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**ANALIZA POZIOMU WIRUSOWYCH ZAKAŻEŃ
KRWIOPOCHODNYCH I PRZENOSZONYCH DROGĄ
PŁCIOWĄ U OSADZONYCH W KONTEKŚCIE
PROFILAKTYKI HBV**

**THE ANALYSIS OF LEVEL OF BLOOD-BORNE AND
SEXUALLY TRANSMITTED VIRUSES INFECTIONS OF
THE PRISONERS IN THE CONTEXT OF HBV
PREVENTION**

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Streszczenie

Celem artykułu jest analiza poziomu zakażeń wirusowych przenoszonych drogą kontaktów seksualnych i krwiopochodną w polskich Zakładach Karnych i Aresztach Śledczych. Dokonany w opracowaniu opis zagadnienia ma na celu przede wszystkim zasygnalizowanie problematyki oraz próbę wskazania możliwych rozwiązań profilaktycznych. Nieunikniona wydaje się konfrontacja rzeczywistych warunków bytowych i sytuacji występujących w środowisku więziennym, ze skalą problemu zakażeń HIV i HBV/HCV. Autorzy uważają za konieczne monitorowanie sytuacji i zaznajomienie z problemem zainteresowanych specjalistów z dziedziny probacji w celu skłonienia do refleksji nad możliwym wprowadzeniem działań profilaktycznych.

Słowa kluczowe: HIV, HBV/HCV, zakażenia u osadzonych, szczepienia

Abstract

The aim of the article is to analyze the level of viral infections transmitted through sexual contact and blood-borne infections in Polish penal institutions and detention centers. The description of the issue presented in the study is primarily aimed at signaling the issue and at trying to indicate possible preventive solutions. It seems inevitable to confront the actual living conditions and situations in the prison environment with the scale of the problem of HIV and HBV/HCV infections. Therefore, the authors consider it necessary to monitor the situation and familiarize the interested specialists in the field of probation with the problem in order to encourage reflection on the possible introduction of preventive measures.

Key words: HIV, HBV/HCV, infections of prisoners, vaccinations

Introduction

Viral infections are one of the problems that can affect people in correctional facilities. Studies indicate that there is a high level of risky behaviour among this population (both men and women) prior to incarceration (non-use of condoms, high number of sexual partners), so it

is reasonable to assume that many people do not even know they are infected⁴.

According to a 2007 report, the number of inmates infected with human immunodeficiency virus in correctional facilities, is approximately 1 250 per year⁵. According to global data, the percentage in correctional facilities is higher than in the general population of many countries⁶. It is important to note that in addition to HIV infection, viral hepatitis, caused by 6 different viruses, 4 of which are transmitted by contact with the blood or tissues of infected persons and by sexual contact, is a serious threat⁷. Particularly dangerous are the hepatitis B and C viruses, which, although genetically unrelated, are major etiologic agents of hepatocellular carcinoma⁸. In the case of HBV infection most infections occur through contact with infected blood. However, saliva, semen, and genital tract secretions can also be infectious. Infectious virus particles are able to survive at room temperature for up to three weeks, and a small number of virions sufficient to infect can be found on contaminated surfaces even in the absence of visible soil⁹. Clinically relevant HCV infectivity has only been demonstrated for blood, but virions can also be detected in other body fluids. If the surface is contaminated, the virus remains infectious for up to several weeks¹⁰.

⁴ M. Ksel, H. Strzelecka, W. Rudalski, *Zdrowie w więzieniu – badanie postaw, zachowań i wiedzy personelu więziennego oraz ludzi pozbawionych wolności na temat chorób zakaźnych w wytypowanych polskich jednostkach penitencjarnych*, Warsaw, 2007, p. 39.

⁵ *Ibidem*, p. 27.

⁶ UNODC, WHO, UNAIDS, *HIV/AIDS Prevention, Care, Treatment and Support in Prison Settings*, New York, 2006, p. 2.

⁷ J. Klamann, T. Smiatacz, *Diagnostyka wirusowych zapaleń wątroby w praktyce lekarza pierwszego kontaktu*, "Forum Medycyny Rodzinnej" 2016, vol. 10, No. 2, p. 67.

⁸ *Ibidem*.

⁹ T. Tan, E. Jo, D. Todt et al., *High Environmental Stability of Hepatitis B Virus and Inactivation Requirements for Chemical Biocides*, "The Journal of Infectious Diseases" 2019, vol. 15, no 219(7), p. 1044-1048.

¹⁰ E. Steinmann, S. Ciesek, M. Friesland et al., *Prolonged survival of hepatitis C virus in the anesthetic propofol*, "Clinical Infectious Diseases" 2011, no 53(9), p. 963-964; E. Paintsil, M. Binka, A. Patel et al., *Hepatitis C virus maintains infectivity for weeks after drying on inanimate surfaces at room temperature: implications for risks of transmission*, "The Journal of Infectious Diseases" 2014, vol. 15, no 209(8), p. 1205-1211.

According to the National Institute of Public Health - National Institute of Hygiene, as of December 31, 2019, there were 24115 people infected with HIV in Poland¹¹. It is estimated that HCV-RNA is present in approx. 0.5%¹², while chronic HBV infection is present in approx. 1% of the Polish population¹³. All three viruses cause chronic infections, but importantly, although only two HIV-infected patients¹⁴ in the world have been completely cured to date, people with a homozygous CCR5-D32¹⁵ mutation have highly increased resistance to infection¹⁶. New therapies with direct-acting antivirals have demonstrated nearly 100% efficacy against HCV¹⁷, while in the case of hepatitis B infections, 90% of detected infections are chronic, and complete elimination of the virus from the body is currently not possible. Therefore, widely available effective prophylactic vaccination against HBV is critical¹⁸.

1. Living conditions and undesirable behaviours in correctional facilities

The Ombudsman's speech to the Director General of the Correctional Service on the living conditions of inmates in multi-bed residential cells

¹¹ M. Rosińska, M. Niedźwiedzka-Stadnik, *Zakażenia HIV i zachorowania AIDS w Polsce*, http://wwwold.pzh.gov.pl/oldpage/epimeld/hiv_aids/index.htm (access: 12/06/2021).

¹² PZH, Narodowy Instytut Zdrowia, *Wirusowe zapalenie wątroby typu C – informacje ogólne*, www.epibaza.pzh.gov.pl/story/wirusowe-zapalenie-watroby-typu-c-informacje-ogolne (access: 12/06/2021).

¹³ PZH, Narodowy Instytut Zdrowia, *Informacja o zachorowaniach na wirusowe zapalenie wątroby typu B (WZW B) i zakażeniach HBV*, www.epibaza.pzh.gov.pl/story/informacja-o-zachorowaniach-na-wirusowe-zapalenie-watroby-typu-b-wzw-b-i-zakazeniach-hbv (access: 12/06/2021).

¹⁴ G. Hütter, D. Nowak, M. Mossner et al. *Long-Term Control of HIV by CCR5 Delta32/Delta32 Stem-Cell Transplantation*, "The New England Journal of Medicine" 2009, no 360, p. 692-698.

¹⁵ Deletion (loss) of 32 base pairs in both versions of the gene encoding the protein that allows HIV to infect the cell - a non-functional receptor is created, preventing the virus from entering the cell.

¹⁶ M. Samson, F. Libert, B. Doranz et al., *Resistance to HIV-1 infection in Caucasian individuals bearing mutant alleles of the CCR-5 chemokine receptor gene*, "Nature" 1996, no 382, p. 722-725.

¹⁷ PZH, Narodowy Instytut Zdrowia, *Wirusowe zapalenie wątroby typu C...*

¹⁸ PZH, Narodowy Instytut Zdrowia, *Szczepionka przeciw wzw B*, www.szczepienia.pzh.gov.pl/szczepionki/wzw-b/ (access: 12/03/2021).

of 22 November 2018 clearly indicates the irregularities that exist¹⁹. The high density of inmates in a small space, the lack of privacy and often the ability to take care of physiological needs at any time, as well as little physical activity outside the cell, can contribute to problems with controlling emotions, the occurrence of aggressive behaviour and conflict situations. The harsh realities of multi-person cells create conditions for unwanted behaviour in the form of mental and physical abuse, bodily violations (including rape) and even self-aggression²⁰.

For the past 20 years, the average annual number of pre-trial detainees, convicts, and punished has hovered around 80 thousand²¹. According to the Bureau of Information and Statistics of the Department of Correctional Services, up to and including 2009, penitentiary units were constantly overcrowded (at times by as much as 20%). Since 2010, there has been a slow, gradual decline in population to <90% at the end of last year²². However, this does not change the fact that multi-person cells are often overused. Although national legislation does not regulate the maximum capacity of residential cells in penitentiary units, the elimination of cells larger than 10-person cells should be pursued as soon as possible, so that correctional facility conditions do not deviate from the standards accepted in society and convicts can serve their sentences in a humane manner and with respect for human dignity²³.

The undesirable behaviours include those that are also highly risky in terms of viral transmission, e.g.: rape, getting tattoos or using needle-applicable drugs.

It is common for groups with specific philosophies of functioning and different positions in the hierarchy of correctional facility subculture to form within correctional facilities - the largest of these are: "kilters", "non-kilters", and "fairies" i.e. "faggots"²⁴. The latter includes prisoners who are

¹⁹ Speech of the Ombudsman to the Director General of the Correctional Service on the living conditions of inmates in multi-bed residential cells, 22/11/2018, <https://bip.brpo.gov.pl/art-z-pwg/11656> (access: 12/06/2021).

²⁰ *Ibidem*.

²¹ Ministerstwo Sprawiedliwości Centralny Zarząd Służby więziennej, *Roczne informacje statystyczne*, raporty za lata 2001-2020, www.sw.gov.pl/strona/statystyka-roczna (access: 12/06/2021).

²² *Ibidem*.

²³ *Speech of the Ombudsman to the Director General of the Correctional Service...*

²⁴ A. Michalska, D. Michalski, *Zachowania niepożądane w Zakładach Karnych. Wybrane zagadnienia*, Warsaw-Olsztyn 2020, p. 9.

deprived of their humanity, without the right to vote, treated as objects and often sexually abused by the "kitters"²⁵. However, solitary confinement in penitentiary units excludes the possibility of satisfying one's sexual needs, which may precisely take the form of homosexuality. In prolonged isolation, prisoners have two choices for relieving sexual tension: self-pleasure or voluntary or forced, usually violent homosexual contact. In correctional facilities, the display of any homosexual feelings is unacceptable to other inmates and can lead to acts of aggression. One of the more dangerous homosexual behaviours are those performed by individuals who are part of the prison subculture. In 2009, 10 (27 participants) inmate rape cases were reported. In recent years, these incidents have been marginal, with single cases recorded: in 2017. - 2, and in 2018. - 1 of this type of behaviour²⁶. However, it is important to remember that, in addition to humiliation and physical injury, such practices carry a particularly high risk of HBV infection. It is also worth noting that over the last decade, the percentage of prisoners with sexual preference disorders has steadily increased - from 0.2% in 2011 to 0.6% in 2020. These statistics are incomplete and do not include situations that occur within the prison subculture and are covered by a kind of taboo in prisons²⁷.

According to Article 116a of the Executive Penal Code, convicts are not allowed to drink alcohol or use narcotic or psychotropic drugs²⁸. However, almost daily, correctional officers uncover attempts to smuggle prohibited items or substances into correctional facilities²⁹. Over the past decade, the percentage of drug addicts among inmates has ranged from 0.7% to nearly 1.4% with an increasing trend³⁰. In order to secure their hiding place, inmates often place shredded glass in the immediate vicinity of the cache, which is intended to maim the tracking dog and discourage it from further searching³¹.

²⁵ S. Przybyliński, *Na krawędzi więziennej egzystencji – skazani "cwaniacy" w soczewce podkulturowego spojrzenia*, "Resocjalizacja Polska" 2016, No. 11, p. 43.

²⁶ A. Michalska, D. Michalski, *Zachowania niepożądane...*, p. 93-94.

²⁷ Ministerstwo Sprawiedliwości Centralny Zarząd Służby Więziennej, *Roczne informacje statystyczne*, raporty za lata 2011-2020, www.sw.gov.pl/strona/statystyka-roczna.

²⁸ Act of 6 June 1997 - Executive Penal Code (Journal of Laws of 2020, item 523, as amended).

²⁹ <https://sw.gov.pl/aktualnosc/wiezniowie-probuja-straznicy-znajduja> (access: 13/06/2021).

³⁰ MS CZSW, *Roczne informacje statystyczne*, reports for 2011-2020, *op. cit.*

³¹ A. Michalska, D. Michalski, *Zachowania niepożądane...*, p. 92.

Due to limited access to equipment, injections are often performed with a single needle by several inmates, which is a significant risk factor for HIV, HCV and HBV transmission. According to the data of the PZH report, 12.4% of the drug addicts were HIV seropositive³² (19.2% of them were unaware of the infection), the percentage was higher in persons with a history of incarceration - 22.9%³³; nearly 60% of the respondents were diagnosed with hepatitis C virus (77.2% in respondents with a history of incarceration)³⁴; 36.8% of the respondents showed the presence of antibodies indicating past or present HBV infection, 3.1% were diagnosed with HBV (54.8% in respondents with a history of incarceration³⁵). The report confirmed that sharing injection equipment is a significant risk factor for infection with the aforementioned viruses.

Article 116a of the Executive Penal Code also prohibits any tattooing on the grounds of the correctional facilities³⁶. This ban is based on hygienic and sanitary reasons, as well as on the health and lives of inmates, as tattoos in penitentiary units are made with primitive methods (a special, hand-made machine called a "boob gun" - a pen, needle and a small motor, e.g. from a radio)³⁷, which promotes the spread of infectious diseases (including HIV and hepatitis viruses). Despite the ban, however, it can be said that correctional facility tattooing is still common in correctional facilities³⁸ and affects up to 40% of inmates³⁹.

³² It showed the presence of specific antibodies in the blood.

³³ M. Rosińska, A. Zieliński, *Oszacowanie występowania chorób zakaźnych (wirusowe zapalenie wątroby typu C i B, HIV) wśród narkomanów przyjmujących środki odurzające w iniekcji w miastach o różnym stopniu realizacji programów redukcji szkód. Raport z programu badawczego*, Warsaw 2004, p. 15-18.

³⁴ *Ibidem*, p. 27, 29.

³⁵ *Ibidem*, p. 36, 40.

³⁶ Act of 6 June 1997. - Executive Penal Code.

³⁷ R. Rodasik, E. Ćwiertnia, J. Zat'ko, *Język podkultury więziennej – gwara, język migowy, tatuaż*, "Kultura bezpieczeństwa. Nauka – praktyka – refleksje" 2013, No. 13, p. 129.

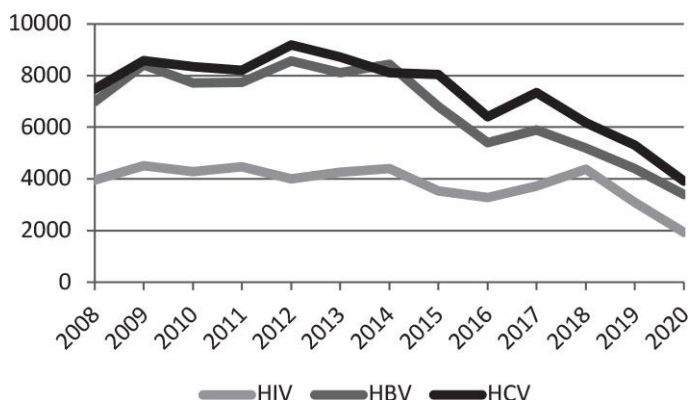
³⁸ A. Michalska, D. Michalski, *Zachowania niepożądane...*, p. 31.

³⁹ M. Ksel, H. Strzelecka, W. Rudalski, *Zdrowie w więzieniu...*, p. 43.

2. Infection rates in inmates

Data from the Correctional Service's annual statistics are complete for both HIV and hepatitis B and C infections from 2008 to 2020. It is worth noting that not all inmates are mandatorily tested. The number of tests performed for each virus varied by up to twofold between years. Detailed data on this are shown in Figure 1.

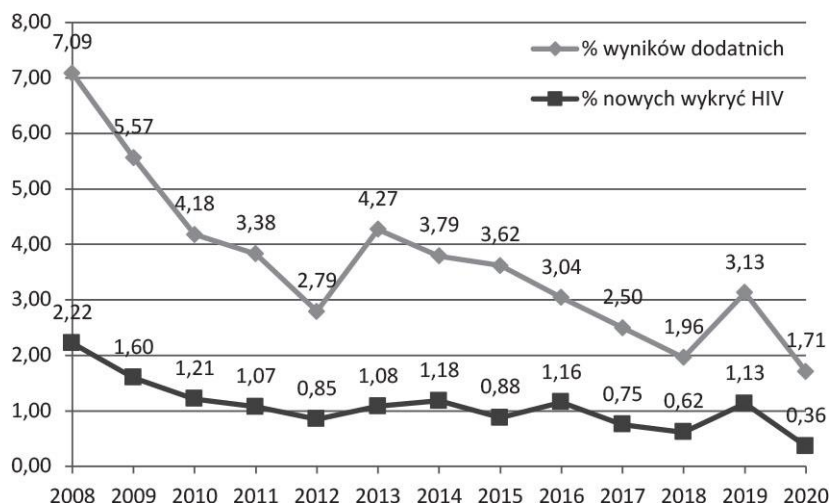
Figure 1. Number of tests performed for HIV and hepatitis B and C viruses in inmates by year⁴⁰.



Despite the observed decrease in the number of tests performed in recent years, in relation to the total number of inmates in a given year, a drastic decrease in testing was found last year: from an average of 4-5% testing for HIV to less than 3%, for HBV from about 9% to about 5%, and for HCV from about 10% to 5.5%. Infection detection rates detailing cases newly detected each year are shown in Figures 2-4.

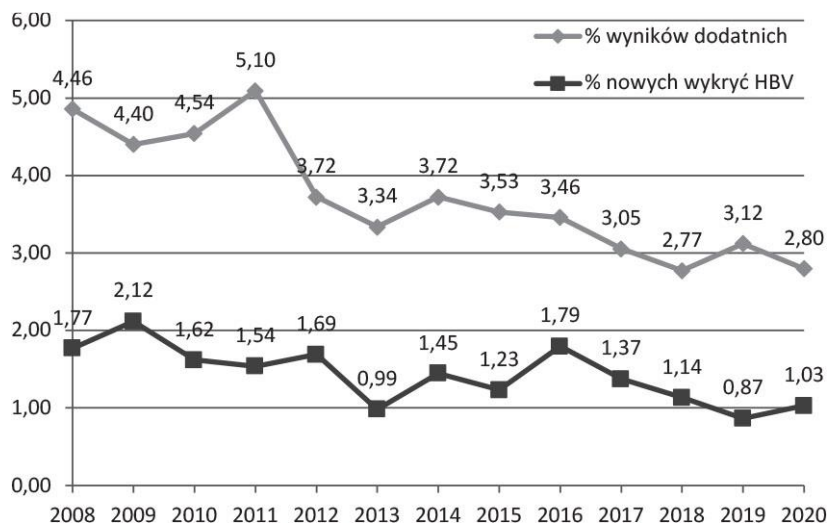
⁴⁰ MS CZSW, *Roczne informacje statystyczne*, reports for 2008-2020, *op. cit.*

Figure 2. Percentage of positive HIV tests among inmates (including newly detected cases)⁴¹.



Termin	Tłumaczenie
% wyników dodatnich	% of positive results
% nowych wykryć HIV	% of new HIV detections

Figure 3. Percentage of positive HBV tests among inmates (including newly detected cases)⁴².

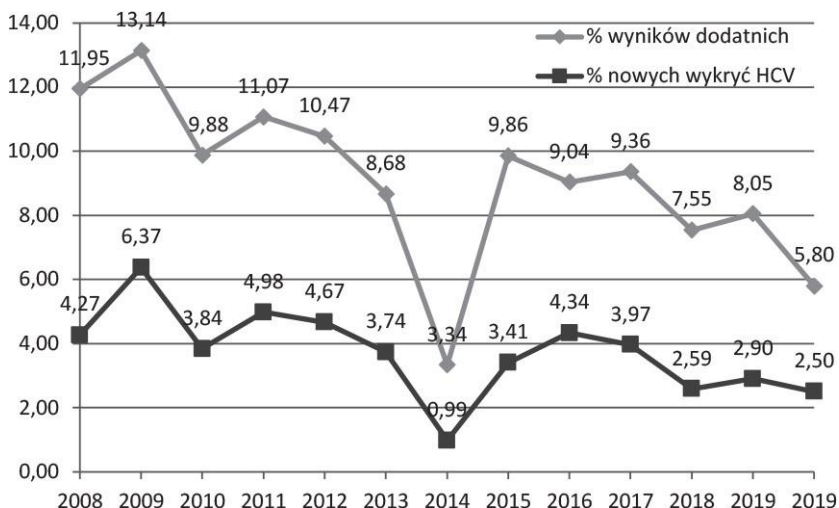


⁴¹ Ibidem.

⁴² Ibidem.

Termin	Tłumaczenie
% wyników dodatnich	% of positive results
% nowych wykryć HBV	% of new HBV detections

Figure 4. Percentage of positive HCV tests among inmates (including newly detected cases)⁴³.



Termin	Tłumaczenie
% wyników dodatnich	% of positive results
% nowych wykryć HCV	% of new HCV detections

The lowest infection rate is observed for HIV (except in 2008 and 2009, when it was higher than for hepatitis B virus - 7.09% vs. 4.86% and 5.57% vs. 4.4%). However, in the correctional facility population, it is dramatically higher - more than 50 times in 2019 - than the rate of HIV infection in the general population of Poland (about 0.06% at the end of 2019)⁴⁴. The situation is similar for hepatitis viruses - HBV detection rates last year were nearly 3 times higher among inmates compared to the general population (2.8% vs. 1%)⁴⁵, while the rate of HCV in prisoners was 10 times higher⁴⁶.

⁴³ *Ibidem*.

⁴⁴ M. Rosińska, M. Niedźwiedzka-Stadnik, *Zakażenia HIV...*

⁴⁵ PZH, National Institute of Health, *Informacja o zachorowaniach na wirusowe zapalenie wątroby typu B (WZW B)...*

⁴⁶ PZH, National Institute of Health, *Wirusowe zapalenie wątroby typu C...*

The higher rates of infection with sexually transmitted viruses and through contact with blood or secretions in prisoners are due to the frequent occurrence of risky behaviours in this group, such as casual sexual contact without the use of a condom or sharing of needles and personal hygiene items. At the same time, it is worth noting the slower decline of HBV infections in relation to infections with other viruses, which confirms the extremely high infectivity of this pathogen.

3. Prevention

Considering the high risk of transmission of viral infections in penitentiary units and the risk of subsequent spread of these viruses in the community, special attention should be paid to the effectiveness of prevention programs.

The reduction of HIV and HCV infections is based primarily on adherence to sterilization and safe injection procedures, particularly the use of disposable equipment for procedures with tissue continuity violations, as well as education on personal protective equipment - the use of condoms, disposable needles and adherence to hygiene including personal hygiene items. The observed gradual decline in HIV/HCV infections is also due to the widespread global publicity of the problem. Implemented by the Stowarzyszenie Profilaktyki Zdrowotnej "Jeden Świat" [Preventive and Support Association "One World"] from Cracow, the project entitled "Wiem i spoglądam w przyszłość – kreacja materiałów profilaktycznych dla osób pozbawionych wolności" [I know and look into the future - the creation of prevention materials for people deprived of liberty] aimed at raising awareness of HIV/AIDS among inmates⁴⁷. There was a lot of interest at the level of project development and subsequent participation in prevention activities by persons deprived of their liberty, and the staff was open to cooperation with NGOs. After consultation with the inmates, a 12-page information booklet (focusing, according to the interest of the target group, primarily on treatment options and living with HIV/AIDS) and a poster were created. In terms of transmission routes, the materials focus primarily on the sexual contact route, which research

⁴⁷ M. Brodzikowska, "Jeśli zależy ci na przyszłości". Kulisy tworzenia materiałów profilaktycznych dla mężczyzn pozbawionych wolności, "Kontra" 2015, No. 1, p. 7.

suggests is the main route of spread of HIV infection⁴⁸. It is worth noting that the project prepared materials addressed only to the male part of the target group, therefore it is important to create similar educational content for female inmates in the future.

Prevention of the spread of hepatitis C virus infection, as in the case of HIV/AIDS, is limited exclusively to education about the routes of infection, risk factors and opportunities for preventing infections and illnesses with HCV etiology (primary prevention) and early detection and treatment of patients in penitentiary isolation (secondary prevention)⁴⁹. However, continuing treatment after correctional facility is a significant problem. One of the criteria for inclusion of a patient in a drug program and use of health benefits is having universal insurance, which people leaving correctional units are usually not covered by⁵⁰.

Hepatitis B prevention can be much more effective and is not limited to education. Since 1996, the vaccination calendar in Poland provides for mandatory vaccination of newborns and persons particularly exposed to infection, i.e. medical personnel, pupils and students of medical schools/universities, persons in contact with HBV and those infected with HCV⁵¹. In this regard, it is worth noting that according to CZSW statistics, up to 90% of convicts could be unvaccinated in 2020⁵². The National Institute of Hygiene's position statement makes it clear that people who are not vaccinated against hepatitis B, who have been vaccinated with fewer than three doses, or who have an unknown vaccination history (no records) are particularly vulnerable to infection⁵³. Taking into account the analysis of sexual behaviour at liberty and after incarceration in the penitentiary unit, it can be concluded that the phenomenon of risky contacts (accidental partner, lack of condom, contact against the will) also

⁴⁸ *Ibidem*, p. 8.

⁴⁹ Speech of the Ombudsman to the Director General of the Correctional Service on prevention and treatment of hepatitis C in prisoners deprived of their liberty, 04/07/2018, www.rpo.gov.pl/pl/content/wirusowe-zapalenie-watroby-typu-c-u-pozbawionych-wolnoscii-jak-zapobiegac-jak-leczyc-rpo-pisze-do-Sluzby-Wieziennej (access: 14/06/2021).

⁵⁰ Odpowiedź MZ na Wystąpienie RPO do DGSW z 15/03/2019 r., www.rpo.gov.pl/sites/default/files/Odpowiedz-MZ-15.03.2019.pdf (access: 14/06/2021).

⁵¹ www.epibaza.pzh.gov.pl/story/informacja-o-zachorowaniach-na-wirusowe-zapalenie-watroby-typu-b-wzw-b-i-zakazeniach-hbv, *op. cit.*

⁵² MS CZSW, *Roczne informacje statystyczne*, report for 2020, *op. cit.*

⁵³ PZH, Narodowy Instytut Zdrowia, *Czynniki ryzyka zakażeń HBV i HCV*, <https://watrobanieboli.pzh.gov.pl/czynniki-ryzyka-zakazen-hbv-i-hcv/> (access: 15/06/2021).

applies to people in conditions of imprisonment⁵⁴. Thus, transmission of HBV, whose initial symptoms may be nonspecific, between inmates may be much higher than the statistics portray, especially given the low level of testing. The cost of 3-dose HBV vaccine is currently 150-200 PLN and is many times lower than the cost of conventional and experimental treatment of one person with hepatitis B. It is also worth noting that up to 20% of patients with chronic HBV infection, despite treatment, develop cirrhosis and hepatocellular carcinoma, with further consequences, also economic.

In the context of the prevention of viral infections in prisoners, it is also worth remembering the United Nations Model Minimum Rules for the Treatment of Prisoners (the Mandela Rules), in particular Rule 24(2), which refers to guaranteeing the continuity of "treatment and care, including treatment for HIV, TB and other infectious diseases, as well as drug addiction", and Rule 30, which indicates to "Segregate prisoners suspected of carrying infectious diseases and provide them with adequate treatment during the period of infection"⁵⁵.

4. Conclusion

All of these viruses, both human immunodeficiency virus (HIV) and hepatitis B and C, are transmitted by the same routes - through contact with the blood or body secretions of an infected person. Because of the higher prevalence of risk behaviours (sexual contact without a condom, use of shared injection needles, non-sterile instruments for tattooing, or acts of "blood fraternization"), and the high percentage of unvaccinated in this population, inmates are a special risk group. In accordance with the passage from the Hippocratic Oath that "prevention is better than cure", bearing in mind that HBV is characterized by the highest infectiousness, the currently available drugs are not able to completely eliminate the virus, and the costs of treatment in penitentiary units are covered by the state

⁵⁴ M. Ksel, H. Strzelecka, W. Rudalski, *Zdrowie w więzieniu...*, p. 41.

⁵⁵ United Nations, United Nations Model Minimum Rules for the Treatment of Prisoners (Mandela Rules), United Nations, Resolution adopted by the General Assembly on 17 December 2015 - 70.175. United Nations Standard Minimum Rules for the Treatment of Prisoners (the Nelson Mandela Rules), resolution number A/RES/70/175, <https://undocs.org/en/A/RES/70/175> (access: 16/06/2021).

budget, it seems reasonable to include the group of inmates in the program of mandatory vaccination against the hepatitis B virus. Especially as this vaccination also protects against hepatitis D (hepatitis D), caused by HDV, which occurs only during HBV infection. This action will reduce health care costs in correctional facilities as well as reduce HBV transmission in the general population.

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