not intended for it. No reaction to such a fact from 21% of the respondents cannot be accepted.

Performing invasive procedures in patient rooms, which is the case for 59% of the respondents, is also inappropriate. Because a similar proportion indicated medical treatment room (multiple choice question), the conclusion is that some do not use the medical treatment room for this purpose whatsoever. Furthermore, one fourth of the respondents admitted to sometimes performing procedures in several patients at the same time, which may cause inadequate preparation for working with a patient. Nearly every tenth person admitted to cases of negligence within the use of protective measures during resuscitation, which, considering the procedure is performed rapidly, may lead to an increased exposure to infection. It seems that rush is not an excuse in this case.

Allowing certain exceptions when it comes to minor medical procedures is highly dangerous. It should be emphasised that it is commonly thought now that it is minor medical procedures that may be "critical points" within the potential transmission of HCV and other blood-borne pathogens. Education in terms of appropriate hand hygiene (cleaning and disinfection) and the use of protective gloves in accordance with WHO guidelines is absolutely necessary. It is vital that employees not only possess theoretical knowledge, but also be able to clean and disinfect hands and put on gloves properly in practice. Preliminary analysis of educational programmes and answers in the surveys conducted among students lead to a conclusion that such training, especially the practical one, is insufficient or is not conducted at all.

Training and supervision over correct disinfection of equipment, such as treatment trolleys, is also crucial. Results of experimental studies performed under Project 4 document presence of traces of blood on worktops, tables, and beds despite the lack of visible contamination. There was also one case of blood presence on a tourniquet for blood collection.

- e) Literature widely describes the problem of HCV transmission risk arising out of the use of multiple-dose packages. An epidemiological investigation performed by American authors during studies on nosocomial HCV infections may serve as an example [1]. The analysis of medical procedures and drugs administered showed that the only preparation that was stored within the ward and used in all the listed patient was saline solution. Obviously, nurses denied having used the same syringes and declared that they changed gloves after dealing with each patient. In the authors' opinion, a likely mechanism was as follows. 3 ml syringes were used for the

flushing of intravenous catheters. When it comes to central venous catheters, such an amount may be insufficient in order to flush a catheter properly; consequently, nurses took an additional amount of liquid from a multiple-dose container. At that point, there was a potential for contamination of the entire liquid in the container. The above description illustrates how far-reaching consequences within the transmission of HCV and other blood-borne infections a seemingly minor deviation from a procedure may have.

Own studies demonstrated that many hospitals still use multiple-dose packages. In 24 hospitals, saline solution used for medicine dilution or catheter flushing is collected from disposable ampules that are thrown away after the collection. In two hospitals, there are 250 ml containers that are used only once. In six cases, after collection from both disposable ampules and 250 ml containers, the packaging is thrown away after collection. However, in 12 hospitals, saline solutions are collected from 250 ml or larger bottles, which are used on a given days for different patients.

A prohibition against using multiple-dose packages, especially if there are single packages available with a low amount of drug or liquid (as it is the case with saline solution), would allow us to eliminate this potential route of HCV transmission.

At the same time despite the proposed strictly prophylactic solutions, the contact of a patient with a health care facility may be used to identify persons who are unaware of their HCV infection. A frequently debated and controversial issue of introducing serological tests for HCV (HCV antibodies) in all patients admitted to hospital seems to be increasingly more justifiable. It allows identification of persons infected and their further referral to specialist care. It is also significant from the legal point of view in terms of potential lawsuits from patients claiming infection, as it would be possible to prove that the infection existed at the time of admission to a medical facility. Considering relatively low cost of such a test, it seems to be a worthwhile undertaking.

### 8.2.2 Outpatient health care

Supervision over outpatient health care facilities, where no epidemiological nurses are employed, nor are there any teams responsible for controlling compliance with procedures due to small personnel and economic reasons, constitutes a separate aspect.

Neither patients nor medical professionals associate an appointment in an outpatient health care facility with a particular risk of nosocomial infection (the term “hospital infection” does not seem adequate in this case). Such a

potential for exposure should be taken into account in a situation when, according to the majority of authors, 20-40% of HCV-positive patients have no clearly defined potential risk factors. In one of the major case-control studies conducted in France, 15 independent HCV infection risk factors were defined [2]. The majority of those factors were associated with a contact with a health care facility, including an outpatient health care facility. It included: gastrointestinal endoscopy (OR=1.9), skin lesion treatment [ulcers or disruption of skin continuity (wounds)] (OR=10.1), diathermy (OR=3.0), administration of specific gamma globulins (OR=1.7), intravenous (OR=1.7) or intramuscular injections (OR=1.4), varices sclerotherapy (OR=1.6), as well as acupuncture (OR=1.5) and cosmetic procedures (OR=2.0). The last two, obviously, usually do not take place in outpatient health care facilities, although we cannot rule it out completely. In a statistical analysis, the strongest relationship between an outpatient treatment and a potential for HCV infection was reported for the treatment of lower limb ulcers and wounds ( $p=0.002$ ) and diathermy, treatment of varices, and intravenous and intramuscular injections. Duration of an outpatient treatment was also statistically significant for HCV infection risk. Lower significance was reported for outpatient administration of specific immunoglobulins (mainly as a prophylaxis against tetanus). This example of French analysis of nosocomial HCV transmission risk factors demonstrates that we cannot omit the outpatient health care when assessing infection possibilities.

The results of our own field research evaluating risk factors of transmission of HCV and other blood-borne pathogens within outpatient health care seem to reflect the situation of the outpatient health care in Poland in a representative manner. The fact that no statistically significant differences between individual provinces were observed justifies the joint analysis of the study results.

When it comes to outpatient health care entities, especially the small ones, a steriliser is not necessary for proper functioning, while from an economic point of view, it may even turn out to be useless. For such entities, an agreement with an external entity for instrument sterilisation is a good solution. Unfortunately, in the study sample, only around 20% of the entities without their own steriliser declared that they had executed an agreement with an external company for such services. However, as much as 52.9% of the entities did not have their own sterilisers and the agreement with an external company. Arguably, in some of the cases it is sufficient to use disposable equipment only, but such declarations in the survey were made just by few persons. This raises a question: Can insufficient sterilisation in outpatient health care facilities constitute a significant risk factor for the transmission of HCV as well as other pathogens, and not only the blood-borne ones? Undoubtedly, this aspect requires a painstaking analysis and inspection of sanitary and epidemiological services. If the scale of this phenomenon is confirmed, appropriate measures will have to be immediately taken. It seems

that even if the scale is low, it is absolutely necessary that sanitary services inspect the surgical instrument sterilisation solutions in those facilities.

However, there are no reservations when it comes to the equipment of treatment rooms. Presence of washbasins and available hand cleaning and disinfecting products is a standard in practically all facilities.

Handling of used medical equipment seems not to raise any concerns. In the study sample, 98% of respondents declared that they place a used needle in a rigid container intended for medical waste. In total, 2% handled it incorrectly. Obviously, it is surprising and disturbing that 10 persons out of all the respondents were not aware of the danger that such an approach entails, although it seems that training system in this area works properly. Unfortunately, the above results do not correspond to answers to the question about handling a sharp object found in a bag for other (non-sharp) medical waste. As much as 34% of the respondents do not take measures aimed at securing such a “discovery”, although only (or maybe we should say “as much as”) 2% consider such an approach appropriate. Such situations require to be treated very carefully and accurate and thorough handling instructions are necessary. It obviously raises a question: how do sharp objects end up in bags not intended for such a type of waste if almost all the respondents declare correct conduct in that respect?

It is disturbing that 21% of the respondents do not follow the obligation of hand disinfection before and after each contact with a patient. Such a high proportion confirms observations of many authors in various countries that errors made by medical personnel while cleaning and disinfecting their hands belong to the most frequent deviations from correct procedures. It should be noted that, whereas principles of appropriate hand disinfection are the subject of numerous training courses in hospitals and are subject to inspections by appropriate services and teams (presumably, at least), in outpatient health care, the principles are not supervised in any way.

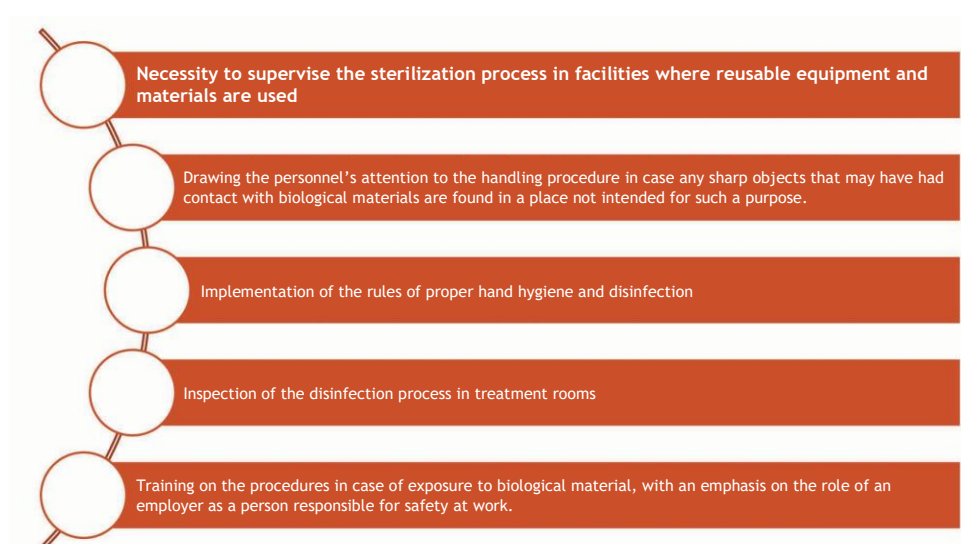
Similar observations are made with regard to the lack of disinfection of a treatment trolley after each procedure performed. Such an incorrect conduct was declared by 9% of the respondents. It is a significant shortcoming, because the chance of contaminating a treatment trolley with infectious biological material is commonly considered significant and meaningful in the transmission of blood-borne infections.

The issue of multi-dose packages seems to be surprisingly marginal. Only 1% of the outpatient health care facilities participating in the study declared that saline solution is collected to syringes from large containers many times for different patients. In the past, such practices were quite common and it is gratifying that the awareness of the threat those practices involve is large.

Unfortunately, inappropriate post-exposure behaviour is observed. In case of needlestick injury, 7% of persons do not report such an incident and do not initiate the procedure related to the risk of HBV, HCV, and HIV infection.

Although there are currently no possibilities of post-exposure prophylaxis of HCV infection, but it is possible to efficiently prevent HBV and HIV infection. Proving occupational exposure is also important for an employee in terms of potential damages, which also should be taken into account.

Outpatient health care employees require special attention, since there are no instruments to monitor directly and permanently the compliance with handling procedures within the prophylaxis against infection agent transmission as is the case with most of inpatient health care facilities. Properly conducted inspection and supervision of epidemiological services with an emphasis on potential training seem to play an important role. Figure 8.1. summarises recommended actions within the prophylaxis against the transmission of HCV infection and other blood-borne infection agents.



**Figure 8.1.**  
Recommendations for outpatient health care entities

### 8.2.3 Dental clinics and practices

As suggested by recently published collective summaries of HCV transmission risk factors in health care facilities, such a risk is considerably increased when it comes to dental procedures. In the opinion of Korean authors, the sole fact of undergoing such a procedure increases HCV infection risk 2.5 times. Similar values were obtained by Italian researchers [4]. Unfortunately, the above data are mainly based on surveys conducted among patients and patients' histories and do not arise from epidemiological investigations. More detailed studies draw special attention to chronic multiple use of syringes and gross negligence in terms of general principles of prophylaxis, such as not replacing gloves after each patient or performing various activities and contact with the environment without prior removal of protective gloves after treating a patient [5,6]. Characteristics of the study

group demonstrated that the type and size of dental facilities were similar for all provinces. Single-person private practices constituted vast majority. Interestingly, in 46% of cases there are no nurses hired, which probably stems from the fact that their responsibilities are taken over by dental assistants. It raises a question whether the education profile of dental assistant within sanitary/hygienic and prophylactic procedures corresponds to the qualification of nurses. Based on own experience, we note that so far infectious disease specialists have never conducted classes as part of dental assistant training courses, which are conducted outside medical universities.

Attention is drawn to a comparable number of patients admitted every day, amounting to around 10, and quite a significant proportion of the use of local anaesthesia – practically every second patient receives aesthetic injection. It is particularly important because according to literature data injections may constitute one of the major transmission routes of blood-borne infections in a dental practice and the most frequent form of occupational exposure [7].

Dental practice equipment condition does not raise particular concerns. More than 96% have their own sterilised (almost always steam steriliser) and a certain proportion declared additionally that they executed an agreement with an external company. There are practically no problems in terms of the availability of hand hygiene and disinfection products. While assessing the occurrence of risky behaviours related to violation of sanitary rules, it must be stated that the vast majority of the respondents throw used needles to a proper, rigid container (98.5%). Findings presented in literature that multiple use of multiple-dose packages for different patients constitutes a fundamental problem were not confirmed. In the study group, such a behaviour was declared by 6.2%.

However, when it comes to hand disinfection, the situation is slightly different. Although the vast majority of the respondents complies with the obligation of hand disinfection before and after each contact with a patient (81%), almost 20% of the respondents sometimes tend not to follow this rule. 9.7% of the respondents disinfect their hands only before a contact with a patient, 4.1% – only after a contact with a patient, while 5.4% disinfect their hands several times a day. Considering the importance of hand hygiene among dentists, those deviations from the procedure promoted by World Health Organisation in almost 20% of dental practice employees may lead to severe consequences.

A low proportion of persons declaring appropriate behaviour following occupational exposure (59%) is also surprising. It may stem from the employment structure (sole trader) and no post-exposure procedure agreements executed with centres for infectious diseases. On the other hand, it may reflect the lack of awareness of the risk. Inappropriate behaviour following an employee's exposure may have legal consequences, as it is the employer who is responsible for occupational safety according to the law.

Proportions of persons changing gloves for each patient, properly disinfecting a treatment trolley, and disinfecting the dental unit after each patient (99%) as well as performing sterilisation of used equipment are surprisingly high (in comparison with literature data). However, such questions did not allow us to verify whether those procedures are followed in practice.

Participation in training within prevention of blood-borne pathogen transmission leave much to be desired. In general, every fifth person does not remember such a training. On average, only 40% of dental practice employees participating in the study feel they possess knowledge in this area.

The above study results were used to attempt to formulate proposed actions aimed at reducing the risk of blood-borne pathogen transmission and infection of both patients and dental practice employees:

1. Verification of content on hygiene and epidemiology of blood-borne infections conveyed during training and vocational education of dental assistants.
2. Necessary introduction of training and verification of theoretical knowledge and practical skills in terms of hand hygiene and proper disinfection. Dissemination of a film produced under Project 4 intended for dentist – drawing attention to potential contamination of protective gloves, environment, and transmission of various pathogens to other patients.
3. Necessary promotion of the obligation of appropriate post-exposure procedure, for example through mandatory agreement with a unit specialising in such a procedure.
4. Protection of HCV-positive patients against ostracism and refusal of services.

Note that the processes of education and implementation of protection systems in this group are particularly difficult. Dental practices are located in various places with diversified site conditions allowing appropriate handling of used medical equipment and not always sufficient space for preparation and reception of medical materials.

### **8.3 Assessment of knowledge of medical university students on HCV infection and procedures aimed at reducing the risk of transmission**

Surveys conducted among students of medical faculties and dental faculties/fields of Polish medical universities were aimed at assessing theoretical knowledge and potential behaviours in clinical practice within the issues of hepatitis C virus infection, related clinical consequences, and, above all, routes of transmission, behaviours that are hazardous for a patient and a



physician themselves, and ways to eliminate or, at least, reduce the risk of transmission of HCV infection and, as a result, other blood-borne pathogens as well.

Comparison of the knowledge of first-year students who are just starting their medical education with the students in the last years of studies demonstrated an increase in knowledge index and proportion of correct answers to practically all the question. Such an evolution of knowledge is obviously expected and may reflect an increase in both the sole theoretical knowledge and awareness of hazardous behaviours and procedures.

Proportion of correct answers given by students of medicine was practically always higher than that of students of dentistry, which leads to a conclusion that the former possess better knowledge within this subject. Since the questions were not concerned with specialist clinical issues, but mainly epidemiology and aspects related to occupational safety, the specificity of dentistry should have no bearing on student's education in that respect. We may even risk making a statement that in clinical practice, it is dentists who may more frequently have practical influence on the potential of blood-borne infection transmission, as dentists have more frequent contact with biological material potentially infected with HCV and other blood-borne viruses than physicians of many specialisations. Difference in education may stem from flawed specialist training (e.g. courses on infectious diseases), but also basic courses (e.g. hygiene, epidemiology, virology, introduction to clinical courses).

Among questions where the proportion of incorrect answers was higher than the proportion of the right ones, the following questions should be noted:

#### **A. Epidemiology**

HCV infection is possible through nasal administration of drugs – no information on this topic will probably have little influence on the behaviour of a physician, although it sometimes may be a part of doctor's interview assessing risky behaviours of a patient.

#### **B. Behaviour towards an infected patient**

An HCV-positive person may work in an occupation related with providing medical services – in this case there is apparent lack of knowledge within the law and legal provisions; therefore it is suggested that this problem (not only with regard to HCV infection) be introduced to the curriculum. Lack of knowledge in that respect may lead to a person with a known serological status being refused employment, which would violate effective legal provisions and the law.

An HCV-positive patient is obliged to inform about their disease the personnel of a facility providing medical services to them. Incorrect (affirmative) answers of the majority of the students may have very serious

consequences. The answers confirm such a conviction among physicians. Many falsely assume that implementation of appropriate hygienic and prophylactic procedures is only necessary when we know that the patient is infected, which gives an illusion of safety if there is no such information available. Such a behaviour leads to a serious risk of "allowing" deviation from rules and procedures. Another consequence, which unfortunately is still observed in practice, is unwillingness, and sometimes even refusal, to provide medical service to HCV-positive persons (it is even more serious when it comes to HIV).

### **C. Knowledge on HCV**

A very high proportion of the students gave incorrect answers to questions regarding potential spontaneous elimination of HCV infection, importance of additional laboratory tests (blood chemistry) for suspected infection and diagnostic significance of HCV antibodies for the diagnosis of active infection. The lack of knowledge in that respect may lead to incorrect diagnostic decisions – not referring a patient for diagnosis and, as a consequence, treatment in a specialist clinic. Fortunately, knowledge within this field is considerably improving as a result of medical education, but still half of students of dentistry and 1/3 of students of medicine in the last year of studies think that a positive result of a serological test (anti-HCV) means there is an active infection. Every fourth student of the last year of medicine and every third student of dentistry does not know that the virus may cause damage of organs other than liver.

Even larger knowledge deficiencies are observed in terms of modern methods of treatment of HCV infection. While incorrect answers of first year students are understandable, students in the last year of studies should possess such knowledge, as it is one of the most frequently addressed issue during classes on infectious diseases. 42% students of medicine and 56% students of dentistry do not know that it is possible to fully eliminate HCV from a patient's body. It clearly means it is necessary to emphasise those issues during undergraduate courses, but it also indicates that those issues should be introduced to post-graduate education. It must be emphasised that this knowledge is necessary not only for specialist, but most importantly for all physicians of other specialisations, especially family medicine, as it motivates for performing screening and individual tests.

The disproportion between medicine and dentistry is most apparent when it comes to questions assessing knowledge on HCV – with the knowledge of students of dentistry being the lower one.

### **D. Spread of infection in health care facilities**

Answers reflecting a quite common conviction that the sole fact of using disposable equipment and disposable protective gloves ensures safety and makes transmission of blood-borne pathogen infections impossible are most

disturbing. At the same time, no significant change of the above conviction is observed as a result of medical education. Proportion of improper answers in individual years of studies was comparable when it comes to both medicine and dentistry.

Considerable proportion of students of both faculties does not see the problem of multiple-dose packages. Almost 1/3 graduate convinced that such a form of drugs cannot contribute to the spread of HCV infections. This issue should also be raised during postgraduate courses.

#### **E. Questions specifically for dentistry**

The approach of many students of the last year of dentistry towards handling a patient with a known HCV infection is very disturbing. Firstly, for many (about-to-be) doctors, referral of such a patient to another facility only on the grounds of the HCV infection is acceptable. Secondly, they see that special protective measures need to be taken. Again, we deal with misunderstanding of the rule of prophylaxis during contact with a patient. The attitude “I must be careful because the patient is infected, while the one I know nothing about I treat normally” is very risky. It may lead to negligence within occupational safety and ostracism and refusal of providing medical services to infected patients.

It seems that changing this attitude presents the largest challenge during both university education and post-graduate training.

## **8.2 Summary**

The results of the studies conducted under Project 4 provided a great deal of valuable information. Detailed data were placed in relevant reports. The most important problems presented above indicate an immediate need of actions on various levels and of various types. We will not exaggerate if we say that the riskiest element in the transmission of HCV and other blood-borne pathogens is currently not the lack of equipment and deficiencies arising out of problems in funding health care, but a human – and the one representing various medical professions – who is in contact with patients, is responsible for sterilisation processes, waste disposal, and disinfection and preparation of working environment. Negligence most frequently arise from the lack of knowledge or awareness of how important minor everyday procedures are. Assessment of students demonstrated that the insufficient knowledge equally arises from deficiencies in post-graduate education and acquisition of practical skills as well as undergraduate education.

The authors would like to thank all the persons who so greatly contributed to the present studies, especially health care professionals participating in the studies, the management of the health care facilities for favourable attitude towards the studies. And particularly warm thanks go to the employees of State Sanitary Inspection who conducted the field studies.

## REFERENCES

1. Krause G, Trepka J, Whisenthunt R, Katz D, Nainan O, et al. (2003) Nosocomial transmission of hepatitis c virus associated with the use of multidose saline vials. *Infect Control Hospital Epidemiol* 24: 122-127.
2. Karmochkine M, Carrat F, Santos OD, Cacoub P, Raquin G. (2006) A case control study of risk factors for hepatitis C infection in patients with unexplained routes of infection. *J Viral Hepat.* 13:775-782.
3. Kim JY, Cho J, Hwang SH, et al. (2012) Behavioral and healthcare-associated risk factors for chronic hepatitis c virus infection in Korea. *Korean Med Sci* 27:1371-1377.
4. Guadagnino V, Stroffolini T, Rapicetta M, et al. (1997) Prevalence, risk factors, and genotype distribution of hepatitis C virus infection in the general population: a community-based survey in southern Italy. *Hepatology* 26:1006-11.
5. Laheij AMGA, Kistler JO, Belibasakis GN, et al. (2012) Healthcare-associated viral and bacterial infections in dentistry. *J Oral Microbiol* 4:17659.
6. Leao JC, Teo CG, Porter SR. (2006) HCV infection: aspects of epidemiology and transmission relevant to oral healthcare workers. *Int J Oral Maxillofac Surg* 35:295-300.
7. Nagao Y, Matsuoka H, Kawaguchi T, et al. (2008) HBV and HCV infection in Japanese dental care workers. *Int J Mol Med* 21:791-799.

# EDUCATION OF MEDICAL AND NON-MEDICAL PROFESSIONALS AS A KEY ELEMENT OF BLOOD-BORNE INFECTION PREVENTION

Anita Gębska-Kuczerowska, MD PhD; Lidia Rakow, MA;  
Anna Gaber, MA

National Institute of Public Health – National Institute of Hygiene

Izabela Kucharska, MA; Joanna Sujka, VS  
Chief Sanitary Inspectorate

## PROJECT 5

“Raising awareness of prevention of blood-borne infections (HCV, HBV, HIV) among providers of services associated with blood-to-blood contact and the general public”

Project 5 was performed from 1 April 2013 to 31 December 2016 with participation of the Chief Sanitary Inspectorate. Activities under Project 5 aimed at raising awareness of blood-borne infections among health care personnel and employees of salons providing non-medical services that involve disruption of tissue continuity, such as hair salons, cosmetic salons, and tattoo and piercing studios. The first stage involved training courses in 11 provinces; the second stage covered the entire country. During Project 5, teaching materials intended for training on blood-borne infection prevention were prepared and an e-learning platform was developed which not only is a source of information, but also has an examination module allowing organisation of tests assessing knowledge acquired during the training. Some of the educational materials were prepared using audio-visual techniques. Recognition of persons who passed knowledge tests was also ensured through individual certificates of completion. In total, several thousands of people in Poland participated in the training course and we hope that this number will grow as long as the e-learning platform is active.

## 9.1 Main assumptions of Project 5

Detailed goals of the Project were concerned with:

- Prevention of the spread of blood-borne infections (HCV, HBV, HIV) in Poland by improving knowledge of providers of services associated with a higher risk of blood-borne infection transmission;
- Improvement of infection prevention skills within relevant procedures;
- Raising awareness of the issue of hepatitis C and HCV infections among providers of services associated with a higher risk of blood-borne infection transmission;
- Counteracting social stigma of infected persons through dissemination and publicising information on the disease and routes of transmission as part of training for various occupational groups and during the social campaign "HCV I am aware of" under the cooperation between content-based projects of Project KIK/35.

Educational programmes were addressed to:

- health care professionals, such as:
  - physicians,
  - nurses,
  - laboratory diagnosticians,
  - medical rescue workers,
  - other medical professionals having contact with blood,
- non-medical professionals performing procedures involving disruption of tissue continuity which constitute a risk of infection transmission:
  - tattoo studios,
  - cosmetic salons,
  - hair salons.

Teaching tools and methods used in Project 5 included:

- traditional training courses,
- e-learning courses,
- educational and information materials,
- promotional materials.

Schedule and performance of activities were divided into: period of preparation of didactic assumptions (content-related and methodological materials) and period of conducting training courses along with updating didactic database and methodology.

## 9.2 Planning activities

As part of preparation, syllabuses of the training courses (Table 9.1. and Table 9.2. contain the subject framework of the training courses and educational effects) and didactic recommendations along with proposed multimedia presentations and a set of training and information materials to be used by content coordinators and remaining lecturers during the performance of training courses aimed at providers of services associated with a higher risk of blood-borne infection transmission were developed.

**Table 9.1.**

Subject framework of the training courses and educational effects based on the syllabus of the training for health care professionals

Subject of training course:	Prevention of blood-borne infections (HCV, HBV, HIV) in health care entities
Training team:	
Lecturer: epidemiologist/training coordinator	<p>SUBJECT: Epidemiological supervision over blood-borne diseases (HCV, HBV, HIV) /2h</p> <ul style="list-style-type: none"> <li>• epidemiology of blood-borne infections (HCV, HBV, HIV)</li> <li>• epidemiological situation of HCV infections around the world, in Poland, in the province</li> <li>• HCV, HBV, and HIV infection risk factors</li> <li>• fundamental hygienic and sanitary requirements regarding medical personnel, equipment, and rooms where health care services are provided</li> <li>• 1-2 cases of HCV infection reported to the State Sanitary Inspection with attention given to legal responsibility</li> <li>• employer obligations and supervision requirements (State Sanitary Inspection) within occupational safety at work associated with a risk of needlestick injury during performance of health care services</li> <li>• current legal acts, including obligations of a physician and a manager of a medical diagnostic laboratory (MDL) within the system of supervision over reporting disease cases and positive results of laboratory tests for HCV, HBV, and HIV in the context of provisions of new regulations of the Ministry of Health (Article 27(9) and Article 29(7) of authorisation act)</li> <li>• training evaluation survey</li> </ul>

Lecturer: physician specialising in infectious diseases	<p>SUBJECT: Patient infected with HCV /2h</p> <ul style="list-style-type: none"> <li>practical aspects of HCV diagnosis and treatment - presentation of two clinical cases (laboratory diagnostics of hepatitis C virus infections – Recommendations of the Polish Working Group 2012/2013)</li> <li>prevention of blood-borne infections (HCV, HBV, HIV) from the point of view of a physician – effectiveness of preventive and treatment activities at different stages of infection/disease, transmission risk</li> <li>post-exposure procedure in case of exposure to blood-borne infection – discussion on the procedure</li> </ul>
Lecturer: specialist for epidemiology or hygiene and epidemiology, i.e.: - specialises in the field of epidemiological nursing, epidemiology or hygiene and epidemiology - has medical secondary or higher education within nursing - has at least three- year experience in the occupation of nurse or hospital midwife	<p>SUBJECT: Methods of reducing the risk of blood-borne infections (HCV, HVB, HIV) in medical facilities /2h</p> <ul style="list-style-type: none"> <li>risk of infection associated with health care (HCV, HBV, HIV) from the point of view of a patient and from the point of view of a medical professional – examples of correct procedures and examples of violations of the procedures</li> <li>hand hygiene as a guarantee of safe health care -5 moments for hand hygiene in health care according to WHO, the most frequent errors</li> <li>examples of modern decontamination (cleaning, disinfection, sterilisation) and examples of the most frequent errors in the process of decontamination</li> </ul>
<b>Educational effects:</b>	
Knowledge	<p>Participant acquires knowledge on:</p> <ul style="list-style-type: none"> <li>blood-borne infections (HCV, HBV, HIV) and their epidemiology</li> <li>risk of blood-borne infection transmission that accompany medical procedures</li> <li>methods of preventing the spread of blood-borne infections</li> <li>modern decontamination</li> <li>currently effective legal provisions within the prevention of blood-borne infections</li> </ul>
Skills	<p>Participant acquires skills within:</p> <ul style="list-style-type: none"> <li>preparing procedures to prevent the spread of blood-borne diseases within the scope of one's own work duties</li> <li>following current guidelines of WHO "5 moments for hand hygiene" in health care</li> <li>handling situations of exposure to infection</li> </ul>



Competences	<ul style="list-style-type: none"> <li>• active, cognisant participation in developing and improving procedures within preventing blood-borne infections associated with health care</li> </ul>
-------------	---

**Table 9.2.**

Subject framework of the training courses and educational effects based on the syllabus of the training for providers of non-medical services who perform procedures involving disruption of tissue continuity

<b>Subject of training course:</b>	<b>Prevention of blood-borne infections (HCV, HBV, HIV) in service establishments – cosmetic and hair salons, tattoo studios</b>
<b>Training team:</b>	
Lecturer: epidemiologist/training coordinator	<p>SUBJECT: Supervision over infections /3h</p> <ul style="list-style-type: none"> <li>• HCV, HBV, and HIV infections around the world, in Poland, in the province</li> <li>• HCV, HBV, and HIV infection risk factors</li> <li>• prevention of blood-borne infections (HCV, HBV, HIV) in hair salons, cosmetic salons, and tattoo studios: <ul style="list-style-type: none"> <li>- mandatory rules of hygiene</li> <li>- basic rules of decontamination</li> </ul> </li> <li>• recommended/necessary hygienic and sanitary conditions <ul style="list-style-type: none"> <li>- in cosmetic and hair salons, and tattoo studios</li> </ul> </li> <li>• waste disposal</li> <li>• obligations of persons performing activities (besides health care services) involving disruption of human tissue continuity arising out of the Act of 5 December 2008 on the Prevention and Control of infections and Infectious Diseases in Humans</li> <li>• training evaluation survey</li> </ul>
Lecturer: specialist for epidemiology or hygiene and epidemiology i.e.:	<p>SUBJECT: Procedures ensuring protection against blood-borne infections (HCV, HBV, HIV) in cosmetic and hair salons, and tattoo studios /3h</p> <ul style="list-style-type: none"> <li>• blood-borne virus infections (HCV, HBV, HIV) – fundamental information</li> </ul>

<ul style="list-style-type: none"> <li>- specialises in the field of epidemiological nursing, epidemiology or hygiene and epidemiology</li> <li>- has medical secondary or higher education within nursing</li> <li>- has at least three-year experience in the occupation of nurse or hospital midwife</li> </ul>	<ul style="list-style-type: none"> <li>• prophylaxis against infections, including HCV infections, in cosmetic salons, hair salons, and tattoo studios, with an emphasis on decontamination (cleaning, disinfection, sterilisation)</li> <li>• hand hygiene</li> <li>• procedure after needlestick injury</li> <li>• the most frequent errors made while providing services involving disruption of skin continuity – risk assessment from the point of view of a customer and a person performing such a procedure – work with casussen</li> </ul>
Educational effects:	
Knowledge	Participant possesses knowledge on: <ul style="list-style-type: none"> <li>• blood-borne infections (HCV, HBV, HIV)</li> <li>• transmission routes of those infections</li> <li>• infection risk factors</li> <li>• procedures to prevent infections</li> </ul>
Skills	<ul style="list-style-type: none"> <li>• participant acquires skills in preparing procedures preventing infections</li> </ul>
Competences	<ul style="list-style-type: none"> <li>• participant performs cosmetic procedures, following all the safety principles within blood-borne infections and taking into account their and their customer's health and safety</li> </ul>

For each province, teams of educators were appointed which consisted of: content coordinator with 1 or 2 lecturers (depending on the type of training) to conduct training for employees of both occupational sectors. With the aim of efficient and content-based performance of traditional training within 11 provinces in the period from 2014 to 2015, by way of a letter of the Chief Sanitary Inspector addressed to State Provincial Sanitary Inspectors, out of the employees of Epidemiology Departments, 11 content coordinators were chosen who met the following requirements:

- experience in epidemiological supervision,
- broad knowledge within epidemiology,
- knowledge of the current epidemiological situation within the province, including the issue of blood-borne infections,
- experience in conducting training courses,
- cooperation skills because of necessary working cooperation with other lecturers, representatives of the Chief Sanitary Inspectorate, and the

project team in NIZP-PZH.

In turn, the content coordinators (as persons possessing knowledge regarding regional (provincial) experts performing activities within epidemiology of infectious diseases within a given region) chose the remaining lecturers – the specialist for infectious diseases and the specialist for epidemiological nursing. When it comes to the approval of physicians specialising in infectious diseases, the opinions of Prof. Małgorzata Pawłowska, PhD, President of the Polish Society of Epidemiology and Infectious Diseases, were obtained, while Ms. Mirosława Malara, MD PhD, President of the Polish Association of Epidemiological Nurses provided opinion on the nominated specialists for epidemiological nursing. This way, 11 provincial training teams were created. As mentioned above, the subject scope covered by the specialists appointed, including content coordinators, was specified in the syllabuses prepared earlier. A detailed scope of tasks for the content coordinator, who is also a host of training meetings, was specified as well (Table 9.3.).

**Table 9.3**

Tasks of content coordinators

Tasks of coordinators	Training - health	Training - services
Preparation and delivery of a lecture	+	+
Update of effective legal acts received in training materials prior to the lecture	+	+
Preparation of 20 questions checking the knowledge within the lecture scope	+	+
Preparation of a list of facilities indicated by the State Provincial Sanitary Inspection the employees of which will be invited to the training	+	+
Sending invitations to training participants - invitations prepared by NIZP-PZH	+	+
Invitation of the representatives of the Province Governor's Office and the Province Marshal's Office – invitations prepared by NIZP-PZH	+	-
Confirmation of the participant's attendance at the training one week before the training	+	+

Both the methods and the subject scope of the educational programme were jointly developed with experts in education methodology. These activities were based on the analyses of educational programmes for medical services sector (for nurses and midwives, postgraduate for physicians and

dentists and other health care professions). An innovative educational programme for providers of cosmetic services within blood-borne infections was proposed (syllabus). The update of the educational programme for nurses and midwives was also received positively.

Between 2014 and 2015, the planned traditional training courses were performed in 11 provinces, while in 2016, the training courses were conducted in all provinces.

### 9.3 Educational and information materials

As part of Project 5, educational and training materials were planned and developed for the purposes of traditional training courses, cascade training courses conducted by the attendees of the traditional training courses for their co-workers, and for the purposes of the e-learning platform that can be used by professionals of both service sectors and other persons interested in broadening their knowledge within transmission of blood-borne infectious biological agents. Before starting to develop educational materials, analyses were prepared that served as a basis for creating comprehensive information and training materials. To this end, an overview of studies and statistical data regarding infection risk in selected occupational groups was performed, including among the health care and social aid professionals. The framework content of specialisation programmes for nurses and midwives and physicians within the required knowledge and mandatory training within blood-borne infections was analysed. Specialisation courses in the fields relevant to health care (for persons with a master's degree) and dental procedures with blood-borne infection transmission risk assessment were also evaluated. A list of currently applicable legal acts on the prevention of infection transmission with regard to medical personnel and health care entities, especially related to post-exposure procedure, occupational diseases, nosocomial infections, and principles of handling infectious material was prepared.

Appointed experts within infectious diseases, epidemiology, and sexology participated in developing and assessing educational and training materials. The experts also included practitioners and specialist in the field of hygiene in health care facilities and service providers performing procedures involving disruption of tissue continuity. Some of the materials were also consulted with and evaluated by representatives of non-governmental organisations, including those representing patient groups.

A range of information and didactic materials was developed – such as educational film and methodological materials and methods for educators, particularly including:

- crucial content of the programme of training courses for health care professionals and non-medical services sector professionals performing procedures involving disruption of tissue continuity based on the

assumptions of the developed training programme:

- for medical training within:
  - 1) epidemiology and diagnosis of HBV, HCV, and HIV infections,
  - 2) research and treatment of HBV, HCV, and HIV infections,
  - 3) prevention of blood-borne infections (e.g. preventing occupational exposure to blood, hospital hygiene, including hand hygiene and hospital programme for elimination of needlestick injuries, legal aspects, and case studies).
- for non-medical professionals regarding:
  - 1) transmission of blood-borne infections,
  - 2) general information on identification, diagnosis, and treatment of HBV, HCV, and HIV infections, taking into account an analysis of several foci of HCV infections in health care entities,
  - 3) prevention of blood-borne infections (principles of hygiene, procedures to prevent transmission of blood-borne infections with regard to the performance of procedures, preventing occupational exposure to blood);
- two knowledge tests (15 questions each) prepared for the purposes of traditional training courses, intended for people working in the health care sector and non-medical professionals (pre/post test);
- evaluation survey regarding organisation of the training, methods used, assessment of the usefulness of the new knowledge and achievement of the training goals, extent to which the training programme was fulfilled, and lecturers (substantive preparation and skills of conveying the knowledge);
- question base, which was prepared on the basis of questions formulated by the training content coordinators chosen in 11 provinces from the group of experienced employees of epidemiology departments of provincial sanitary and epidemiological stations who possess knowledge on epidemiology of infectious diseases. Having been approved by the National Consultant within epidemiology, the base was made available on the e-learning platform. It contains a set of randomly chosen questions that verify knowledge and, at the same time, allow taking a free training course that ends with a knowledge test and a certificate (Fig. 9.1.);



Figure 9.1.

Certificate of completion of the training course in prevention of blood-borne infections under Project 5

- materials that take into account current aspects of knowledge within disinfection and sterilisation (e-learning);
- sample hygiene plans for cosmetic salons, hair salons, and tattoo studios (brochures, available in an electronic version);
- leaflets and brochures providing information on the project (Fig. 9.2.)



Figure 9.2.

A sample information material as a leaflet

- educational film prepared in collaboration with Procontent, a company chosen by the Leader through competition, including:

a) two series of expert videos:

- 1) lectures featuring Prof. Janusz Cianiara, PhD, in the form of a conversation with patients on diagnosis, treatment, lifestyle recommendations, prognoses (Fig. 9.3.).

The series consists of 4 conversations with patients at different levels of their disease:

- a patient informed about HCV diagnosis,
- a patient who is chronically ill,
- a patient with complications,
- a patient after liver transplant.



Figure 9.3.

A shot from the educational film featuring Prof. Janusz Cianiara, MD PhD

2) a series of lectures featuring Prof. Zbigniew Izdebski, PhD (Fig. 9.4.), which cover the following subjects:

- cosmetic procedures in relation to physical and sexual attractiveness,
- risky sexual behaviours,
- blood-borne infections in relation to cosmetic procedure addiction,
- psychopathology of risky behaviours.



Figure 9.4.

A shot from the educational film featuring Prof. Zbigniew Izdebski, PhD

- b) three animated educational/information and instruction films used during breaks from training classes and in the social campaign. The films intended to present basic information about HCV using an animated figure named Marta (Fig. 9.5.), who explains, for example, what is HCV, what are routes of transmission, what situations may lead to infection during procedures involving disruption of tissue continuity (medical and non-medical). Instruction part deals with procedures to be used in salons providing non-medical services in order to avoid HCV infection,
- c) three spots with famous people – celebrities (Fig. 9.6.):
- Anna Jagodzińska, a model,
  - Przemysław Saleta, an athlete,
  - Leszkek Czajka, a hairstylist,
- that encourage visiting the Project 5 website in order to broaden one's knowledge.

One of the many tools supporting educational tasks developed under Project 5 is an e-learning platform which contains all the educational and training materials in the form of films and documents.



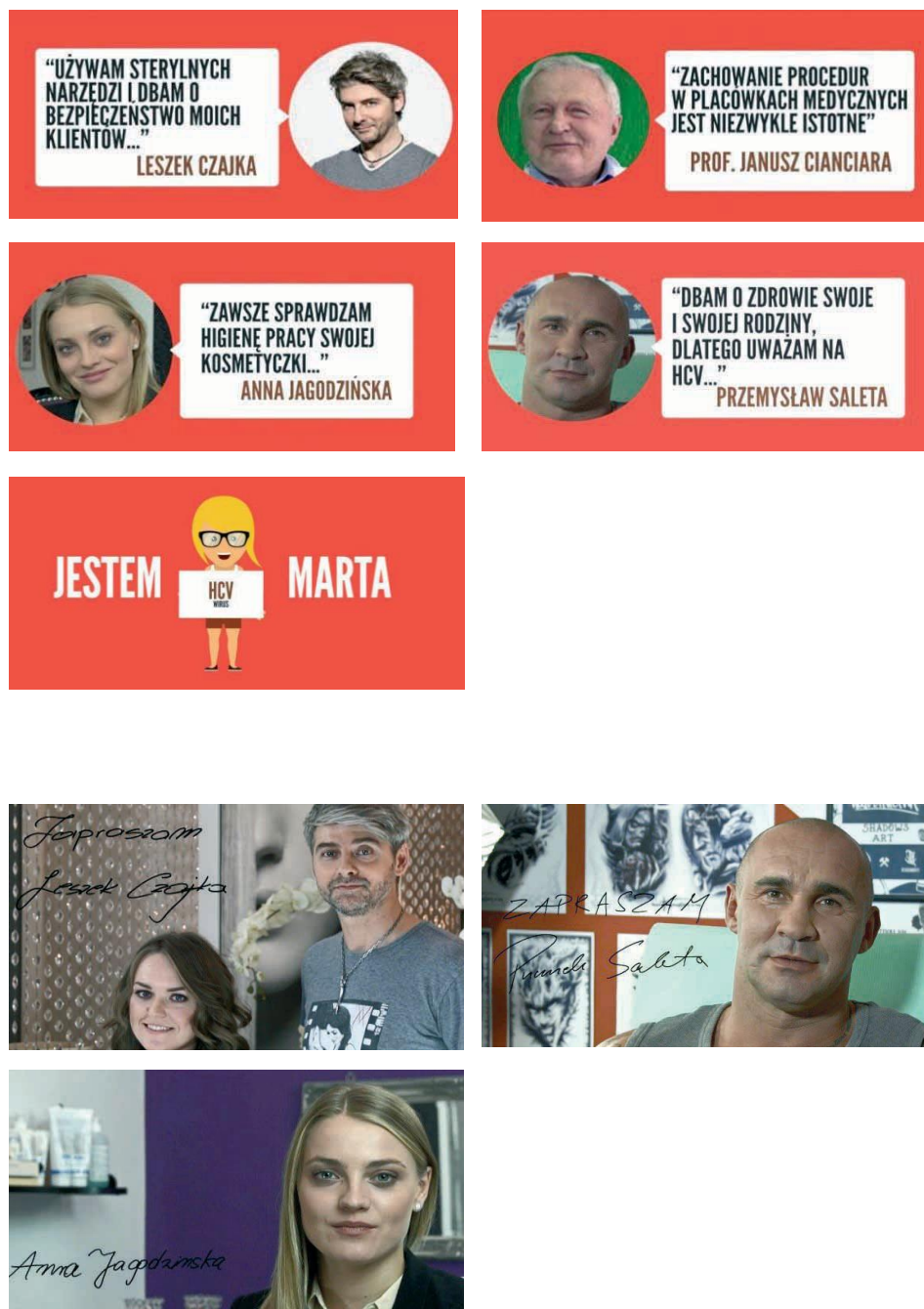


Figure 9.5.

A shot from the animated educational film: I am Marta

Figure 9.6.

Shots from commercial spots encouraging participation in training courses offered as part of Project 5

## 9.4 Training for providers of services associated with a higher risk of blood-borne infection transmission

### 9.4.1 Traditional training courses

Traditional training courses were organised by the Team of Project 5 in collaboration with the Chief Sanitary Inspectorate and teams of educators chosen for each of the 11 provinces between 2014 and 2015 and 16 provinces in 2016. KDK, a company chosen by the Leader of Project KIK/35 through competition, was responsible for technical aspects of the training courses. The first stage of the training courses was performed in the following provinces: Zachodniopomorskie, Pomorskie, Warmińsko-Mazurskie, Podlaskie, Lubuskie, Lubelskie, Dolnośląskie, Śląskie, Świętokrzyskie, Łódzkie, Podkarpackie. In the period from November 2014 to the end of November 2015, 4,327 persons were trained as part of traditional training courses, while the initially planned number was 4,180. Performance indexes of traditional training courses in the first edition are put together in **Table 9.4.**

**Table 9.4.**

Performance indexes of traditional training courses in the years 2014-2015

Indexes	Assumption	Performance
Number of provinces	11	11
Number of training courses		
- total	77	77
- for medical professionals	22	22
- for non-medical professionals	55	55
Number of persons trained:		
- total	4180	4327
- key personnel (medical sector)	880	891
- other personnel (non-medical sector)	3300	3436
Number of leaflets/brochures handed out	78100	88354
Number of distributed film copies (CDs)	5000	7862

Based on the developed and updated educational material, Project 5 was continued and in 2016, additional training courses were conducted according to the assumptions presented in **Table 9.5.**, which also contains information on the performance of planned indexes.

**Table.9.5.**

Performance of training courses in 2016

Indexes	Performance
Number of provinces	<b>16</b>
Number of training courses	
- total	<b>57</b>
- for medical professionals	<b>31</b>
- for non-medical professionals	<b>26</b>
Number of persons trained:	
- total	<b>1869</b>
- key personnel (medical sector)	<b>565</b>
- other personnel (non-medical sector)	<b>1304</b>

After the traditional training courses organised between 2014 and 2015, a SWOT analysis of the activities was carried out, which allowed taking advantage of strengths and opportunities, with simultaneous reduction of weaknesses and threats of those activities during the second edition of the training.

#### 9.4.2 E-learning courses

Education was provided in two ways – aside from traditional courses, there was an additional didactic facility for traditional training courses and an independent learning space in the form of the e-learning platform, which has been used by a total of 6,488 persons so far.

IT tools created to support education under Project 5:

- registration platform on [www.szkoleniehcv.pzh.gov.pl](http://www.szkoleniehcv.pzh.gov.pl), covering a list of training courses including their venue address and date,
- e-learning platform for online education available on the website <http://www.hcv.pzh.gov.pl/Page/platforma-e-learningowa-1>

As mentioned above, the e-learning platform contains all the education and information materials developed in the form of presentations, films, and documents.

Such features of e-learning as available, free-of-charge, self-paced, and location-independent creates a possibility of educating an almost unlimited number of people (visitors in 2016 – 9,179 people).

## **9.5 Additional task — research projects supporting educational activities**

### **9.5.1 Study regarding maps of blood-borne infection risk distribution in the sector of non-medical services**

The study was carried out thanks to the support of a Partner to Project 5 — the Chief Sanitary Inspectorate and representatives of the State Sanitary Inspection. Between 2013 and 2014, Project 5 Team supported by experts and volunteers developed study assumptions for the evaluation of the knowledge, attitudes, and behaviours of non-medical professionals, including sanitary conditions in which they perform procedures associated with infection risk due to disruption of tissue continuity. The study aimed at evaluating the level of knowledge within blood-borne infection transmission and methods of preventing them, as well as at gaining insights in terms of procedures used by providers of non-medical services to ensure sanitary safety of the services.

The study was conducted in the field between November 2013 to March 2014. A survey was carried out by employees of the divisions of municipal epidemiology and hygiene of county and provincial sanitary and epidemiological stations across the entire country. Considering the necessary nationwide range of this study, the Chief Sanitary Inspector turned to 16 State Provincial Sanitary Inspectors with a request for support of the project activities.

The study respondents were non-medical professionals performing procedures involving disruption of tissue continuity. Study tools included: questionnaires (study questionnaires for tattoo and piercing studio employees, study questionnaires for cosmetic salon employees and persons performing permanent makeup, and study questionnaires for hairdressers and barbers) and a site evaluation form (evaluation questionnaires for non-medical service facilities performing procedures involving disruption of tissue continuity aimed at evaluating the equipment and infrastructure of such service facilities).

Considering the diverse risk of blood-borne infection transmission during cosmetic services, 1,600 interviews with main representatives of the salons (100 interviews per province) were planned, including:

- 50% interviews in cosmetic salons
- 30% interviews in tattoo studios
- 20% interviews in hair salons

The percentage share of the three forms of non-medical services was based on preliminary, arbitrary criteria of infection risk assessment.

The survey was anonymous. The choice of salons was random, grouped at

the level of province and county, according to statutory obligations fulfilled by the State Sanitary Inspection within ongoing sanitary supervision and planned inspection activities in entities providing services in the field of hairdressing, cosmetics, spa, tattoos, and piercing.

As part of the study, 1,554 surveys were collected in the country in the form of interviews with employees of cosmetic salons. For technical reasons, the analysis did not include 3% (46) of the questionnaires.



Figure 9.7.

Project KIK/35 website providing information on Project 5

Having been analysed, the collected material was turned into risk maps and entitled: “Blood-borne infection risk map in service salons” available on the website dedicated to Project 5: <http://www.hcv.pzh.gov.pl/Page/projekt-5-1/mapa> (Fig. 9.7.). The surveys were carried out cost-free; some of the analyses and statistical calculations at the final stage were funded from the project savings.

### 9.5.2 Pilot study regarding the assessment of knowledge and frequency of occupational exposure among laboratory diagnosticians

With the support of the National Chamber of Laboratory Diagnosticians

(KIDL), external experts and physicians specialising in NIZP-PZH in public health, an analysis of risk and educational needs for laboratory diagnosticians was prepared. According to KIDL’s data of 1 June 2015, the number of laboratory diagnosticians registered in Poland was 14,744.

The purpose of the study was to estimate the scale of the issue of occupational exposure among laboratory diagnosticians and its causes.

An electronic questionnaire entitled “Determining blood-borne virus infection risk factors in medical laboratories” was developed under the project. The questionnaire was created via [ankieta.pl](http://ankieta.pl) platform. The link to the platform was published in a newsletter distributed by KIDL to registered laboratory diagnosticians. The link to the survey was also available on the [www.kidl.org.pl](http://www.kidl.org.pl) website and shared via social media (Facebook).

400 laboratory diagnosticians from the entire country took part in the study. The analysis of the results provides methods within educational needs for the occupation of laboratory diagnostician intended to be further used also by the National Chamber of Laboratory Diagnosticians. Information obtained during the study may also be helpful and used in order to plan and adjust educational programmes for laboratory diagnosticians. The surveys were conducted cost-free.

### **9.5.3 Opinion of expert epidemiologists and public health practitioners and experts within blood-borne infections**

As a preparation for the fulfilment of the main objective of Project KIK/35 – development of assumption to the document entitled “The National Programme of HCV Infection Prevention for the Years 2015-2020” – three-stage expert opinion survey (forum, FGI) aimed at obtaining additional information and analyses in the field of blood-borne infections and opinions with regard to problem diagnosis and existing or proposed solutions was conducted. The survey entitled “Risk of blood-borne diseases from the perspective of public health – medical services and services involving disruption of tissue continuity” was prepared and performed in collaboration with Millward Brown. Results of the three-stage survey constitute a case study of the issue of blood-borne infections from the perspective of the entire country, various diagnosis levels, and decision-making. They constitute one of the elements of analysis within public health for strategy proposal.

## **9.6 Summary**

One of the fundamental elements that will be responsible for maintaining the permanence, functionality, and effectiveness of Project KIK/35

„Prevention of Hepatitis C Virus (HCV) Infections” are activities planned and successively performed as part of, for example, Project 5 and objectives of those activities. It is expected that education and training activities addressed to selected recipient groups should have long-term influence and their effects should be successively apparent in the future. Continuous broadening of knowledge, training of practical skills, and shaping of the awareness among professionals performing invasive procedures at risk of transmission of microorganisms responsible for serious diseases is an investment in health and safety of customers and personnel alike. In the opinion of many experts, such activities may trigger changes in behaviours, while on a global scale, they may contribute to improving the health and safety of the entire population. The assumption of Project 5 was that the knowledge acquired by medical personnel as part of traditional training courses be further conveyed to co-workers at their workplace through cascade training. Furthermore, training available via the e-learning platform created under Project 5 provide unlimited possibility of continuous education mostly for non-medical professionals.

The educational materials developed by experts which training participants may freely use constitute a significant factor which will certainly play a role in ensuring permanence of the programme effects. It will certainly be helpful in raising awareness among persons performing invasive procedures (medical and non-medical) within the issues of blood-borne infections, which, despite observed improvement of the knowledge in this subject, is still quite low.

When it comes education of staff it should be emphasised that the knowledge developed in the programme has already at the current stage been used to update undergraduate and postgraduate curricula for chosen medical professions, especially nurses and midwives. One of the conclusions drawn from the activities performed in Project KIK/35 is that it is necessary to include HCV infection prevention issues in the education of physicians and dentists.

Activities that cannot be overrated and that supplement tasks performed as part of Project 5, aside from the long-term national social campaign dealing with the problem of HCV infection in the form of a clear message to the general public, include: health programmes targeted at youth within avoiding risky behaviours related with, among others, drug use or dangerous sexual practices; information activities for uniformed services, security services or personnel of remand centres and prisons, as well as prisoners using psychoactive substances by way of disrupting tissue continuity; and empowering local authorities to take actions for the local communities. Representatives of both the National Institute of Public Health – National Institute of Hygiene and the State Sanitary Inspection actively participate in performing those activities.



## ACKNOWLEDGMENTS

Project 5 Team would like to give special thanks to the content coordinators responsible for carrying out traditional training courses in the particular provinces, to the provincial and county-level bodies of the State Sanitary Inspection for supporting project activities, to the educators – physicians and nurses, to the persons participating in developing the materials, as well as assessing and consulting them.

We would also like to thank Procontent, KDK, and Millward Brown companies for the fruitful cooperation and all the Persons not mentioned here but involved in the works on Project 5.

**Table 9.6.**

List of persons cooperating in the performance of Project 5

Person	Institution
Minister Marek Posobkiewicz	Chief Sanitary Inspectorate
Mirosława Półgrabia Olga Kołakowska	National Institute of Public Health - National Institute of Hygiene - team at the stage of preparing teaching materials
Aleksandra Czyrznikowska Mateusz Szewczyk	Chief Sanitary Inspectorate
Grażyna Chaszczewska-Wojtas	County Sanitary and Epidemiological Station in Wałbrzych
Elżbieta Sójkowska	County Sanitary and Epidemiological Station in Jelenia Góra
Joanna Strugarek	County Sanitary and Epidemiological Station in Kłodzk
Bożena Kess	Provincial Sanitary and Epidemiological Station in Lublin
Aneta Sawicka	Provincial Sanitary and Epidemiological Station in Gorzów Wielkopolski
Anna Guzek	Provincial Sanitary and Epidemiological Station in Łódź
Małgorzata Witas	Provincial Sanitary and Epidemiological Station in Rzeszów
Lucyna Jadaluk Joanna Siemienkiewicz	Provincial Sanitary and Epidemiological Station in Białystok
Aneta Bardoń-Błaszowska Dorota Zabielska	Provincial Sanitary and Epidemiological Station in Gdańsk
Kamilla Kalitka-Ulman	Provincial Sanitary and Epidemiological Station in Katowice
Małgorzata Haponiuk	Provincial Sanitary and Epidemiological Station in Kielce
Małgorzata Dobrzańska	Provincial Sanitary and Epidemiological Station in Olsztyn
Renata Opiela	Provincial Sanitary and Epidemiological



	Station in Szczecin
Witold Paczosa	Provincial Sanitary and Epidemiological Station in Wrocław
Elżbieta Narolska-Wierczewska, MD-PhD	Provincial Sanitary and Epidemiological Station in Bydgoszcz
Jolanta Janik, MA	University Hospital in Cracow
Marta Andrzejewska, MA Janina Krawczyk, MA	Center of Postgraduate Education for Nurses and Midwives
Bożena Jakimiak, PhD Ewa Rohm-Rodowald, MA	National Institute of Public Health — National Institute of Hygiene
Prof. Alicja Wiercińska-Drapało, MD-PhD	Medical University of Warsaw Independent Public Health Care Centre Provincial Hospital of Infectious Diseases in Warsaw
Prof. Janusz Cianciara, MD-PhD	Independent Public Health Care Centre Provincial Hospital of Infectious Diseases in Warsaw
Prof. Zbigniew Izdebski	Department of Biomedical Grounds for Development and Sexology of the University of Warsaw
Elżbieta Puacz, MD-PhD	President of the National Chamber of Laboratory Diagnosticians
Anna Jagodzińska Przemysław Saleta Leszek Czajka	For granting their image free-of-charge for the purposes of the project
Urszula Jaworska Sebastian Gawlik	Representatives of Patient Organisations and Urszula Jaworowska Foundation
Joanna Rafałowska, DDS Małgorzata Znyk, MA Rafał Halik, MA Group of Students of the Medical University of Warsaw and persons specialising in NIZP-PZH in the field of epidemiology and public health during the project.	National Institute of Public Health - National Institute of Hygiene - Participation in the project at its various stages

# SOCIAL CAMPAIGN “HCV I AM AWARE OF” – TRANSLATION OF KNOWLEDGE AND ITS INTEGRATED MESSAGE TO TARGET GROUPS

Rafał Patoła, MEng; Rafał Gierczyński, PhD; Anna Małek  
National Institute of Public Health – National Institute of Hygiene

For many years, health education as well as prophylaxis and health promotion activities are the subject of efforts of many institutions in the country. Those aspects are dealt with by, among others: government and self-government administration, scientific units, research institutes, sanitary and epidemiological units, educational facilities, as well as non-governmental organisations. Unfortunately, many prophylactic educational programmes rarely use comprehensive approach oriented at developing life skills allowing to maintain permanent health.

Providing the society with information allowing identification and understanding of a health problem, its causes and chances to prevent, especially those available for citizens, is an important element of prophylactic activities. At this stage, proper translation of expert knowledge into language comprehensible for the society is of enormous importance. This process often requires using far-reaching, skilful generalisations and selection of the most significant facts that should reach the social awareness. The next stage involves choosing an effective form of communication – one that will make the message sufficiently attractive to draw the attention of the society – and selecting “technical” forms of communications, so that appropriate target groups can be effectively reached. The last element of the activities involves maintaining the message for a period of time needed to shape the society’s expected model of health-promoting behaviours (habits/convictions/fads). Here, activity effectiveness monitoring plays an important role. Promotional activities in the field of health are currently much more difficult due to large amounts of information, often contradictory, that reach the society from many diverse communication channels; therefore, effective promotion of health-promoting behaviours is frequently achieved through social campaigns.

According to Paweł Prochenko, a practitioner, social campaign is a set of different activities planned for a specific time and oriented at a specific target group which aim at improving knowledge, inducing change of thinking and behaving towards a specific social problem, or solving a social problem that inhibit the achievement of commonweal defined as a marketing goal [1]. Social campaign is a specific communication and promotion campaign the purpose of which is usually to induce changes in social attitudes towards a certain idea or problem. In general, such a type of ventures aim at achieving an educational effect through informing, explaining, leading to actions, or touching upon difficult or embarrassing subjects taking social interest into consideration [2].

### **10.1. Information on the issue of HCV infections in Poland and their sample translations into a message that is comprehensive for the society**

Results obtained during intensive epidemiological studies conducted under Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections” allowed us to estimate the number of people infected with HCV in Poland as well as to determine risk factors and groups particularly at risk of HCV infection.

The first information that should reach the mind of the society in the country is the fact that, epidemiological estimations on collected data show, there are approximately 165 thousand people in Poland with chronic HCV infection, although considering possible spread of the results (confidence intervals: 95% CI 127 thousand – 190 thousand) and results of previous studies, it was decided to round up this value to 200 thousand in the message for the society, creating the following announcement: “even up to 200 thousand people in Poland may live with HCV in their blood”. The issue of unambiguous, simple message regarding the number of people in Poland with chronic hepatitis C is crucial. It stems from the fact that HCV is very specific in that, in practice, we deal with disparity between the estimated number of people who have had contact with the virus – have been infected (around 750 thousand) – and the estimated number of people in whom the HCV has not been spontaneously eliminated by the immune system and is continuously replicating, leading to a chronic infection (165 thousand). For this reason, it was crucial that the message for the purposes of the social campaign “HCV I am aware of” round up the number of people with chronic HCV infection to a value that is easy to remember, such as 200 thousand people.

Another important information that the society should receive is concerned with the transmission routes of HCV and risk factors. Study results obtained in Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections” confirmed other literature data on the major risk factors and transmission routes of HCV in Poland. Therefore, the message targeted at the society had to highlight

that the hepatitis C virus is transmitted by blood, which is the reason why every medical or non-medical procedure and action involving disruption of tissue continuity may be an HCV risk factor. Considering the fact that the majority of invasive medical procedures are performed of necessity, as part of treatment or prophylaxis of diseases, which means that it is the patient's interest not to disagree to such procedures, the message to the society focused on such HCV risk factors that most people may reduce themselves, meaning cosmetic and beauty procedures involving disruption of skin or mucosa continuity. The message during the social campaign "HCV I am aware of" was to inform the society that such procedures may pose a threat due to a possible transmission of blood-borne infections, if not performed using aseptic techniques that are applied in health care. The purpose of the message was to shape an active demanding attitude of the customers of salons where such types of procedures are performed, so that the customers expect the service provider to ensure safety of cosmetic procedures by eliminating the potential for blood-borne infection transmission. The message informed the society that the elements to pay attention by the salon customer should be the service provider's awareness of blood-borne infections and the way the procedures are performed, with an emphasis on the necessary use of disposable and sterile equipment wherever it involves disruption of skin connectivity, as well as proper activities within disinfection of the service site and maintenance of appropriate hand hygiene. Due to the broad scope of this message, the social campaign "HCV I am aware of" tries to operate with audio-visual means of communication as frequently as possible.

## **10.2. Educational activities as a professional background for the social campaign**

Educational activities targeted at key populations from the point of view of HCV control, which were conducted across Poland between 2014 and 2016 under Project 5, determined the choice of activities under social campaign and the way and mode the activities were implemented. The training courses were intended for medical and non-medical professionals, including employees of cosmetic salons, tattoo studios, and hair salons. In total, 134 training courses were conducted, with more than 6 thousand participants, including ca. 1.5 thousand employees from the medical sector and 4.7 thousand employees from the non-medical sector. With its originality and innovativeness, the educational offer addressed the needs of both medical professionals and employees from the beauty industry, i.e. cosmetic salons, hair salons, and tattoo studios.

The subject of prevention and prophylaxis against blood-borne infections is equally important from the point of view of professional tasks involving disruption of tissue continuity for employees representing the beauty industry

as it is for medical personnel. Due to the lack of specific legal regulations standardising the issues of blood-borne infection prophylaxis in tattoo studios, hair salons, and cosmetic salons, as well as the lack of sufficient awareness of blood-borne infection risk among the personnel of those entities and limited possibilities of additional training within this subject, an immediate need for further education of this occupational group was identified. Another stimulus which influenced the choice of tools for the social campaign were initiatives of local communities. In 2014, the representatives of the team implementing Project 1 were invited to a local event entitled: “Health Festival” in Tuszyn, Poland. During the “Health Festival”, the most important aspects regarding HCV infections and basic assumptions of Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections” were presented to the local community. Presentations of the representatives of Project KIK/35 met with a large interest of the audience. They also constituted an opportunity for the exchange of views with regard to the needs and expectations of the local community when it comes to the expected information on blood-borne infections. In 2015, in collaboration with the Foundation of Social Education, educational and information activities were conducted among the participants of Woodstock Festival, which involved setting up an HCV education and information stall.

### **10.3. HCV – awareness among the Polish society, studies of target audience**

Planning appropriate educational and information activities under the social campaign would not have been possible without public opinion survey on what citizens in Poland know about HCV.

The nationwide public opinion survey was conducted by Millward Brown company on a representative sample of the Polish society amounting to 1,012 people over 15 years old using the CAPI technique (Computer Assisted Personal Interview). This technique is used in quantitative studies and involves interviews with respondents using portable computers [3]. The use of an electronic questionnaire containing 20 questions prepared by experts from the National Institute of Public Health – National Institute of Hygiene involved in Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections” allowed automatic, faster collection of data – eliminating this way a long stage of entering survey answers to the database manually, automatic rotation of questions asked, as well as better control and elimination of potential errors.

The study demonstrated that the awareness of HCV infections in the society is still insufficient. More than half (55%) declared to have never heard of HCV, while only 12% of the respondents aged 15-24 are aware of the issue of HCV infections. Many of the respondents were convinced that there is a

vaccine against hepatitis C, while only 14% gave the right answer that such a vaccine has not been created yet. Furthermore, 41% had no knowledge on whether one can be vaccinated against the disease caused by HCV. The respondents also had difficulties giving the right answers to the questions regarding symptoms of HCV infection. If they were able to indicate any symptoms, it was mostly: liver pain. However, they most frequently indicated lack of specific symptoms of the disease. When it comes to the question whether HCV infection is curable, only every fifth respondent stated that HCV infection may be effectively cured, while every third respondent was of the opinion that available drugs only allow controlling the HCV infection. As part of the study, besides the knowledge of the respondents, we also evaluated their beliefs regarding HCV infection. According to 54% of the respondents, disclosing HCV infection could negatively affect their professional and private life. The higher education of the respondents, the more worried they are in that respect. Only 4% of the respondents encountered signs of discrimination or social stigma of a person infected with HCV.

The results of the public opinion survey on the knowledge of the Polish society on HCV allowed us to determine areas to be addressed in the social campaign in the first place. On the one hand, the lack of knowledge induces fear, while on the other – it leads to negligence. Therefore, the first areas to be dealt with is raising awareness among the Polish society of HCV and its possible consequences for health, as well as changing behaviours to reduce HCV infection risk [4].

#### **10.4. Determining the goals of the social campaign**

The assumption that the most important method of preventing HCV is early diagnosis among persons from the risk groups and the use of procedures making infection transmission impossible was a starting point for the nationwide social campaign "HCV I am aware of". The lack of adequate and comprehensive prophylactic activities aimed at preventing HCV infections constitutes a problem for public health. It should be emphasised that early diagnosis increases the treatment effectiveness and reduces its social and economic costs. Therefore, the awareness among physicians, patients, and those who represent occupations at a higher risk of HCV transmission is an important aspect from the economic point of view. Therefore, the goals of the nationwide social campaign were:

- 1) Raising awareness on the prophylaxis of HCV infections and shaping appropriate health-related attitudes and behaviours;
- 2) Transfer of information and knowledge regarding HCV infection prevention and encouraging people to undergo tests for HCV;
- 3) Personalisation of communication channels with regard to HCV and HCV infection prophylaxis for specific groups, e.g. youth (developing model

attitudes with regard to the prevention and prophylaxis against HCV, which will reduce the number of infected people in the future);

- 4) Improving working standards, e.g. in tattoo studios, beauty, hair, and acupuncture salons, and dental practices, as well as improving the quality of health care provided by medical professionals in terms of prevention and prophylaxis against HCV infections, for example through promotion of e-learning courses;
- 5) Drawing the attention of policy-makers within public health care and NGO sector to the issues regarding HCV infections (many organisations from the third sector operates alone within matters related to HCV, there is no platform for exchange of experience and cooperation).

Such goals were to be achieved through:

- 1) Shaping active attitude among the social campaign target groups, which involves among others:
  - a) taking measures reducing the risk of HCV infection, including the risk of transmission of the infection to another healthy person,
  - b) asking questions before and during procedures regarding sterility of items used in the procedure, the use of disposable equipment, opening sterile equipment directly before the procedure, washing hands or using disposable gloves changed for each procedure;
- 2) Raising awareness among the campaign target groups that it is worth testing for HCV on one’s own initiative if they find themselves in a risk group.

Implementing those goals, it was assumed that the language of the campaign will be adequate to a given communication channel. It was decided that even inconvenient subjects will be addressed openly and clearly so that it is difficult to contravene with the arguments presented which were supported by evidence and solutions arising out of scientific research. Authors of the campaign decided to place “themselves” on the recipient’s side – to feel like a recipient. Therefore, the campaign does not prohibit or order anything, nor does it judge or criticise anyone.

When it comes to the means of communication, certain constraints were introduced, which are worth highlighting at this point. Assumptions were adopted that the social campaign shall not:

- try to scare with death caused by HCV infections or show images of people suffering from HCV infection,
- induce aggression and/or intolerance,
- present the image of a person infected with HCV as a failure or social outcast,
- discredit, ridicule and condemn,
- stigmatise, or offend any occupational group whose work may involve

disruption of tissue continuity (and as a result – contact with blood),

- use items or symbols that may be associated with terror attacks or violence, including firearm, knife, etc.

However, it was agreed that the social campaign can be funny, but not superficial or ridiculous.

### **10.5. Planning and formulating a creative strategy and elements of the social campaign**

Creating as well as planning activities under the social campaign "HCV I am aware of", the National Institute of Public Health – National Institute of Hygiene reached for communication channels that are recognised and readily used in the identified target groups and which sometimes shape the way various problems are seen.

Considering the complexity of the subject as well as the innovative method of implementing the educational and information activities, the media message uses a specific stylistic provocation.

Every day, the recipients of the media communication hear dozens of messages about a danger to their health and life. They care about those stories, although the chance of those stories to occur is one out of a million. Many people are afraid of hazards that in reality mean nothing and have nothing to do with the reality. The stories are sometimes more and sometimes less funny, mostly ridiculous, but always thought-provoking, because who believes in all of that anyway? A man holding a cupboard, a killer-heating blanket, a creepy kettle or a beaver which is attacking out of a blue. Those are only few of many stories that made to the headlines of popular Polish daily newspapers, seen behind shop windows every day. There is much more, such as many photo albums available on the Internet.

In the abundance of threatening information, people mainly focus on those spectacular messages – not the actually important ones. Planning the activities and the creation of the social campaign, we took advantage of this phenomenon by diverting the recipient's attention to the issue of HCV infections.

Ridiculing, in a way, the paper headlines that surround us, imaginary dangers were created: sharks in the Baltic Sea, spiders in bananas, and a cobra prowling on the streets. In planning the campaign, NIZP-PZH received professional support from company: Good Company. Other companies: Telescope Malina Wieczorek and Mastermind Media Sp. z o.o. were responsible for creation and visualisation of the social campaign, including the key visual, and production of the TV advertisement directed by Piotr Onopa, as well as production of the radio advert.



### 10.6. Social Campaign “HCV I Am Aware of” in the media

The fundamental and, at the same time, the first element of the social campaign was the use of traditional mass media: radio, television, the press, outdoor advertising, and the Internet.

TV advertisement is considered the most effective form of reaching the public. A TV advertisement gives us reliability of the message, wide range with a lower cost of reaching a single recipient as compared with other advertising media, as well as strong influence on the recipient’s emotions.

In the period from 1 July 2016 to 31 August 2016, the TV advertisement was broadcast 927 times in the Polish public television (Telewizja Polska S.A.) on TVP1, TVP2, and TVP3 channels as well as thematic channels of the Polish public television and thematic channels of Cyfrowy Polsat S.A. As part of social broadcasts, thanks to the collaboration with “HIGIEJA” Foundation, in September 2016, the TV commercial was broadcast additionally by the Polish public television 115 times on the following channels: TVP1, TVP3, TVP POLONIA, and TVP KULTURA. It is estimated that the TV commercial was seen by a total of 18,500,000 persons, reaching a GRP of 152. GRP (Gross Rating Points) is a measure of the strength (effectiveness in reaching the audience) calculated by measuring the size of the audience reached by a TV advertisement in conjunction with the frequency with which it was broadcast. GRP details and the TV commercial coverage are presented in [Figure 10.1](#).

Considering the fact that radio has a great potential and constitutes the most personal media outlet accompanying many listeners for almost entire day,



Figure 10.1.

Educational and information activities in the media (television, radio, and outdoor advertising)



Figure 10.2.

A shot from the TV commercial broadcast as part of the social campaign "HCV I am aware of"

the radio advertisement was also broadcasted in the period of broadcasting the TV advert. The radio advertisement, which was heard by nearly 14,000,000 listeners, was emitted a total of 141 time on such radio stations as: Pakiet Złote Przeboje, ZET Chili, Pakiet Zet Total and Pakiet RMF 3D. GRP value and the radio commercial coverage are presented in Figure 10.1.



Figure 10.3.

Advertisement of radio broadcasts as part of the social campaign "HCV I am aware of"

What is more, as part of the "Lato z Radiem" tour, the station one of Polskie Radio (Polish Radio) broadcasted a three-part radio programme on HCV and hepatitis C.

The use of radio advertisement in the social campaign as a perfect, relatively inexpensive means of communication allowed us to reach a wide group of listeners, influencing their emotions, communicating with them in many different situations – as they were doing household chores, commuting to work, or driving their cars, etc.

The social campaign could not omit outdoor advertising. A definite advantage of this type of mass advertising is its wide range and the fact that the audience do not have to incur any financial costs as opposed to television, radio, the press or the Internet. The audience of an outdoor advertisement are everyone who go outside. The outdoor advertisement under the social campaign “HCV I am aware of” was published during two months of school holidays in 2016 on 115 advertising carriers across Poland.

Aside from the outdoor advertisement between June and November 2016, there was a banner campaign conducted in the Internet with the aim of providing a clear message on HCV and redirecting the Internet users to the website of the social campaign “HCV I am aware of”. Bright colours, different formats, and animations of the banners drew attention and many visitors of web pages clicked the banner posted on those web pages and visited the website of the social campaign [www.jestemswiadom.org](http://www.jestemswiadom.org).



Figure 10.4.

Examples of an outdoor advertisement as part of the “HCV I am aware of” Campaign

During the banner campaign, the advertisement was viewed on the Internet more than 200 million times by ca. 23 millions of individual Internet users. The advertisement was clicked by more than 500 thousand Internet

users. Ten different format of the advertisement were used for the purposes of the campaign: 240x400, 250x250, 300x250, 300x600, 320x100, 336x280, 486x60, 728x90, 970x90, and 970x250. The largest number of clicks was recorded for: the 300x250 advertisement, in Warsaw – 131,586 clicks and on the Interia.pl website – 40,828 clicks.

Using the potential of the press, which builds relationships and reliability, as well as engages and deepens the message, many articles and advertisements redirecting the reader to the [www.jestemswiadom.org](http://www.jestemswiadom.org). were published in newspapers and magazines during the campaign. Those articles and advertisements were aimed at satisfying the reader's curiosity about HCV and hepatitis C, provide them with reliable information, broaden their knowledge, as well as encourage thought and reflection. As part of the collaboration with the Urszula Jaworowska Foundation – in July 2016, AGORA S.A. published press releases informing on the social campaign "HCV I'm aware of" 27 times in its newspapers.

World Hepatitis Day, an annual event at the end of July – established by the decision of World Health Organisation in 2010 – became the motivation to plan additional activities under the social campaign.



Figure 10.5.

Examples of a banner advertisement in the Internet as part of the "HCV I am aware of"



### Campaign

Every year, both experts and representatives of patient environments try to highlight the problem of viral infections leading to chronic hepatitis. For this reason, there was “Great Health Test” aired on channel one of the Polish public television that, in most, dealt with the subject of HCV and hepatitis C, which was watched by more than 1,200,000 viewers and as many as 179,000 Internet users. The Programme was attended by:

- Konstanty Radziwił, Minister of Health;
- Marek Posobkiewicz, Chief Sanitary Inspector;
- Prof. Mirosław J. Wysocki, Director of the National Institute of Public Health – National Institute of Hygiene;
- Guido Beltrani – Director of the Swiss Contribution Office Warsaw - Counsellor of the Embassy of Switzerland in Poland;
- Prof. Alicja Wiercińska-Drapała, MD-PhD, Head of the Department of Hepatology and Acquired Immunodeficiency of the Medical University of Warsaw, Hospital of Infectious Diseases in Warsaw, Poland;

and celebrities and popular singers, actors, athletes, and journalist responded to questions about health.



**Figure 10.6.**

Shots of the television programme entitled “Great Health Test” prepared by TVP and NIZP-PZH as part of the social campaign “HCV I am aware of”, 12<sup>th</sup> September 2016



Figure 10.7.

A shot from the television programme entitled "Great Health Test" showing the symbolic first prize for the winners of the programme

Winners of "Great Health Test" were: Marzena Stupkowska and Vito Casetti, who donated the first prize for the benefit of Urszula Jaworowska Foundation involved in the help for patients suffering from blood and bone marrow cancer, patients with brain tumours, as well as persons suffering from multiple sclerosis (MS), and people infected with HCV.

#### 10.6.1. Social Campaign "HCV I Am Aware of" in the Internet

The internet campaign, as a non-standard tool in the social campaign, focused on activities aimed at raising awareness among the society of: the issues of HCV, diagnosis and treatment possibilities, transmission routes of the virus, and activities to reduce the risk of infection. All the activity under the social campaign "HCV I am aware of" were mainly focused around the website [www.jestemswiadom.org](http://www.jestemswiadom.org). Any message occurring in the traditional mass media redirected the recipient to the campaign website (Figure 10.8.).



Figure 10.8.

Website of the "HCV I am aware of" social campaign

In order to maintain the interest of the Internet community, video materials, graphics, memes and animations created and used in the web campaign were displayed on the [www.jestemswiadom.org](http://www.jestemswiadom.org) website with appropriate frequency. They were moderated on an ongoing basis. An important element of the campaign portal was the feedback to the audience – the FAQ page was successively updated with Project KIK/35 experts' answers to questions frequently asked by the Internet users, including those regarding difficult social issues of people with hepatitis C diagnosed having to wait for treatment.

Other activities as part of the online campaign were social media actions. Relevant profiles were created on Facebook, Twitter, YouTube, Pinterest, Google+, Snapchat and Instagram. Within this area, we collaborated with Abanana agency belonging to the Eura7 Group.



Figure 10.9.

Coverage of content published on social media (as at: 31.12.2016)

The online campaign also involved bloggers (Los Wiaheros, Mamalife, Fit jest Git, Basia Smoter, Ugotowani.tv), which allowed us to reach their subscribers with the subliminal message as part of the subjects they raised on their profiles.



**Figure 10.10**

List of bloggers participating in the "HCV I am aware of" social campaign

Online authors, including bloggers, allow reaching hundreds of thousands of readers who, reading their posts, give increasingly more trust to what is published on their website. Therefore, Los Wiaheros, a travel blog, participated in the campaign. Alicja and Andrzej are not only well-known globetrotters, but also persons who care for their safety during travels. Their valuable advice may have helped numerous travellers. Mamalife, a parenting profile, on the other hand, presented potential dangers we can encounter in household environment and emphasised how important it is to be aware of many health-related issues. The blogger's activities allowed us to reach a wide group of recipients – mainly women, mothers, showing them that awareness may save our life and ensure safety of our closest ones. A young cosmetician, Basia from the BasiaSmoter.pl blog, raised awareness of the risk of HCV infection during everyday and – what it would seem – simple activities, such as a visit at a hairdresser's, cosmetician's, tattooist's or a medical facility. For people who value active leisure, the Fitjestgit blog brought valuable advice. Exercising may be helpful and not only may it make



our everyday life easier, but it also may help fighting a disease. Thanks to the above activities we could reach more than 350,000 recipients and raise awareness among people who, every day, try to find solutions to problems that concern them and search for inspirations for new ventures [5].

### 10.6.2. Youtubers as ambassadors of the social campaign “HCV I’m aware of”

Alex Mandostyle, iHanio, Yoczook, Uwaga! Naukowy Bełkot, SerafinTV, Po Prostu Patryk, and Requer – youtubers who were involved in the social campaign “HCV I’m aware of” and became its ambassadors.

Youtubers who played the role of ambassadors were selected according to the subject matter of their youtube channels – so that they were as much diverse as possible. Their accounts on such portals as YouTube, Facebook, Instagram, and Snapchat were used for communication. Since 10 June 2016, seven youtubers informed on their channels about: what HCV is and what threats it entails, and how to avoid infection - in a way relevant to the interest of their audience. Each of the ambassadors prepared and published films on the YouTube and Snapchat in their characteristic ways. On all of their remaining profiles (Facebook, Instagram, Twitter, Ask.fm, Snapchat), the ambassadors organised competitions, published posts involving in, and informing about the campaign, as well as posts on the HCV itself and on the consequences of the infection.



Figure 10.11

List of youtubers participating in the “HCV I am aware of” social campaign

"The campaign lasted continuously for 90 days. Each day, we proposed a different type of activity related to education about HCV. We also ensured that the message of the campaign occurs on the ambassadors profiles on all the significant social media" – says Emil Kokoszka from the WE SHARE agency responsible for collaboration with the youtubers.

Each day, for three months, one of the youtubers was involved in the actions. This element of the social campaign "HCV I am aware of" was especially aimed at young people. The language of youtubers and the content that appears on their channels reach the minds of young people. The agency assumed that the communication on the ambassadors' channels should be as natural as possible. As part of the campaign, seven films were created on the YouTube channels of the participating artists. Each video was created in the style of the specific YouTuber to which his/her audience is accustomed, and the video length was not different from other video content from the channel. Therefore, the fans positively reacted to the messages and were eager to interact: gave "likes", commented, and sent "snaps". In total, the videos on YouTube created on the channels of the above influencers reached nearly one million views. The ambassadors were always in touch with the fans, replied to their questions about HCV and took part in educational events within the campaign. With all the activity on the ambassadors' channels, we managed to reach with our HCV message more than four million people!

### 10.6.3 "HCV Campaign Face"

Activities conducted via online channels encouraged employees of hair salons, cosmetic salons, acupuncture salons, and tattoo studios, as well as medical professionals to self-study within prevention and prophylaxis against HCV via the e-learning platform.

In order to encourage employees from the services sector to self-study, a competition to become "HCV Campaign Face" was organised on the campaign website. Among persons who achieved at least 11 points in the online course via the e-learning platform, 15 film prizes were drawn: appearance in a short film lasting several minutes regarding promotion of the HCV knowledge and good practices in their salon (without advertising the salon itself). In order to counteract the passive attitudes of the society, a film promoting the "HCV Campaign Face" competition was produced and published on the Internet.



**Figure 10.12.**  
Logo of the “HCV Campaign Face” competition

#### 10.6.4 Map of Aware Places

Map of Aware Places is one of the initiatives undertaken in the Internet as part of the social campaign “HCV I am aware of”. The Map shows locations of salons and other service entities which employ persons with full awareness of HCV infection prevention confirmed with a theoretical training completed and an examination passed. Deciding to undergo a cosmetic procedure, we should choose places where the personnel is aware of the issue of blood-borne infections, follows safety rules, and the salon is equipped with disposable or sterilised equipment. HCV is relatively resistant to external environmental conditions and it can survive more than seven days on contaminated surfaces in room temperature. Knowledge and compliance with procedures are the most important aspects of HCV infection prevention. Therefore, the initiative aimed at showing all the places on the map of Poland where the personnel is aware of the threats posed by HCV – as they successfully completed a training on HCV offered under Project KIK/35.



**Figure 10.13.**  
Logo of the “Map of Aware Places” initiative

### 10.7. Summer with the "HCV I am aware of" social campaign – direct contact with the recipients

The social campaign "HCV I am aware of" could not take place without direct contact with the campaign recipients. Educational and information activities were conducted in 17 cities across Poland, including 10 as part of the "Lato z Radiem" concert tour. The activities were aimed at general public and conveyed information on HCV in an interesting and attractive way, indicating the problem of HCV infection as a problem of all social groups.



Figure 10.14.

Advertisement of the "Lato z Radiem" concert tour together with the "HCV I am aware of" social campaign

The events took place in the cities where public opinion surveys conducted in February 2016 (before the social campaign started) with regard to what the Polish society knows about HCV demonstrated the lowest awareness of HCV among people: smaller cities, where the main message of the social campaign broadcast in television, radio, and the Internet was supplemented with a direct contact with the recipient. A team of educators, animators, physicians, and representatives of the National Institute of Public Health – National Institute of Hygiene and partners, especially the State Sanitary Inspection, met with the Polish society on selected mass events and festivals organised in the country.



**Figure 10.15.**

Outdoor educational and information activities as part of the social campaign “HCV I am aware of”

Outdoor activities as part of the campaign were conducted using new digital technologies. Participants solved plays and quizzes on interactive kiosks with touch screens and direct access to the website of the online social campaign “HCV I am aware of”, while those who visited the tents could answer questions regarding HCV on an ongoing basis. Educators and animators conducted the survey on HCV and hepatitis C using tablets.

The audience at the outdoor events were animated by inviting them to HCV tents and using attractions prepared for them. A delegated person walked around the area before the tents. During the event, the educators gave out QR codes with ciphered slogans to the event participants. The participant’s task was to create a new slogan by finishing a sentence. Every 45 minutes, the committee composed of the representatives of NIZP-PZH chose the most creative slogan. A winner received a prize. A significant part of the stall was a rest area where one could have a rest and relax, watching the campaign promotional spots on two LCD screens.



**Figure 10.16.**

Information and promotional materials handed out to participants of the competitions organised during the outdoor events of the social campaign “HCV I am aware of”

In the “chill-out” zone, one could also talk with the educators and a physician. Children animation zone with two animators organised a stall named “zrób sobie wirusostracha” (“make your own virus-beast”), where children drew “virus-beasts” and made their own pins. This zone also featured children games and plays: music play, teaching a song on hand hygiene using musical instruments, assembling “huge” thematic jigsaw puzzles, and memory games on an interactive kiosk. A photo booth was also set up. Participants could use: funny accessories, foam arrows in the colours of the campaign, and background (graphic roll-ups). The animator’s task was organising plays, technical support of the photo booth, and encouraging the participants using a small gift to agree to publish their photo on the website of the social campaign.

In 2016, educational and information activities were also conducted among participants of the Woodstock Festival. During a three-day stay, an educational and information stall was set up, where knowledge on HCV was promoted.





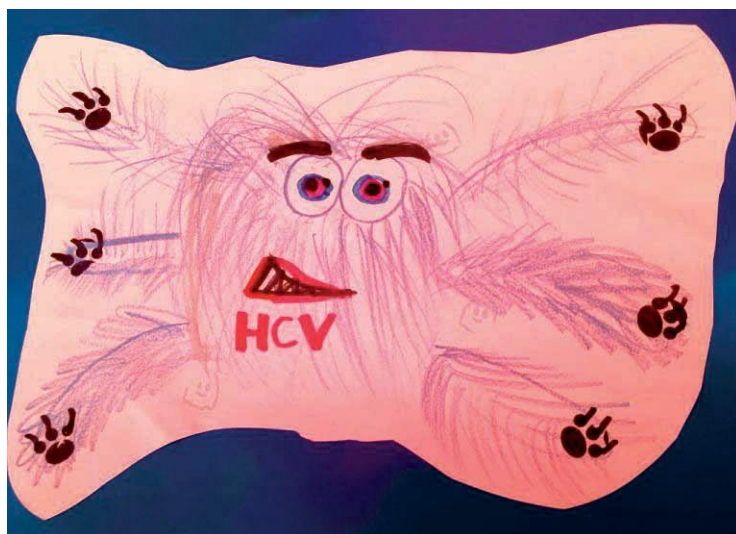
Figure 10.17.

Photo report and number of participants of the concerts during which the educational and information stall of the “HCV I am aware of” social campaign was present

All the educational and information stalls during the 10 outdoor events as part of the “Lato z Radiem” concert tour across Poland and 6 regional events, as well as during the Woodstock Festival were organised by BOOM, a marketing company. Educational and information activities during the outdoor events were supported by the “HIGIEJA” Foundation, Grójeckie Orchards Association, which donated certified apples from the grójecki region, Mazovia, Poland for the participants of the outdoor events, and “Muszynianka” cooperative which donated drinking water for the participants.

A photo report from all of the outdoor events is available on the website of the social campaign “HCV I am aware of” – [www.jestemswiadom.org](http://www.jestemswiadom.org).

As part of the social campaign “HCV I am aware of”, we also cooperated with local authorities. During an event in Kalisz, the residents of the city who visited our HCV and hepatitis C educational and information stall received an invitation to a blood test. The programme was implemented by KONSyliUM Outpatient Clinic located at Podkowińskiego 2 St. in Kalisz. The programme was entirely funded from the budget of the city of Kalisz.



**Figure 10.18.**

A "virus-beast" drawn by one of the youngest participants of the social campaign "HCV I am aware of"

In September 2016, the educational team of the social campaign "HCV I am aware of" also visited the picturesque city of Tuszyn, which celebrated its 600<sup>th</sup> anniversary. Acting upon the idea of learning through play, many various attractions were prepared that combined acquisition of knowledge and good fun. The youngest generation had fun creating a "virus-beast", assembling jigsaw puzzles, and participating in games and music and movement activities. Older participants diligently solved HCV knowledge quiz with a support of educators and assembled magnetic puzzles and actively participated in creative competitions with prizes.

## 10.8. Summary

Although at the time when the present work was in press the social campaign "HCV I am aware of" had not ended yet, we may state with full responsibility that all of the activities planned during the campaign related to creation of informational content had been completed in accordance with the schedule. For the first quarter of 2017, actions were planned which mainly involved maintaining the activity on the website of the social campaign "HCV I am aware of" and on the social channels of the campaign, as well as broadcasting video materials on the Internet and on the television and radio.



**Table 10.1.**

A list of chosen activities performed in particular periods of the social campaign “HCV I am aware of”, including their costs and indexes achieved

No.	Name of activity	Communication channel	Times broadcast	Period of implementation	Indexes achieved	Financial outlays [PLN]
1.	Setting up and maintenance of the website of the campaign	The Internet	N/D	06.2016 – 01.2017	Views count: 787,000	7,857
2.	Educational and information activities in media (commercial)	Television	927 times	07.2016 – 08.2016	GRP: 152.16 Coverage 3+: 20.65%	116,297
		Television	115 times	09.2016	Free broadcasts	0.00*
		Radio	141 times	07.2016 – 08.2016	GRP: 194 Coverage 3+: 25.20 %	110,700
3.	Banner campaign	The Internet	26 weeks	06.2016 – 11.2016	Clicks count: 500,416 Views count: 204,908,274 Unique viewers: 23,010,000	123,000
4.	Outdoor advertising	Billboard, city light	110 media 5 media	07.2016 – 08.2016	Estimated number of times the advertisement was seen: 12,436,789	83,640
5.	Advertisement in the press	The press	27 times	07.2016	Free broadcasts	0.00**
6.	Educational and information activities in social media	The Internet	N/D	06.2016 – 12.2016	Coverage: Facebook: 10,600,000 Twitter: 2,200,000 Followers: 5,000 Instagram: 1,200,000	254,856
7.	Educational and information activities of youtubers	The Internet, outdoor events	N/D	06.2016 – 09.2016	Views count of YouTube videos: more than 1,000,000 Number of people the message reached: 4,000,000	102,760
8.	Educational and information activities during outdoor events	Outdoor events	17 cities	06.2016 – 09.2016	Number of participants: 28,100 Number of people who participated in animations: 16,500	638,000
9.	Production and broadcast of “The Great Health Test” programme	Television	1 time	07.2016 – 09.2016	Number of viewers: 1,200,000 Number of Internet users solving the online test: 179,000	660,000

\* The broadcast was cost-free as part of the cooperation with the “HIGIEJA” Foundation

\*\* The broadcast was cost-free as part of the cooperation with Urszula Jaworska Foundation

N/A not applicable

The above indexes may reflect the effectiveness of how the social campaign "HCV I am aware of" reached the recipients; however, the most important effect of the campaign is increased awareness among the society measured through independent studies which best compare the state after the activities under the campaign are finished with the state before the campaign began. Such studies were conducted in December 2016 and their results, compared with the results obtained in February 2016, confirmed the increased recognition of HCV as an important health problem (from 45% to 51%) and the respondents less frequently chose wrong answers to questions regarding various aspects of HCV epidemiology and clearly more frequently chose answer: "I don't know/hard to tell", which indicates the sense of unsatisfied thirst for knowledge. Increase in the HCV recognition by the society is indirectly reflected by the increase from 5% to 13% in the proportion of people declaring that among their neighbours, there is a person with HCV. It is especially gratifying – when it comes to the study results obtained after the campaign – that there is a higher proportion of respondents declaring behaviours that reflect an active attitude towards the problem of HCV, especially a higher proportion of people (increase from 11% to 15%) who tested themselves for HCV on their own initiative. The number of people who remembered having been tested for HCV in connection with hospitalisation also elevated – from 35% to 51%. After the activities conducted under the campaign in 2016, the respondents almost 25% more frequently asked the personnel about using sterile equipment during cosmetic and dental procedures and, what is most important, the number of people who declared that they never ask such question during procedure dropped from 40% to 30%. However, the results of the analysis of the respondent's answers to other questions indicate that HCV information campaigns need to be continued [6].

The social campaign "HCV I am aware of" was concluded with the Jury of the "Success of the Year in healthcare - Leaders of Medicine 2016" competition awarding the first prize in the category: "Leader of 2016 in Health Care educational and training activities."



**Figure 10.19.** Prof. Mirosław Wysocki with the first prize – statuette and diploma in the category: Leader of 2016

in Health Care educational and training  
activities in the Success of the Year in  
healthcare - Leaders of Medicine 2016  
competition

The competition jury was composed of people deeply involved in health care: representatives of the legislative body in Poland, local authorities, employer associations, institutions, business entities, associations, and the most influential figures in the world of medicine recognised the social campaign “HCV I am aware of” organised with a view to improving the epidemiological situation within HCV infections by way of voting. Contribution of the project to increasing the society’s awareness of not only the prophylaxis, but also early diagnosis of HCV was greatly appreciated.

## ACKNOWLEDGMENTS

The campaign would not have been successful if it were not for involvement of many Persons and Institutions. The National Institute of Public Health – National Institute of Hygiene, which was the main organiser of the social campaign “HCV I am aware of”, would like to thank all the people who participated in the activities under the campaign. Thanks to your commitment and professional collaboration we could reach with the HCV knowledge a large number of Poles via television, radio, the Internet, outdoor advertising, as well as through direct contacts and conversation with the society during outdoor events organised in 17 cities in Poland.

We thank all the employees of NIZP-PZH and partner institutions participating in Project KIK/35 – especially the Chief Sanitary Inspectorate and the State Sanitary Inspection for all the forms of involvement: personal, substantive, and logistic support. We would also like to thank the companies which, for the purpose of the above-mentioned activities, provided various services within: campaign image creation, design and production of advertising and informational materials – including audio-visual; planning and organisation of events; development and maintenance of the activity of the [www.jestemswiadom.org](http://www.jestemswiadom.org) website and social media profiles. We saw on numerous occasions that not only did you put a great deal of effort to fulfil the agreements you executed, but also – having realised the problem the campaign dealt with – you personally involved in the idea that motivated us. We also thank for the interest and support of media which accompanied us during Project KIK/35, informing the society about the HCV problem and activities we undertake in the form of many broadcasts, interviews, and articles. At this point, we should give special thanks to Ms. Monika Wróbel-Harmas, who ensured in NIZP-PZH the communication between the persons who performed content-based tasks in Project KIK/35 and the representatives

of the media.

We also give special thanks to the Intermediate Body – Department of European Funds and e-Health at the Ministry of Health – and to the National Coordinating Body – the Ministry of Development – the employees of which provided support and help at every stage of our undertaking. Every help, even the smallest one, was valuable and contributed to the expected effect – very good outcome of the "HCV I am aware of" campaign.

With the slogan "HCV I am aware of" we would like to continue the educational and information activities we started, counting on your further involvement.

## REFERENCES

1. Strona [www.kampaniespoleczne.pl](http://www.kampaniespoleczne.pl) (2017).
2. Tarczydło B., Kampania społeczna w teorii i praktyce, Akademia Górniczo-Hutnicza im. Stanisława Staszica w Krakowie, (2013); nr 157 Wykorzystanie nowych mediów w public relations; Studia Ekonomiczne / Uniwersytet Ekonomiczny w Katowicach.
3. Bucker R., Czechowska L., Gadomska G., Gajda J., Gawron-Tabor K., et al., Metodologia Badań Politologicznych, Polskie Towarzystwo Nauk Politycznych, (2016), Warszawa.
4. „Wirus HCV - świadomość wśród Polaków" Raport z badania dla Narodowego Instytutu Zdrowia Publicznego - PZH; 29.2.2016 r., Millward Brown, 2016 r. Warszawa.
5. Strona internetowa [www.jestemswiadom.org](http://www.jestemswiadom.org) (2017).
6. Szenrok D., Jagodzińska I., „Wirus HCV - świadomość wśród Polaków" Raport z badania dla Narodowego Instytutu Zdrowia Publicznego - PZH; 28.12.2016 r., Millward Brown, 2016 r. Warszawa.

# SYSTEM AND ECONOMIC ASPECTS OF HEPATITIS C IN POLAND AGAINST EUROPE

Jakub Gierczyński, MD PhD, MBA  
National Institute of Public Health – National Institute of Hygiene

A substantial goal of the „Prevention of Hepatitis C Virus (HCV) Infections” Programme was to build a foundation for planning a long-term strategy of preventing HCV infections and controlling hepatitis C in Poland. This chapter presents the most important system and economic aspects supporting the process of developing such a strategy in Poland. The first part, which provides a diagnosis of the situation, constitutes an overview of key reports and ratings comparing health care provided to patients with hepatitis in European countries. The second part, as part of an overview of the most important international strategies for the prevention and treatment of hepatitis, puts together the most important documents of the health policy at the level of World Health Organisation, the European Union, and Poland. In the third part, the most important economic aspects of hepatitis C in Poland are presented.

## **11.1 Key reports and ratings comparing the organisation of diagnosis and health care provided to patients with viral hepatitis in European countries, including the situation in Poland**

In the last five years, several key reports analysing national systems of health care for patients with viral hepatitis have been published. The reports are presented chronologically in order to show how the situation of diagnosis assessment and treatment of hepatitis in Europe has been changing, with an emphasis on Poland. It must be noted, however, that the Polish situation presented in the cited reports often did not fully reflect the real picture. It seems, though, that tracing the evolution of the Polish health care system with regard to care provided to people with hepatitis from the point of view of external experts and international comparisons may be useful in the process of analysis and optimisation of national efforts.

In 2012, a report entitled “Euro Hepatitis Index 2012 Report” was published, which compared the health policy, diagnosis, and treatment of

hepatitis in 30 European countries [1]. Aside from assessing the process of diagnosis and treatment of hepatitis, the Euro Hepatitis Index also presented opportunities for the improvement of effectiveness, formulating a strategy within these diseases. France was at the top of the index with 872 out of 1000 points. Slovenia ranked second (872 points), while Germany took the third place (797). Poland was 18th with 677 points. It is presented by Figure 11.1.

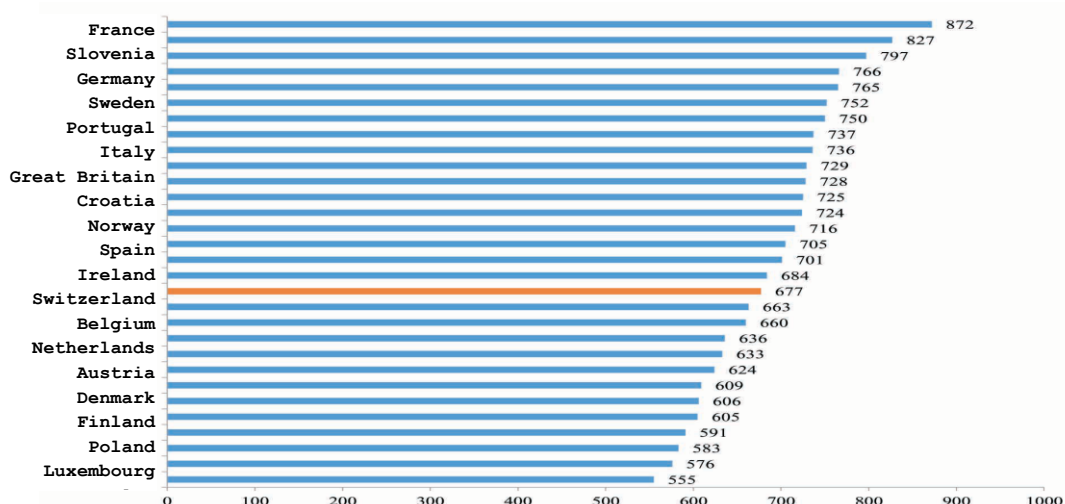


Figure 11.1.

Results of the Euro Hepatitis Index 2012 conducted in 30 European countries according to points received. Source: Euro Hepatitis Index 2012 report

The Euro Hepatitis Index addresses the priorities of the European Union and the governments of the Member States in searching for efficient strategies of handling and the methods of reducing the consequences of hepatitis. The Report demonstrated that the hepatitis epidemic in Europe is, to a large extent, ignored despite the estimates that around 23 million of people are suffering from chronic hepatitis B and C. Detection rate of hepatitis was very low. Even in the countries which implemented a national strategy, less than 40% of cases were detected. In countries such as Great Britain or Germany, detection rate amounted to 14-18%. According to the Report, around 3% of hepatitis cases were detected. It was also stated that governments did not treat the efficient strategy for handling hepatitis as a priority, although 125 thousand of Europeans die from diseases related to hepatitis. Great Britain and France are exceptions to this rule. It meant that much was left to be done also in the countries from the top of the hepatitis Index. According to the authors of the Report, in 2012, Poland offered health care to its patients at a good, European level (677 points) in comparison with other Central European countries. Since 1996, children and youth up to the

age of 19 were covered by mandatory vaccines against viral hepatitis B, as well as persons at a particular risk of infection: medical professionals and students of medical universities, people living close to HBV-positive persons, HCV-infected persons and people undergoing dialysis. A wide range of people was recommended paid vaccines against viral hepatitis B. No systematic screening tests were performed in risk groups (injecting-drug users and HIV-positive persons). A detailed prospective analysis in the group of persons undergoing haemodialysis and tests of pregnant women for HBV were conducted. Hepatitis treatment was free-of-charge. Access to specialists in infectious diseases and new treatments was limited because of long waiting lists. Children were treated in specialist departments. There were Polish organisations of patients with hepatitis but had little influence on policy-makers. According to the recommendations of the Report authors, the Polish government should establish a national strategy for handling hepatitis and a fully functional register of liver cancer. The number of liver transplants should increase [1].

The report entitled “Global policy report on the prevention and control of viral hepatitis in WHO Member States”, drafted by WHO in 2013, presented the situation within the management of hepatitis sent by governments of WHO Member States [2]. The chapter on Poland contains information regarding individual groups of aspects related to hepatitis, which are put together in **Table 11.1**. The report entitled “Global Community hepatitis Policy Report 2014” was published in 2014 by World hepatitis Alliance [3]. It was a response of the civil society to the information supplied by governments of WHO Member States put together in the WHO Report entitled “Global policy report on the prevention and control of viral hepatitis in WHO Member States”. The respondents were asked about what key aspects of policy-makers’ reactions to the problem of hepatitis they identify in their countries. When it comes to Poland, comments of non-governmental organisations and clinicians were mainly concerned with:

- the lack of national hepatitis programme developed together with patient organisations and the environment of clinicians;

**Table 11.1.**

## 152 Project KIK/35 - “Prevention of hepatitis C virus (HCV) infections”

Situation regarding the management of hepatitis in Poland according to WHO Report of 2013

Aspect	Key findings
National coordination	There is lack of national hepatitis programme, there is no government department delegated, and there are no activities celebrating World Hepatitis Day. The government carries out prophylaxis against viral hepatitis and prevention programmes addressed to health care professionals, injecting-drug users, people living with HIV; children and youth up to 19 years old, people living close to HBV-positive persons, persons suffering from hepatitis C, and other groups at risk of infection are covered by vaccination against viral hepatitis B.
Awareness-raising and partnerships	Government structures do not cooperate regularly with hepatitis patient organisations, they do not develop prevention and treatment programme together.
Evidence-based policy and data for action	Epidemiological supervision over hepatitis is carried out on the national level, incidence registers are maintained – on the local and regional levels, government reports and statistics are regularly published, and anti-epidemic actions are taken if hepatitis foci are found.
Prevention of transmission	National viral hepatitis prevention strategy is implemented among health care professionals, blood banks, and blood donors.
Screening, care and treatment	Medical personnel are trained on different levels of professional education within handling a person with hepatitis, there are national guidelines and standards of treating hepatitis infections. The public health care system offers free diagnostic tests for hepatitis (B and C) for blood donors, pregnant women, and persons referred from infectious diseases specialist. Hepatitis treatment is free. The government of Poland readily cooperates with WHO agendas.

Source. Own work based on “Global policy report on the prevention and control of viral hepatitis in WHO Member States”, WHO 2013

- too low outlays for the treatment of hepatitis B and C. It was requested that the outlays for the treatments of hepatitis C be increased by a minimum of 50% per year;
- too long waiting lists of patients to be provided treatment for viral hepatitis;
- no national diagnosis programme.

The latest cross-sectional report on the situation within hepatitis in European countries entitled “The 2016 Hep-CORE Report” was developed by the European Liver Patients Association (ELPA) [4]. The main purpose of the report was to identify the failures and successes of individual countries in terms of the management of viral hepatitis, improve the decision-making process based on priorities and advocacy of patients, and mobilise governmental actions towards improving the situation. Twenty seven countries were covered by the studies according to national and regional key indexes of health policy within viral hepatitis: awareness, prophylaxis,



diagnostic tests, disease monitoring and treatment. As many as fourteen (52%) countries – including Poland – did not have national strategies for viral hepatitis. Thirteen countries (48%) had national strategies for viral hepatitis. In ten out of them (77%), the national strategy was jointly concerned with HBV and HCV, while in the other three countries (Belgium, Spain, Great Britain), the strategies only concerned HCV. Twelve out of the thirteen countries (92%) which had national strategies for viral hepatitis possessed national strategy implementation plans. Four countries (31%) – Belgium, Germany, Israel, Turkey – had national strategies in which the actions against HBV and HCV were integrated with actions against other diseases.

## **11.2 Health policy regarding viral hepatitis and hepatitis C**

### **11.2.1 Health policy concerning viral hepatitis and hepatitis C from the perspective of WHO, the European Union and patient organisations**

On 21 May 2010, the World Health Organisation considered viral hepatitis as one of the biggest epidemiological threats of the 21<sup>st</sup> century. During the 63rd session of WHO, the first resolution (WHA63.18) against viral hepatitis in the history was adopted [5]. The Resolution called on the Member States to take measures to raise the awareness of the disease among the society and to improve prophylaxis and diagnosis of viral hepatitis. As a result of the Resolution, World hepatitis Day, observed on 28 July, was established.

In 2012, WHO published a programme document within prevention and control of viral hepatitis entitled “Prevention & Control of viral hepatitis Infection: Framework for Global Action” [6]. The document contained key strategic actions, such as raising awareness of viral hepatitis in the society and among the health policy-makers, promoting partnership in projects, using reliable data in assessing health situation, cross-sectional prophylaxis against HCV infections with an emphasis on education, screening tests in general population, and access to effective treatment.

In the document entitled “Hepatitis – Improving the health of patients with viral hepatitis. Report by the Secretariat” WHO emphasised the importance of comprehensive and cross-sectional activities within the prevention, diagnosis, and treatment of viral hepatitis [7]. WHO also highlighted the problem of equality of citizens when it comes to the access to modern anti-viral treatment – especially within HCV.

On 24 May 2014, WHO Member States adopted another resolution (WHA67) devoted to the problem of viral hepatitis at the 67<sup>th</sup> session of the World Health Assembly [8]. The resolution contains 16 points addressed to the Member States where they are called to intensify their actions in order to improve the widespread access to prophylaxis, diagnosis, and treatment of hepatitis and develop national strategies in that respect. Those actions mainly

include:

1. Development and implementation of coordinated multisectoral national strategies for prevention, diagnosis, and treatment of viral hepatitis based on the local epidemiological situation;
2. Enhancement of actions associated with health promotion and viral hepatitis prevention, stimulation and reinforcement of the vaccine strategy based on the local epidemiological situation;
3. Supporting involvement of civil society in all the aspects of prevention, diagnosis, and treatment of viral hepatitis;
4. Introduction of appropriate system of supervision over viral hepatitis in order to support the process of decision-making within evidence-based health policy;
5. Enhancement of monitoring of the system of blood collection from low-risk donors based on high quality screening in order to avoid transmitting HIV infection, hepatitis B, hepatitis C, and syphilis;
6. Enhancement of the quality system of diagnosis of all tissue and organ donors in order to avoid transmitting HIV infection, hepatitis B, hepatitis C, and syphilis;
7. Reduction of the prevalence of chronic hepatitis B, especially by increasing efforts to prevent perinatal transmission;
8. Enhancement of actions aimed at preventing hepatitis A and E, especially in promoting food and drinking water, safety and hygiene;
9. Enhancement of the infection control in health care facilities through all the necessary measures;
10. Vaccination of newborns against hepatitis B as a national vaccine program;
11. Ensuring equal access to prophylaxis, diagnosis, and treatment for the population with viral hepatitis;
12. Considering, if necessary, national legal mechanisms for the purpose of taking advantage of flexible aspects of intellectual property rights in order to promote access to specific pharmaceutical products;
13. Considering, if necessary, the use of administrative and legal measures to promote the access to preventive, diagnostic, and treatment technologies against viral hepatitis;
14. Implementation of comprehensive prevention against viral hepatitis in the programmes of diagnosis and treatment for injecting-drug users;
15. Shift to exclusive use of safe injection materials since 2017;
16. Verification of policies, procedures, and practices associated with stigmatisation and discrimination – including refusal of the right of employment, training, and education, as well as travelling restrictions – towards people living with and suffering from viral hepatitis or such

policies, procedures, and practices that prevent them from using the highest possible level of health care to the fullest extent.

During the 69<sup>th</sup> World Health Assembly held in May 2016, WHO presented a global strategy on viral hepatitis for the years 2016-2021 entitled "Global health sector strategy on viral hepatitis 2016-2021. Towards ending viral hepatitis" [9]. The strategy was accepted by 194 countries which supported its main objective – to eliminate viral hepatitis as a threat for public health until 2030. Two measurable goals of the strategy are:

- reducing the prevalence of chronic forms of viral hepatitis from the current number of 6-10 millions of cases around the world to 0.9 million in 2030;
- reducing the number of deaths from chronic viral hepatitis from 1.4 m a year around the world to 0.5 m a year in 2030.

Achieving those objectives will require radical change in national strategies and prioritising viral hepatitis in health policy of a given country. The strategy must take advantage of new possibilities, including: increasing social awareness, development in viral hepatitis treatment and diagnosis in order to ensure equal access of citizens to health. Priority actions should be organised as part of the following five strategic directions:

1. Information for focused action: development of a strong information system based on epidemiological data;
2. Interventions for impact: interventions and technologies with proven effectiveness should be included in the package of guaranteed health services;
3. Delivering for equity: enhancement of health care system in order to deliver high quality service for the purpose of achieving health effect and equal access to health for all citizens;
4. Financing for sustainability: introduction of solutions reducing costs and risks;
5. Innovation for acceleration: promoting innovative solutions and technologies.

**Figure 11.2.** shows original graphical version of the structure of the WHO global strategy on viral hepatitis for the health sector for the years 2016-2021.

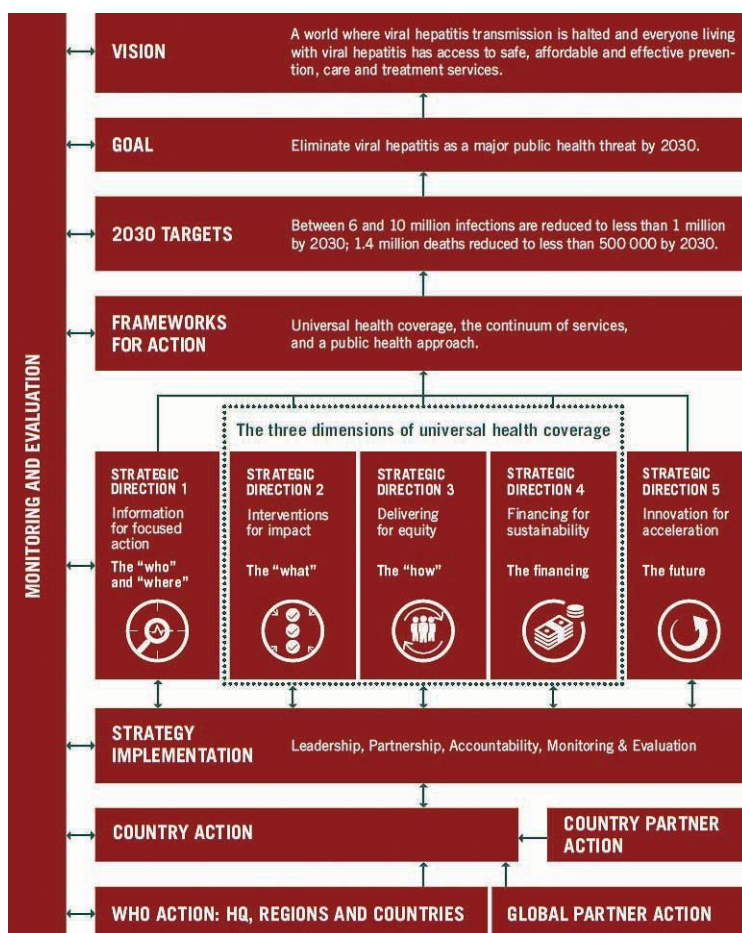


Figure 11.2.

Structure of the WHO global strategy on viral hepatitis for the health sector for the years 2016-2021

Source. Global Report on Access to Hepatitis C Treatment. Focus on overcoming barriers. World Health Organization 2016

In September 2016, WHO presented a document intended for the European region entitled "Action plan for the health sector response to viral hepatitis in the WHO European Region" [10]. This work is a result of the WHO strategy entitled "Global Health Sector Strategy on viral hepatitis 2016-2021". The document is also consistent with the Sustainable Development and Health Care Programme 2020 and the health care policy in the European Union. It is the first action plan for the health care sector regarding viral hepatitis, one of the largest challenges for public health in Europe. According to conservative estimates, the number of HCV-positive people is 15 million, while the number of HBV-positive people – ca. 13 million. Every year, around 171 thousand people die from viral hepatitis. The proposed activities envisage to inhibit the spread of viral hepatitis in Europe, to ensure availability of diagnostic tests

and equal access to health care and effective treatment for infected persons.

The main purpose of the WHO recommended actions is to eliminate viral hepatitis as a threat for public health in the European Region by 2030 through:

- reducing viral hepatitis transmission;
- reducing morbidity and mortality caused by viral hepatitis and its complications;
- ensuring equal access to comprehensive prophylaxis, recommended diagnosis, care, and treatment for all citizens.

In order to achieve the ambitious objective of eliminating viral hepatitis by 2030, seven regional goals need to be fulfilled at the level of the entire WHO European Region and each country by 2020. The first five regional goals are concerned with viral hepatitis prevention, while the sixth and the seventh with treatment of viral hepatitis. The regional goals are as follows:

1. 95% coverage with three-shot HBV vaccine for newborns in the countries which implemented the programme of widespread vaccination;
2. 90% intervention coverage with vaccine or other approaches at birth in order to prevent vertical transmission of HBV;
3. 100% of blood collected should be screened using methods with assured quality;
4. 50% injections should be performed with equipment that guarantee safety;
5. At least 200 sterile injection kits per person should be distributed to injecting-drug users as part of a comprehensive harm reduction package;
6. 50% of people living with chronic HBV or HCV infection should be diagnosed and aware of their disease;
7. 75% of people with HBV or HCV diagnosed who qualify for treatment should undergo the treatment recommended by clinicians.

The above document was supported by the resolution of the WHO European Region passed in September 2016 which calls on the Member States to enhance the national programmes for the prevention and control of viral hepatitis adapted to national regulations and priorities and to increase social awareness of viral hepatitis [11]. It recommends four directions of actions against viral hepatitis to the governments of European countries:

1. adjusting national strategies against viral hepatitis to the strategies and plans recommended by WHO, with political support and provision of adequate financing;
2. enhancing national systems of public health within prevention and control of viral hepatitis;
3. ensuring that governmental actions for prevention, treatment, and health care cover people with viral hepatitis based on local epidemiological

data;

4. ensuring equal and fair access to comprehensive prophylaxis, treatment, and care within viral hepatitis for citizens through appropriate regulations and policies.

During the first EU Policy Summit in 2016, "Hepatitis C Elimination Manifesto" was presented [12]. It was an initiative of the organisation of patients with liver diseases advocating the WHO strategy and supported by the European Parliament. In 2016, European Liver Patients Association (ELPA) published also a report entitled "Hepatitis B and C: An action plan for saving lives in Europe. The experts' recommendation summary" [13].

### **11.2.2 Health policy regarding viral hepatitis and hepatitis C in Poland**

In Poland, the current governmental actions against viral hepatitis are implemented in accordance with the assumptions of "National Health Programme for 2016-2020" (NPZ), the strategic objective of which is to "extend healthy life of Poles, improve life quality related to health, and to reduce social inequalities in health" [14]. A specific operational goal of NPZ related to hepatitis C is Operational Goal 4: Reducing health risk arising out of physical, chemical, and biological hazards in outdoor environment, workplace, place of residence, recreation, and education. The Programme involves, among others, prophylaxis against infectious diseases and infections in people. According to the Minister of Health, the most important directions of actions to reduce the number of people infected with HCV in Poland are:

- higher availability of diagnosis,
- reaching people unaware of their infection and
- better accessibility of treatment of already detected infections.

Since July 2015, in response to requests from both patient environments and infectious disease experts, the Minister of Health have provided public funding for interferon-free treatment as part of the new drug prescription programme of the National Health Fund entitled "Treatment of chronic hepatitis C". As part of the programme, drugs containing ombitasvir, paritaprevir, ritonavir, and dasabuvir are reimbursed for patients suffering from hepatitis C with HCV genotype 1 or 4 detected. Since November 2015, the programme has included drugs containing sofosbuvir and sofosbuvir + ledipasvir, which allowed providing treatment to patients infected with HCV genotype 2, 3, 5, and 6, and, above all, it made treatment possible for patients with severe liver failure and people awaiting liver transplant. At the same time, there are activities carried out for improving the safety of procedures performed in medical facilities – implementation of appropriate procedures, availability of sufficient equipment, and continuous education of personnel. The Ministry cooperates within this field with NFZ, GIS, NIZP-PZH,

patient organisations, clinicians, and the media. Every year, World hepatitis Day is celebrated at the national and regional level. The project „Prevention of Hepatitis C Virus (HCV) Infections” implemented between 2012 and 2016 aimed at building foundations for development of a national strategy against hepatitis C. The publication of the cross-sectional study entitled “Health Needs Maps within Infectious Diseases (viral hepatitis)” by the Ministry of Health in December 2016 was a very important event. [15].

Health policy within prevention and diagnosis of HCV is also implemented by some local authorities. According to the statistical data of the Agency for Health Technology Assessment and Tariff System (AOTMiT), from January 2010 to December 2016, 19 local government health programmes within HCV were developed and recommended in Poland. The programmes involved providing health care to around 30 thousand people a year. Target population covered by the programmes in the years 2010-2016 was estimated at ca. 720 thousand people. The planned budget for the 19 local government health programmes against HCV in the years 2010-2016 amounted to around PLN 151 million [16].

#### **11.2.2.1 Recommendations for health policy within hepatitis C in Poland**

Recommendations for health policy within hepatitis C in Poland are composed of several documents and system reports.

In 2004, on the initiative of the General Management of the Polish Society of Epidemiology and Infectious Diseases and the General Management of the Polish Society of Hepatology, a Polish HCV Expert Group was established. The main objectives were: to take measures to reduce the dynamics of HCV epidemics, to develop a strategy for improving health care for HCV-positive persons, and to raise awareness among the society of the significance of HCV infections [17]. The first effects of the work of the Polish HCV Expert Group was the National HCV Infection Control Programme. Presented in 2005, it was to have been initially implemented in the years 2008-2010. According to the programme authors, the main objectives of the programme involved reduction of the dynamics of HCV infection spread and reduction of negative consequences of hepatitis C (liver cirrhosis, liver cancer). Supporting goals included: educating health care system employees and the general public, monitoring epidemiological situation, reducing the sources and routes of HCV transmission, ensuring access to HCV infection diagnosis, qualification diagnosis and treatment, creating a network of clinical reference centres, and assessment of actions carried out under the programme [17]. The programme was to cover around 1 million people; 95% of the budget was to be intended for screening and treatment of hepatitis C. The project was submitted to the Minister of Health, was updated and supplemented, although it has not been implemented so far. A very important aspect of the operation of the Polish Expert Group is annual publication of a document entitled “Polish HCV Expert Group’s recommendations for the treatment of hepatitis C” [18].

Since 2012, four overview system reports on hepatitis C have been published in Poland, which contained, among others, recommendations for implementing the national strategy on hepatitis C. The first of the reports was the report of the Institute for Health Protection entitled "Diagnosis and treatment of chronic hepatitis C in Poland: report – recommendations 2013-2014" [19]. In 2014, HTA Consulting published a report entitled "Hepatitis C. Necessary changes in the organisation of the health care system" [20]. The most important recommendations arising out of the work prepared by HTA Consulting are:

- Wide access to HCV diagnosis;
- Comprehensive education and promotion of behaviours reducing the risk of HCV infection transmission;
- Access to efficient and safe anti-viral treatment for infected persons.

The report of the Institute for Health Protection (IOZ) issued in 2015 indicated the necessity to develop and implement a long-term comprehensive strategy for solving the problem of HCV infections [21]. Adopting a long-term strategy will allow reducing the number of new HCV infections, further consequences of hepatitis C (cirrhosis, liver failure, hepatocellular carcinoma, and – at the end – death); it will also contribute to improving the situation of infected persons and reducing indirect costs arising out of the disease (absence, ineffective work, welfare, etc.). The national strategy should take into account the following priorities:

- Early diagnosis and early start of treatment.
- Improved availability of treatment and access to new methods of treatment.
- Improvement of the society's knowledge on HCV infection and its prevention.
- Better sanitary supervision and improved knowledge of the medical personnel on the prevention of HCV infections.
- Appointment of a permanent team at the Minister of Health for solving the problem of HCV in Poland.

The Report of the Institute of Health Care Management of the Lazarski University entitled "Hepatitis C – economic and social cost analysis" issued in 2015, formulated recommendations regarding optimisation of management of hepatitis C in Poland [22]. The recommendations included the following activities:

- Development by the Minister of Health in collaboration with system stakeholders of a long-term "Strategy for prevention, diagnosis, and treatment of hepatitis C in Poland" constituting an integral part of the National Health Programme.
- Establishment of a national register of patients with hepatitis C based on



actual data for continuous assessment of health care provided to patients and in order to allow forecasting epidemiological trends and planning changes in financial outlays.

- Recognition of hepatitis C as a health priority for the country due to its high social and health costs.
- Development and implementation of the hepatitis C Prophylaxis Programme in order to improve identification of infected persons.
- Introduction of a more effective model of financing procedures related to the treatment of hepatitis C by the National Health Fund based on coordinated and comprehensive health care.
- Development of the Health Needs Map within the treatment of infectious diseases as tools of strategic planning in the health care system.
- Development of a welfare prevention programme for patients with hepatitis C in order to reduce the costs incurred by The Polish Social Insurance Institution mainly arising from sick leave and pension due to inability to work.

### **11.3 Economic Aspects of hepatitis C in Poland against European Countries**

There has been an enormous progress in terms of the treatment of hepatitis C. New drugs have been invented and marketed, the clinical efficacy of which leads to curing a patient with HCV. It is a crucial breakthrough for those infected and a hope for countries which struggle with the morbidity of hepatitis C. At the same time, it creates a serious challenge for the governments of those countries when it comes to reimbursement of treatment for all the patients who qualify for treatment. Due to unquestionable clinical arguments, the economic aspects play a crucial role in the process of decision-making by the public payer. Therefore, economic analyses must include all the types of costs – especially including indirect costs which are often underestimated and arise out of lost productivity of persons suffering from hepatitis C and dying from its complications.

In 2016, an estimated burden of disease was published with regard to viral hepatitis around the world entitled “The global burden of viral hepatitis from 1990 to 2013” [23]. It was established that viral hepatitis was a seventh cause of death in the world and was responsible for 1.45 m deaths, which – in comparison with 0.89 m deaths in 1990 – demonstrated an increase of 63%. In 2013, hepatitis B and C were responsible for 95% of deaths and 91% DALY (disability-adjusted life-years) caused by viral hepatitis in general. Considering the burden of viral hepatitis measured by disability-adjusted life-years (DALY), there was an increase of 34% – from 31.7 m in 1990 to 42.5 m in 2013. The highest increase in the burden of disease was recorded for hepatitis

C – 43%. In 2013, the number of deaths due to complications of viral hepatitis in Poland amounted to 5,990 (10.9 deaths per 100 thousand of residents) and a total of 158.1 thousand of disability-adjusted life-years (DALY) due to viral hepatitis (306 DALY per 100 thousand residents) were recorded [23].

When it comes to direct and indirect costs of viral hepatitis, there is lack of reliable international comparisons published. In Poland, the main source of data on direct costs of hepatitis C from the perspective of the public payer are databases of the National Health Fund (NFZ), while for indirect costs – The Polish Social Insurance Institution (ZUS).

### 11.3.1 Direct costs incurred by the National Health Fund (NFZ)

In 2010, NFZ settled treatment (in the types: hospital treatment and outpatient specialist care) for 33,106 patients with hepatitis C (ICD-10;B18.2), in 2011 – 36,252 patients, in 2012 – 35,747 patients, in 2013 – 35,632 patients, while in 2014 – 36,276 patients. The value of financed services associated with the treatment of patients due to hepatitis C in all the types of contracts amounted to PLN 178.3 m in 2010, PLN 168.0 m in 2011, PLN 162.1 m in 2012, PLN 203.6 m in 2013, and PLN 254.3 m in 2014 [22].

When it comes to the drug prescription programme "Treatment of chronic hepatitis C", the contracts between service providers and NFZ amounted to PLN 113,129,325 in 2015 and PLN 452,778,631 in 2016. Growth rate of contracts 2016 vs. 2015 amounted to +300% [24].

Costs of treatment of hepatocellular carcinoma and liver transplants incurred by NFZ in 2013 amounted to PLN 16.8 m (as part of drug prescription programme B5) and PLN 17.8 m respectively. Undervaluation of those costs and the lack of costs of treatment of liver cirrhosis and other hepatitis complications should be taken into account [20].

### 11.3.2 Indirect transfer costs incurred by The Polish Social Insurance Institution (ZUS)

Patients with hepatitis C are entitled to a range of benefits on the account of social insurance, especially pensions due to inability to work, social welfares, rehabilitation benefits, and sick leave [25]. Data from ZUS indicate joint data of insured patients with viral hepatitis according to the classification ICD-10: B18; it is presumed, however, that data regarding sick leave due to hepatitis C constitute a significant proportion. The data indicate that in 2012, a total of 14,917 sick notes were issued due to viral hepatitis for a total of 193,074 days of sick leave. In 2013, a total of 15,700 sick notes were issued for a total of 202,434 days of sick leave. In 2014, a total of 15,930 sick notes were issued for a total of 203,243 days, while in 2015, the number of sick notes was 15,930 for a total of 183,599 days of sick leave.

**Table 11.2.**

Days of sick leave and number of sick notes for viral hepatitis (ICD-10: B18) in the

years 2012-2015

Year	2012	2013	2014	2015
Days of sick leave	193,074	202,434	203,243	183,599
Number of sickness certificates	14,917	15,700	15,930	14,959

Source. Own work based on data from ZUS, 2016

It demonstrates that in 2015, there was a downward trend in the number of days of sick leave and the number of sick notes in comparison with 2013 and 2014.

Expenses incurred by ZUS for benefits associated with inability to work caused by viral hepatitis (ICD-10: B18) in 2012 totalled PLN 49,555.6 thousand. The highest share of expenses totalling 64.5% (PLN 31,955.0 thousand) was recorded with regard to pensions due to inability to work. The second highest expense was recorded under sick leave – PLN 10,932.6 thousand (22.1%). Rehabilitation benefits came third with PLN 4,712.0 thousand (9.5%), while social welfare was fourth – PLN 1,956.0 thousand (3.9%) [22].

**Table 11.3.**

Expenses incurred by ZUS in 2012 for benefits associated with inability to work caused by viral hepatitis (ICD-10: B18), according to the type of benefits

Category	Amount (PLN)	Proportion
Pensions due to inability to work	31,955.00	64.5%
Sick leave	10,932.60	22.1%
Rehabilitation benefits	4,712.00	9.5%
Social welfare	1,956.00	3.9%
Total	49,555.60	100%

Source. Own work based on data from ZUS, 2016

The structure of expenses of ZUS arising out of the most serious complications of viral hepatitis: liver cancer and liver cirrhosis. When it comes to diagnosis ICD-10: C22 (Malignant neoplasm of liver and intrahepatic bile ducts), in 2012, the share of expenses for pensions due to inability to work and for sick leave amounted to 67.2% and 27.3% respectively in 2012. With regard to diagnosis K74 (Fibrosis and cirrhosis of liver), the share of expenses for pensions was almost 84%, while for sick leave ca. 11% [22].

### 11.3.3 Indirect costs associated with productivity loss

Indirect costs related to the loss of productivity are estimated based on short-term or long-term inability to work. When it comes to the short-term

aspect, absenteeism, which is related to absence from work, as well as presenteeism, which means reduced efficiency at work, are analysed. According to estimates by experts, in 2013, annual indirect costs arising out of productivity loss caused by viral hepatitis amounted to PLN 584.8 m. It was a sum of premature deaths – PLN 53.6 m, disability – PLN 147.7 m, absenteeism – PLN 20.9 m, and presenteeism – PLN 362.5 m. An average complete productivity loss in a person with hepatitis C was estimated at ca. PLN 41.4 thousand per year. Taking that into account, annual indirect costs of viral hepatitis may reach ca. PLN 383 m [26].

In order to meet the needs within updating system and financial data on hepatitis C, in March 2017, NIZP-PZH will publish a monograph with the latest data obtained from the public payer and other system stakeholders.

#### 11.4. Summary

The above information reflects the growing significance of public health in the planning of health policy and comprehensive management of the disease. From the perspective of hepatitis C, we can see how health care systems have been evolving in particular countries, leading to higher coordination of national actions – from health education, building social awareness, diagnosis, epidemiology, treatment, and monitoring of system and economic indexes. Not only can the WHO recommendations be very useful in the planning of national strategies within viral hepatitis, but they also can support exchange of information and experience between countries. The higher significance of patients' organisations and health awareness of society are very satisfactory in terms of public health. When it comes to hepatitis C, it gives us hope that governments' actions towards investing in the optimisation of the management of hepatitis C will meet with support and responsible participation of the society. It seems that system stakeholders in Poland have been creating strong foundations for the elaboration and implementation of national strategy on hepatitis C for several years. Considering the fact that the fundamental goal of the Programme „Prevention of Hepatitis C Virus (HCV) Infections” was to create a basis for planning a long-term strategy of preventing HCV infections and controlling hepatitis C in Poland, we may hope that the Programme, which is now coming to an end, will be an additional argument for creating the strategy in 2017.

## REFERENCES

1. Cebolla B, Bjornberg A. (2012) Euro Hepatitis Index 2012 report. Health Consumer Powerhouse.
2. WHO (2013) Global policy report on the prevention and control of viral hepatitis in WHO Member States.
3. World Hepatitis Alliance (2014) Global Community Hepatitis Policy Report 2014.
4. European Liver Patients Association (2017) The 2016 Hep-CORE Report. Monitoring the implementation of hepatitis B and C policy recommendations in Europe.
5. WHO (2010) Resolution viral hepatitis WHA63.18. Sixty-Third World Health Assembly.
6. WHO (2012) Prevention & Control of viral hepatitis Infection: Framework for Global Action.
7. WHO Report by the Secretariat (2013) Hepatitis. Improving the health of patients with viral hepatitis, EB134/36.
8. WHO (2014) Resolution hepatitis WHA67.6. Sixty-Seventh World Health Assembly.
9. WHO (2016) Global health sector strategy on viral hepatitis 2016-2021.
10. WHO (2016) Action plan for the health sector response to viral hepatitis in the WHO European Region.
11. WHO Regional Office for Europe Regional Committee for Europe (2016) Action plan for the health sector response to viral hepatitis in the WHO European Region. Draft resolution EUR/RC66/Conf.Doc./6 Rev. 1.
12. Elimination Manifesto. Hepatitis C Elimination in Europe. Our vision for a hepatitis C-free Europe (2016).
13. Walker M, Kautz A, Chavdarova L. (2015) Hepatitis B and C. An action plan for saving lives in Europe. The experts recommendation summary. ELPA.
14. Rozporządzenie Rady Ministrów z dnia 4 sierpnia 2016 r. w sprawie Narodowego Programu Zdrowia na lata 2016-2020 (2016) Dziennik Ustaw Poz. 1492.
15. Strona internetowa Ministerstwa Zdrowia (2017).
16. Strona internetowa AOTMiT (2017).
17. Polska Grupa Ekspertów HCV (2012) Oświadczenie Polskiej Grupy Ekspertów HCV na temat Wirusowego Zapalenia Wątroby typu C w Polsce w roku 2012.
18. Halota W, Flisiak R, Boroń-Kaczmarska A, Juszczak J, Małkowski P. et al. (2016) Rekomendacje leczenia wirusowych zapaleń wątroby typu C Polskiej Grupy Ekspertów HCV - 2016.
19. Bogucki M, Flisiak R, Halota W, Jaworska U, Kozierkiewicz A, et al. (2012) Diagnostyka i terapia przewlekłego wirusowego zapalenia wątroby typu C (wirusem HCV) w Polsce: raport - rekomendacje 2013-2014. Instytut Ochrony Zdrowia.
20. Władysław M, Jaros P, Kobierski J, Hałdaś M, Gąszczet K, et al. (2014) WZW typu C. Konieczność zmian w organizacji systemu ochrony zdrowia. Raport systemowy HTA Consulting.
21. Raciborski F, Gujski M, Kłak A, Gierczyński J. (2015) HVC w Polsce. Strategia rozwiązania problemu zdrowotnego oraz działania w perspektywie 2015-2016. Raport Instytutu Ochrony Zdrowia.
22. Gałązka-Sobotka M, Gierczyński J, Gryglewicz J, Karczewicz E, Zalewska H, Zyśk R, et al. (2015) Wirusowe zapalenie wątroby typu C - analiza kosztów ekonomicznych i społecznych. Raport Instytutu Zarządzania w Ochronie Zdrowia Uczelni

Łazarskiego.

23. Stanaway JD et al. (2016) The global burden of viral hepatitis from 1990 to 2013: findings from the Global Burden of Disease Study 2013. *The Lancet*, Volume 388, Issue 10049, 1081-1088.
24. Strona internetowa NFZ (2017).
25. Strona internetowa ZUS (2017).
26. Kobierski J, Hałdaś M, Władysiuk M. (2014) Hepatitis C - the need for changes in the system in the health care in Poland. *JHPOR*, 2014, 2, 26-34 DOI: 10.7365/JHPOR.2014.2.4.

# PROJECT KIK/35 CONCLUSIONS AND RECOMMENDED ACTIONS

Prof. Andrzej Zieliński, PhD  
National Institute of Public Health – National Institute of Hygiene

Material collected during Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections” is a result of the work of many employees of NIZP-PZH, Chief Sanitary Inspectorate, Medical University of Lublin, and the Institute of Psychiatry and Neurology and the Centre of Postgraduate Medical Education. A long-term mission of this project was to indicate evidence-based measures to be taken and implemented systemically in order to reduce the number of HCV-positive persons in the Polish population.

Actual fulfilment of this mission will require collaboration of numerous institutions – from the Ministry of Health, which has the power to make financial decisions and initiate necessary legislative changes, to the State Sanitary Inspection entitled to conduct supervision and control within the compliance with procedures preventing spread of infections in institutions performing potentially risky procedures, through numerous educational and training institutions, as well as non-governmental organisations engaged in dissemination of information on HCV infection and promoting activities aimed at preventing infections and facilitating access to treatment for people with active infection.

Activities implemented under Project KIK/35, especially those which underlined the necessity of continuous improvement of medical procedures protecting against blood-borne diseases, as well as the necessity to introduce such procedures to non-medical services involving disruption of tissues in order to limit the spread of HCV, supplements the many years of activity of the Polish HCV Expert Group which promotes extension of HCV infection treatment programme in Poland and prepares recommendations for the treatment of hepatitis C corresponding to modern standards that apply in the Western European countries. Widespread and accurate use of activities counteracting the spread of the virus in conjunction with the identification of as many infected persons as possible and their efficient treatment constitutes a hope for efficient stop to HCV transmission and reduction of hepatitis C in Poland.

In order to carry out the above activities effectively, we need to possess reliable knowledge on HCV epidemiology in the country. Therefore, a significant prerequisite for Project KIK/35 was a methodologically correct estimation of the prevalence of HCV infections in Poland, taking into account those populations that are at a higher risk of infection. An important component of the activities was the determination of situations in medical facilities and other types of facilities providing non-medical services where there is the risk of HCV infection and other factors leading to blood-borne infections. Institutional infections, where the infected person is often an unaware participant of the event, constitute a major, although not the only, source of HCV infections. A certain proportion of infections (different in different social groups) are caused by the behaviours of the infected persons, which arise from their lack of knowledge or negligence.

Therefore, it was crucial to verify the scope of knowledge on blood-borne infections among health care professionals and future health care professionals, as well as persons performing procedures involving disruption of skin or mucosa continuity in non-medical facilities, such as tattoo studios and cosmetic salons.

Elementary knowledge on blood-borne infections among the general population – people who do not provide services that may present the risk of infection themselves, but receive those services and, furthermore, participate in everyday life situations that may lead to such an infection – is fundamental for preventing this type of infections. Awareness of the risk of infection in various life situation and its consequences should be a warning for them, but also a source of the sense of empowerment and rights in situations of potential institutional hazards. Therefore, it was crucial for all the modules of Project KIK/35 to check the knowledge of different social groups and formulate conclusions regarding education and training adapted for the needs of those groups, as well as prepare properly diversified training programmes in Project 5.

None of the people working in particular projects waited with conclusions from the results they obtained until the studies are finished. Preliminary conclusions were drawn on an ongoing basis and formulated on the meetings of the Steering Committee and in discussions between individual participants of Project KIK/35. Step-by-step overviews allowed us to obtain assessment and remarks both from other participants of the research and external observers. Comments on safety processes in medical procedures performed in hospitals from the representatives of the Polish Association of Epidemiological Nurses and our Partner – the Chief Sanitary Inspectorate – were particularly valuable.

Representatives of the Chief Sanitary Inspectorate who participated in the research carried out numerous practical activities aimed at reducing the hazards of blood-borne infections which mainly were connected with inspection procedures regarding the safety of procedures performed in



medical and non-medical facilities where there is potential risk of blood-borne diseases, which were created and modified during the Project.

Studies conducted under Project 1 required reaching many health care units in the country and training a large number of field co-workers. Thus, Project 1 indirectly expanded the extensive educational activity of Project 5.

The following conclusions from Project KIK/35 are substantially based on strategic assumptions formulated previously by the managers of individual projects and the deeply involved (under partnership to Project KIK/35) group of employees of the State Sanitary Inspection under the management of the Deputy Chief Sanitary Inspectorate – Izabela Kucharska. As emphasised above, substantial empirical data underlying this strategy are the results of the work of teams managed by: Magda Rosińska, PhD; Janusz Sierostawski, MA; Prof. Kazimierz Madaliński, PhD; Krzysztof Tomaszewicz, PhD; and Anita Gębska-Kuczerowska, PhD. The participation of our close partners – Prof. Mirosław Wysocki, PhD, and Rafał Gierczyński, PhD – was crucial to the preparation of the strategy.

### **12.1 HCV diagnosis and treatment**

Under Project 1, painstaking estimations of the number of people with HCV antibodies and those with HCV-RNA according to age and sex were performed. The numbers obtained were juxtaposed with the number of cases diagnosed every year through epidemiological supervision, which gives us the scale of needs within diagnosis and treatment of HCV-positive persons.

The studies demonstrate that there may be ca. 165 thousand people in Poland with HCV-RNA in serum, with 125 thousand of people undiagnosed – as only 25 out of 1000 infections existing in the population are identified annually. It must be noted at this point that the number of infected persons is not fixed, as it is continuously increased by newly infected persons.

Those data are alarming and indicate the necessity to design screening tests and carry them out systematically in order to increase the number of diagnosed cases of infections requiring treatment. A high expected cost of population screening indicates the need of searching for possible solutions in the already existing structures. The survey conducted by the team of Magdalena Rosińska among primary care physicians provides grounds in favour of placing the preliminary diagnosis of HCV infections in the primary health care. Preparation of an HCV diagnosis system based on primary health care outpatient units will require such activities as:

1. Establishment of the rules of financing those screening tests by the Ministry of Health.
2. Establishment, in the form of an instruction, of patient eligibility criteria for an HCV diagnosis test based on patient health assessment and on the

- fact of belonging to HCV infection risk groups determined through epidemiological studies by an interdisciplinary team.
3. Establishment, on the national scale, of the network of diagnostic laboratories and reference outpatient clinics with clear assignment of primary health care units and with fully functional procedure of referring the patients for follow-up diagnosis and treatment.
  4. Ensuring accessibility to routine screening tests for HCV infections under prenatal care for all pregnant women.
  5. Creation of HCV infection diagnosis and treatment system for injecting-drug users.
  6. Actions promoting screening tests among HCV infection risk groups established through epidemiological studies. It concerns, for example, people who underwent blood transfusion before 1992. The testing action may be combined with the European Testing Week <http://www.testingweek.eu/> and thus take advantage of the promotion associated with this event.
  7. Systematic (in intervals of 5-6 years) inspection of epidemiological situation (prevalence) of HCV infections in Poland carried out on a sufficiently large sample in order to assess the effectiveness of the HCV prevention and control programme in Poland and, if necessary, to introduce appropriate corrections and additions to the programme.

## **12.2 Prevention of HCV infections in medical facilities and non-medical facilities performing procedures involving disruption of skin or mucosa continuity**

The basic rule in preventing blood-borne infections in facilities which perform procedures involving disruption of skin or mucosa continuity is that hygienic requirements for this group of facilities should be unified, i.e. non-medical facilities should meet the same requirements as medical facilities.

According to the State Sanitary Inspection Act of 14 March 1989, there is an ongoing sanitary supervision over hygienic and sanitary conditions to be met by medical personnel, equipment, and rooms where medical services are provided. Inspection in health care entities are carried out in accordance with (inter alia) continuously updated orders of the Chief Sanitary Inspector, which also regulate the specific content of the forms used by the bodies of the State Sanitary Inspection for epidemiological inspections. Those forms are periodically updated in order to adapt them to changing medical technologies. A significant component of the inspection of sanitary safety of medical procedures is verification of the use of disposable equipment and documentation of decontamination, including sterilisation of reusable equipment.

As the study conducted under Project 4 indicates, the current situation of protections against blood-borne infections in many dental practices is insufficient. Modernised inspection procedures aimed at those practices are under preparation along with new detailed templates of inspection documents regarding the most significant components of infection prophylaxis being drawn up. Minor surgery outpatient units already possess appropriate inspection documents that take into account steam sterilisation or a necessary contract for sterilisation with an external entity verified by presentation of invoices for services performed.

Surveys and empirical studies conducted in hospitals under Project 4 and experience of the inspectors of the State Sanitary Inspection as well as the opinion of the representatives of the Polish Association of Epidemiological Nurses demonstrate that it is necessary to promote compliance with recommendations on blood-borne infection prevention in institutions where it is possible that skin or mucosa may be damaged in patients (customers) or personnel.

According to the Act on Preventing and Combating Human Infections and Infectious Diseases of 5 December 2008, managers of medical entities and other persons providing health care services are obliged to take measures preventing spread of infections and infectious diseases. It involves possessing, using, and supervising performance of universal rules of infection prevention, including hand hygiene, use of personal protective measures, and medical waste disposal – especially potentially contaminated sharp objects. Those measures also include reusable equipment sterilization and decontamination of rooms, working surfaces, and hospital beds.

The above rules should be the subject of medical personnel training organized by members of nosocomial infection inspection teams and when it comes to personnel of other medical entities – by persons or institutions qualified to carry out such training. There is an immediate need to organize the system of personnel training within nosocomial infections, including blood-borne infections. One of the possible solutions would be to conduct training for medical personnel of health care entities other than hospitals and for hospital personnel jointly as part of training organized by nosocomial infection inspection teams.

According to the above Act, persons who do not provide health care services, but whose activities involve disruption of skin or mucosa continuity are obliged to implement and follow procedures ensuring protection against infections and infectious diseases.

A draft regulation of the Minister of Health is currently under preparation that deal with specific sanitary and hygienic requirements to be met by facilities where hair, cosmetic, tattoo, and spa services are provided.

Importance of practices associated with safe performance of a tattoo is emphasized by the European Committee for Standardization (CEN), which is

preparing a European standard within hygienic conditions of performing tattoo services. Implementation of this standard may contribute to improving safety of such procedures.

As pointed out above, procedures performed in those facilities involving potential disruption of skin continuity should meet the same standards as medical procedures and should be subject to the inspection of the State Sanitary Inspection in that respect.

### **12.3 Needs within education and professional training, and raising social awareness of blood-borne diseases**

The level of knowledge on the prevalence and prevention of blood-borne infections was checked during all the projects of Project KIK/35 from the perspective of its different aspects. This matter was addressed by activities undertaken under Project 4 and 5. Surveys demonstrated significant differences in knowledge between particular categories of health care professionals. Among physicians, the knowledge of primary care professionals was generally satisfactory. It was similar when it comes to dentists. In the latter group, the contrast between the level of theoretical knowledge and the willingness to use it in practice was striking. There were quite numerous responses in which deviation from universal rules of infection prevention was "justifiable" by lack of time or financial limitations. Similar approaches were observed in the non-medical services sector. The fact that such approaches exist means it is necessary to intensify supervision over medical facilities and non-medical facilities where services involving potential risk of blood-borne infection transmission are performed. At present, there is a regulation of the Minister of Health under preparation that addresses those issues.

Deficiencies in terms of including aspects related to nosocomial infections with an emphasis on blood-borne infections – which to a large extent depend on human activities and are caused by lack of knowledge or negligence – in medical education programmes constitute a significant problem. It is necessary to consider this issue seriously in professional training programmes and set requirements to complete certain training with elements of practical training before an employee is allowed to deal with patients directly.

All the five content-based projects of Project KIK/35 emphasize the necessity not only to increase the awareness of blood-borne infections among general population, but also to deal with this matter more extensively in the hygiene education curricula of schools.

As part of Project 5, training courses were conducted for medical personnel and personnel of non-medical service facilities on the subject of hazards arising out of blood-borne infections and associated with services performed by that personnel as well as possible measures to reduce the risk of those infections.

Based on an analysis of previously prepared educational programmes for nurses and midwives as well as physicians and dentists, a minimum curriculum, syllabus, and educational materials were prepared. Education and knowledge requirements for educators (qualification and methodology) were also specified. Conclusions from Project KIK/35 „Prevention of Hepatitis C Virus (HCV) Infections” related to competences and tasks performed by nurses and midwives have been implemented to amended framework postgraduate curricula for these professions adopted by the Minister of Health.

Materials in different didactic forms and for different levels and different groups of recipients have been prepared. Experts and practitioners participated in developing those materials, including recognised academic teachers.

A significant part of educational materials was prepared in an electronic form and made available on the e-learning platform which is free-of-charge. The educational (e-learning) platform prepared under Project KIK/35 has been equipped with a module for verifying the knowledge acquired.

#### **12.4 Prevention of HCV infections among injecting-drug users under harm reduction strategy**

Persons addicted to injection drugs constitute a social group with the highest HCV infection morbidity. Because of a low awareness of hazards, deep mistrust of the rest of the society, e.g. due to stigmatisation of drug dependent persons and frequent animosity towards them, this group has the largest difficulties using the medical services that citizens are entitled to. Therefore, in order to effectively combat infections in this group, HCV infection prophylaxis and treatment programmes for people infected with this virus need to be included in wider harm reduction programmes, including extension of substitution treatment programmes and technical solutions allowing safe injection for people for whom substitution treatment turned out to be ineffective. There is also a great need for information campaigns for drug dependent persons, but also for general public in order to counteract stigmatization and promote treating addiction as a disease.

The following measures are recommended for effective control of HCV infections in the population of drug dependent people:

1. Ensuring access to free HCV diagnosis (including screening test) for people belonging to a group at a particular risk – which is the group of injecting-drug users (risk of HCV infection is several times higher than for general population);
2. Ensuring financing for initiation of the pilot injection rooms programme as part of controlled medical experiment. Method of introducing legislative changes creating legal grounds for such rooms to functions if the results

## 174      Project KIK/35 - "Prevention of hepatitis C virus (HCV) infections"

of the experimental implementation of this solution confirms its effectiveness;

3. Methods of ensuring access to HCV treatment without the requirement of abstinence from drugs for active drug users;
4. Methods of counteracting discriminatory practices towards drug users in terms of access to health care and social services;
5. Creation of the system of controlled comprehensive care for a drug user which would offer easier access to HCV diagnosis and treatment.

Performance of the last three postulates may turn out to be difficult in the face of the current treatment policy according to which HCV treatment is only allowed for people in whom rehab treatment was effective.

Rational introduction of those changes, which are based on experience of other countries, should be gradual and should involve associating outpatient clinics performing medical care, including treatment of HCV, with injection rooms as part of the pilot programme. Effectiveness of the model used in Switzerland gives hope for better access to medical aid for drug users who encounter serious barriers in accessing diagnosis and treatment in our country.

## **12.5 Summary**

I cannot claim to be an author of the above suggestions, as many concepts they represent come from the managers of individual projects. Many persons from outside the group that worked directly on Project KIK/35 also actively participated in the research.

Reducing the morbidity of HCV infections, which would lead to reducing the number of HCV-positive persons in Poland, is an important mission for sanitary and epidemiological services and medical professionals, but also for non-governmental organizations and individual persons that support us. It is not currently possible to determine the drop in the number of people infected with HCV that could be seen as completion of this mission. But we can assume entire elimination of HCV from population probably not as a real objective, but as a direction to be taken and followed. The strategy should specify partial and intermediate objectives as well as ways to achieve them. We are aware that determining time frames for the fulfilment of such a mission is not realistic at this point. Therefore, we are of the opinion that the elimination of HCV infections should be treated as a determinant of the direction of extensive prevention and treatment actions led in a coordinated way by state administration, sanitary and epidemiological services, local authorities, medical personnel, non-governmental organizations (NGOs), and properly educated citizens.

Studies conducted under Project KIK/35 „Prevention of Hepatitis C Virus

(HCV) Infections” as well as other available sources are fundamental for gaining insights into the current situation in terms of the prevalence of HCV infections in the Polish population, in sex and age groups, in the country, and in the cities. The surveys provided data on possible HCV risk factors. The survey performed under Project 4 serves as a basis for insights into the infection risk in health care facilities. Progress in terms of reducing transmission of HCV infections is to be based on correlated or separate activities aimed at completing strategic objectives.

A significant element of the strategy we propose is a legally empowered system of regular controls of morbidity rate associated with HCV infections in the form of representative cross-sectional studies. The system will be necessary to assess the effectiveness of the programme of HCV infection control as a whole, but also the effectiveness of its individual elements. Such a system will be helpful in order to modify those elements of the Programme of HCV Infection Prevention the effectiveness of which turns out to be insufficient. Reliable and competent analysis of the prevalence of HCV infections in different groups of our society, documentation of the currently present HCV infection risks in the Polish society through epidemiological studies, as well as estimation of the ratio of newly detected HCV infections to the number of still undetected infections not only constitute a basis for formulating diagnostic and treatment priorities, but also are used to undermine myths that are still present in the public domain. Those myths include the conviction that the proportion of chronic infections among persons with HCV antibodies is exceptionally low in the Polish population in comparison with global data. Similarly, the conviction that, in a situation where only ca. 25 out of 1000 existing cases of chronic infections are detected, the only way to eliminate the HCV infections may be treatment of identified cases should also be treated as unreasonable.





## TERMS AND ABBREVIATIONS

AOTMiT	Agency for Health Technology Assessment and Tariff System
CI	confidence interval
CMKP	Centre of Postgraduate Medical Education
EASL	European Association for the Study of the Liver
ECDC	European Centre for Disease Prevention and Control
ELPA	European Liver Patients Association
EMCDDA	European Monitoring Centre for Drugs and Drug Addiction
GIS	Chief Sanitary Inspectorate
HCV	Hepatitis C Virus
HIV	Human Immunodeficiency Virus
ICD-10	International Statistical Classification of Diseases and Related Health Problems
IDU	Intravenous Drug Users
IVF	in vitro fertilisation
KIDL	National Chamber of Laboratory Diagnosticians
NFZ	National Health Fund
NIZP-PZH	National Institute of Public Health – National Institute of Hygiene
NPZ	National Health Programme

178      Project KIK/35 - "Prevention of hepatitis C virus (HCV) infections"

PIS	State Sanitary Inspection
POZ	Primary Health Care
PSSE	County Sanitary and Epidemiological Station
RNA	ribonucleic acid
SCO	Swiss Contribution Office
SPCP	Swiss Polish Cooperation Programme
SVR	Sustained Viral Response (no detectable RNA HCV in blood during 24 weeks after the treatment)
SWOT	(acronym for: Strengths, Weaknesses, Opportunities, Threats) – a method of ordering and analysing information
WHO	World Health Organization
WSSE	Provincial Sanitary and Epidemiological Station
ZUS	The Polish Social Insurance Institution

## AUTHORS

DĄBROWSKA KATARZYNA

(PhD in Humanities), Assistant Professor, Department of Studies on Alcoholism and Substance Dependence; Institute of Psychiatry and Neurology in Warsaw

GABER ANNA\*

(MA), specialist for promotion and training, Department of Health Promotion and Postgraduate Education, National Institute of Public Health – National Institute of Hygiene in Warsaw

GĘBSKA-KUCZEROWSKA ANITA

(MD PhD), Assistant Professor, Department of Health Promotion and Postgraduate Education at NIZP-PZH; Manager of Public Health Study Centre; National Institute of Public Health – National Institute of Hygiene in Warsaw

GIERCZYŃSKI JAKUB

(MD PhD, MBA), senior specialist, Department of Health Promotion and Postgraduate Education; National Institute of Public Health – National Institute of Hygiene in Warsaw; Lecturer and expert, Institute of Health Care Management; Lazarski University in Warsaw

GIERCZYŃSKI RAFAŁ

(PhD, public health specialist), NIZP-PZH Associate Professor; Bacteriology Department Manager; National Institute of Public Health – National Institute of Hygiene in Warsaw

GODZIK PAULINA

(MD PhD), Assistant Professor, Virology Department; National Institute of Public Health – National Institute of Hygiene in Warsaw

KICIAK SŁAWOMIR

(MD-PhD), Assistant Professor, Department and Clinic of Infectious Diseases; Medical University of Lublin

KOŁAKOWSKA AGNIESZKA\*

(MA), technical assistant, Virology Department; National Institute of Public Health – National Institute of Hygiene in Warsaw

KUCHARSKA IZABELA

(MA, specialist for public health), Deputy Chief Sanitary Inspector, Chief Sanitary Inspectorate

PROF. MADALIŃSKI KAZIMIERZ

(MD-PhD), main specialist, Virology Department; National Institute of Public Health – National Institute of Hygiene in Warsaw

MAŁEK ANNA

economist; administrative and financial coordinator; Economic Department Manager, National Institute of Public Health – National Institute of Hygiene in Warsaw

PARDA NATALIA\*

(MA), analyst of research programmes, Department of Epidemiology, National Institute of Public Health – National Institute of Hygiene in Warsaw

PATOŁA RAFAŁ

(MA, CFE), Representative of the Investment and Development Director, National Institute of Public Health – National Institute of Hygiene in Warsaw

RAKOW LIDIA\*

(MA), specialist for promotion and training, Department of Health Promotion and Postgraduate Education, National Institute of Public Health – National Institute of Hygiene in Warsaw

ROSIŃSKA MAGDALENA

(MD-D.H.Sc, specialist for public health), NIZP-PZH Associate Professor, Department of Epidemiology, National Institute of Public Health – National Institute of Hygiene in Warsaw

SIEROŚŁAWSKI JANUSZ

(MA), specialist in the Department of Studies on Alcoholism and Substance Dependence; Institute of Psychiatry and Neurology in Warsaw

STĘPIEŃ MAŁGORZATA

(MD), research specialist, Department of Epidemiology, National Institute of Public Health – National Institute of Hygiene in Warsaw

SUJKA JOANNA

(VS), Department for Communicable Disease and Infection Prevention and Control, Chief Sanitary Inspectorate

TOMASIEWICZ KRZYSZTOF

(MD-PhD), Manager of the Department and Clinic of Infectious Diseases at the Medical University of Lublin

PROF. WYSOCKI MIROSŁAW JAN

(MD-PhD), Director of the National Institute of Public Health – National Institute of Hygiene, National Consultant for Public Health; National Institute of Public Health – National Institute of Hygiene in Warsaw

ZAKRZEWSKA KAROLINA

(MA), technical specialist, Department of Epidemiology, and analyst of research programmes, Virology Department; National Institute of Public Health – National Institute of Hygiene in Warsaw

PROF. ZIELIŃSKI ANDRZEJ

(MD-PhD), Chairman of the Steering Committee of Project KIK/35, main specialist, Department of Epidemiology, National Institute of Public Health National Institute of Hygiene in Warsaw

---

\* - affiliation during Project KIK/35

