

## Hepatitis B and C in Eastern Europe — the current situation

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### Abstract

This paper presents the current situation of HBV and HCV infection in Eastern European countries and discusses the differing aspects of epidemiology, transmission, prevention strategies and treatment approaches in these countries. (*Acta gastroenterol. belg.*, 1998, 61, 202-205).

**Key words:** hepatitis B, hepatitis C, epidemiology, vaccination, interferon.

### Background

Data from WHO shows that more than 2 billion people have been infected with the hepatitis B virus (HBV), and out of this population, 350 million have been chronically infected (1). The hepatitis C virus (HCV) infects about 100 million people world wide, and about 10% of them live in the Mediterranean countries of Europe. People infected with HBV or HCV are at risk of serious illness or death from liver cirrhosis or cancer. Out of 540,000 new cases of liver cancer per year, 83% of these are attributable to infection with HBV, and the majority of such cases occur in developing countries (2). WHO estimates that more than one million HBV carriers die every year because of a late complication of the infection. HBV infection is shown to be the ninth most likely cause of death on the list of the leading causes of mortality (2). Nearly a third of liver cancer cases in developed countries and over two thirds in developing countries could be prevented by effective prevention of hepatitis B and C infections.

HBV and HCV infections occur world-wide. The incidence depends on geographical and population factors. In some regions, HBV prevalence is very low (e.g. less than 0.1% in Sweden), in the other regions the prevalence is extremely high (> 10% in some Asian and African countries). There has only been a small amount of data collected on HCV epidemiology, but the prevalence is highly variable (2). The incidence of HBV and HCV infection may be modified by different actions, for example, educational programmes, vaccination, improvement of hospital hygiene, eliminating risky behaviours, the treatment of infected cases, etc. The aim of this paper is to present the current situation in HBV and HCV infections in selected countries of Eastern Europe.

### HBV epidemiology

The most common measures used to describe the burden of HBV infection are the prevalence of HBV carriers in the population, and the incidence of new hepatitis B cases per year. There are three categories of prevalence that can be defined: low (< 2% of population positive for HBsAg), intermediate (2-8%) and high (> 8% of HBs carriers in population). Unfortunately, the data on the prevalence and the incidence of hepatitis B are seriously biased. The data on the prevalence usually comes from unrepresentative samples, for example, blood donors, pregnant women, soldiers etc., and there is no comparable standard surveillance system. In some countries, the cases with clinically visible jaundice are reported, but in the others, the cases are distinguished according to the serological type. Some countries (ex. Poland) do not differentiate between acute hepatitis B and chronic carrier state. Since hepatitis B in children is, at least, an asymptomatic infection, many cases fail to be recorded, therefore data on the incidences are underestimated. The degree of this underreporting varies between the countries. These problems make comparisons between the countries difficult (3,4).

Eastern Europe is a region of low (Czech Republic, Estonia, Hungary, Latvia, Poland, Slovak Republic, Slovenia, Ukraine) or intermediate (Belarus, Bulgaria, Lithuania, Romania) prevalence of HBV infection (Table I) (5,6). The endemicity of HBV in the Russian Federation is not precisely defined. The prevalence of HBV infection is stable and many years are necessary to change it. However, the incidence is a more flexible measure and dynamic changes are possible. Data on the incidence of HBV has been collected for many years (from 1978 in the Czech Republic, 1984 in Poland, 1990 in the Ukraine). One can guess that the increasing awareness of the disease might have influenced the number of registered cases in each country, however, in the last few years, in some countries of Eastern and Central Europe, the trend was for a decline in the

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Table I. — The prevalence of HBV infection (per 100000 inhabitants) (source : Prevention and Control of Hepatitis B in Central and Eastern Europe and the Newly Independent States. WHO, Siofok, Hungary 1996)

	Country	prevalence
low prevalence	Croatia	0.3% in blood donors
	Czech Republic	0.6%
	Hungary	0.5% in pregnant women
	Latvia	1.3% in health care workers
	Poland	1.5-1.8%
	Slovak Republic	0.7%
	Slovenia	1.5%
	Ukraine	1.1-2.3%
intermediate prevalence	Belarus	3.98%
	Bulgaria	5%
	Lithuania	2.5% in blood donors
	Romania	5.95%

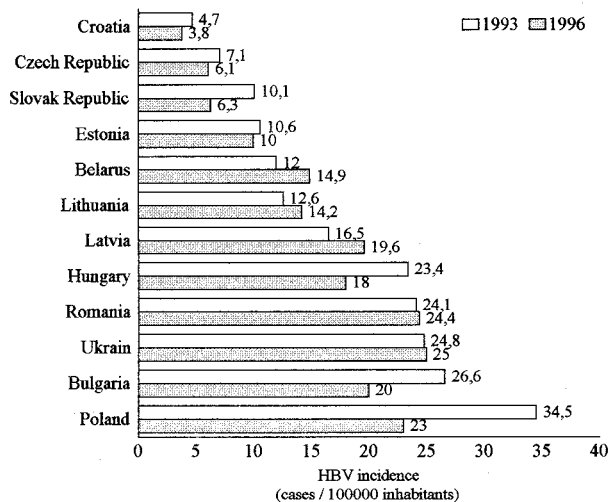


Fig. 1. — Incidence of HBV infection in some countries of Eastern Europe in 1993 (source Health For All 2000 WHO, Prevention and Control of Hepatitis B in Central and Eastern Europe and the Newly Independent States. WHO, Siofok, Hungary 1996).

number of newly reported cases of HBV infection (Fig. 1). This trend is very noticeable in Poland (Fig. 2) (7) and Bulgaria (8). In both countries the improvement is clearly associated with national immunisation programmes that were implemented in 1989. At the beginning, these programmes included only the risk groups, but since 1991 in Bulgaria and 1994 in Poland, they included all newborns and risk group patients. The dramatic impact of the universal newborns vaccination programme in Poland can be demonstrated from data on the incidence of HBV infection in children under three years of age (Fig. 3).

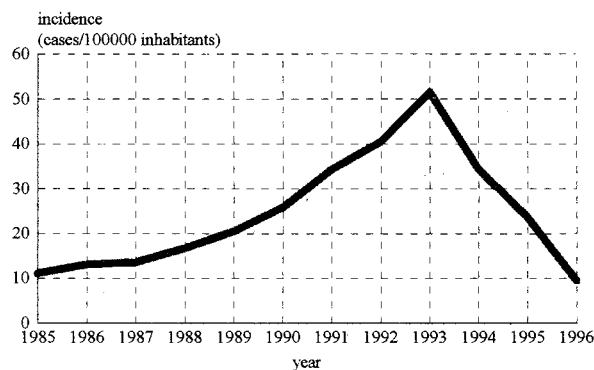


Fig. 3. — Incidence of hepatitis B in children younger than 3 years in Poland (source : Choroby zakaźne i zatrucia w Polsce. PZH Warszawa 1984-1996).

The problem that must be considered in the Eastern Europe, is the HBV transmission route. Perinatal and sexual transmission seem to be uncommon, and the most important are the horizontal and especially the nosocomial routes (6). High levels of hospital acquired HBV infections have been reported from Romania, Russia and Poland. The data shows that in Poland, more than 60% of hepatitis B cases are associated with the previous hospital stays. In a series of over 1,500 children selected for interferon alfa (IFN), treatment for chronic HBV infection, 69% had a history of previous contacts with medical institutions and proce-

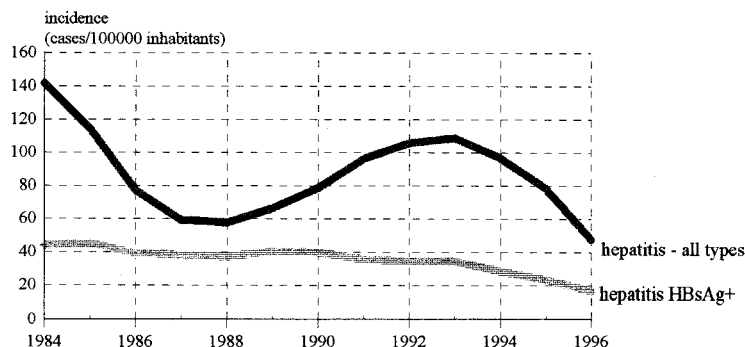


Fig. 2. — Incidence of hepatitis (all types and HBsAg+) in Poland since 1984 (source : Choroby zakaźne i zatrucia w Polsce. PZH Warszawa 1984-1996).

dures that break the skin or mucosa continuity, and only 3% had vertical infection (data unpublished). In past years, it was found that the cause of the nosocomial transmission was due to the inadequate sterilisation of medical equipment (6). Although the introduction of the immunisation programme and an increased awareness of the disease in Poland has reduced the number of hospital acquired infections, they still pose a problem.

### HBV prevention

As mentioned previously, the problem of some Eastern European countries is not only the relatively high prevalence of HBV, but also the transmission route. There are two ways to improve the situation. The first of which is to improve the medical institution hygiene and promote correct sterilisation and use of disposable equipment. It is because of economical reasons that this is not always possible. The second way is to implement the immunisation programmes, the strategy of which focusing on the HBV risk groups, newborns or other groups in the population. The strategy choice depends mainly on the epidemiology and on the economical situation.

Most Eastern European countries have already started antiHBV immunisation (6). The programmes differ very much between the countries. In Croatia, the Czech Republic, Hungary and Slovenia, vaccination is orientated around health care professionals and risk groups, including newborns of HBs positive mothers. The National Immunisation Programmes existing in Poland, Bulgaria and Romania include all newborns, high risk groups and health care professionals. In the Ukraine, Lithuania and the Russian Federation, the National Immunisation Programmes for HBV infection are planned, but they are dependant on the availability of funds.

The evaluation of the effectiveness of the vaccination programmes is variable. Colleagues from Hungary and the Czech Republic (personal communication) think that the immunisation of newborns of HBs positive mothers, as well as health care workers and all risk groups, is effective and reduces the occurrence of hepatitis B. However, the Polish experience of this immunisation strategy, used between 1988 and 1993, was contradictory. HBV incidence was stable in the general population (37.4 in 1988 and 34.6 per 100,000 inhabitants in 1993), but in children under three years of age increased from 16.7 in 1988 to 51.6 in 1993. The system of HBsAg screening in pregnant women was not effective, covering approximately 50% of pregnancies and not all risk group subjects were available for vaccination. The failure of this strategy to control the number of new hepatitis cases in Poland (7) was the reason for including antiHBs vaccination into the universal National Immunisation Programme. The programme was started in 1994 in districts with the highest incidence and by 1996 covered

the whole country. All newborns in Poland are vaccinated now, regardless of the HBsAg serological status of the mother. All costs of the vaccination are covered by the public health care system. Babies of known HBs positive mothers are subjects for passive immunisation too. The costs of passive immunisation are covered by the health care system, but the costs of screening for HBsAg in pregnancy are not reimbursed and must be covered by the patients. Older children and adolescents are not included in the government vaccination programme, however, the vaccination is strongly recommended to these groups (the costs of three doses of vaccine is approximately 25 USD). Universal vaccination of all newborns in Poland caused a 5 fold reduction in HBV incidence in the youngest group of children within 3 years (Fig. 3). Similar results were observed in Bulgaria where vaccination of babies born to HBsAg positive mothers was started in 1988, and vaccination of all neonates in 1991. Within a few years the incidence of HBV in one year old children had fallen down from more than 30 cases per 100,000 inhabitants to approximately 5 cases (8).

### HBV treatment

The universal, or in other countries, risk groups vaccination, may in the long term solve the problem of new HBV infections. Since the largest group of subjects now vaccinated are children, it seems that the situation in paediatrics will improve much faster than in adults. This is especially important because of the high chronicity rate of HBV infection acquired early in life. The effect of vaccination on the number of chronic hepatitis B children referred to IFN treatment in Poland has already been seen. The mean age of children starting IFN treatment for HBV infection increased by two years between 1994 and 1997.

Before the vaccination eliminates the new cases of HBV infection, Eastern European countries must manage the patients that had been infected in the past. The only accepted method of HBV treatment is IFN, but it is an expensive option. Due to high costs and a difficult economical situation, this treatment is not easily available for patients in Eastern Europe. Despite the studies showing the cost-effectiveness of IFN treatment for HBV infection, the HBV treatment programme including a large number of patients, exists only in Poland. Large quantities of IFN are purchased by the Polish Ministry of Health and provided to selected hospitals separately for adults and children. There are 25 paediatric hospitals that admit children with chronic HBV infection. Each of them has the possibility to perform a liver biopsy and standard liver function tests including HBV serological tests. All paediatric hospitals use the same schedule of therapy — 3 MU 3 TIW. The IFN dose is stable and is not adjusted to the body surface. Due to technical and financial reasons, we resigned of HBV-DNA testing.

The duration of the therapy is 20 weeks and is not tailored according to the early antiHBe response. On calculation, it is shown that the savings made on frequent HBs antigens and antibodies testing are greater than the savings made on shortening of treatment that could be done in children with early anti-HBe response. Individual patient data are collected in the standard forms and sent to one computer data base. The number of children treated with IFN for HBV infection and registered in the central database has recently exceeded 1,500, and half of them completed 12 months follow up after IFN discontinuation. HBe/antiHBe seroconversion in this group is 48.6% and a high initial ALT level and a younger age are good prognostic factors (data being prepared for publication).

A similar scheme of IFN treatment is also used in Hungary, but the costs of treatment are not reimbursed and the number of treated patients is small. There is no programme for IFN treatment in the Czech Republic and no data is available for the other countries.

### HCV infection

Data on the epidemiology of HCV infection in Eastern European countries is scanty (2). Due to economical and technical reasons, the surveillance systems for HCV infection are not effective. Since 1993, HCV cases are registered in the Czech Republic and in Poland, but the number of registered cases is extremely small and does not reflect the scale of the problem. For example, in the first six months of 1997 in Poland, only 48 out of 1,328 new cases of hepatitis (3.6%) were due to HCV infection (9). This number is greatly underestimated and the Polish Society for Infectious Diseases estimates that the number of people infected with HCV in Poland may be as high as 400,000 (approx. 1% of the population). The data for 470 Polish antiHCV patients, show that the majority of them (73%) are infected with genotype 1b. Genotype 3a was detected in 12% of patients and 17% were infected with two genotypes (10). The results of IFN treatment in adults in Poland, are not different to the results reported in the European literature. The first experience in IFN treatment in children with HCV were discouraging and now they are treated only in controlled clinical trials.

### Conclusions

Eastern Europe is not a homogenous region regarding the situation in HBV infection. There are large differ-

ences among the countries in HBV epidemiology, transmission routes, prevention strategies and treatment approaches. The experience of Bulgaria and Poland shows that consistently implemented vaccination strategy is highly effective. In some countries, the vaccination must be accompanied by a change in hospital hygiene, an improvement in sterilisation processes, an increase in the number disposable equipment, and educational programmes. A large number of the population in Eastern Europe who are infected with HBV or HCV, are at risk of liver cirrhosis or HCC due to chronic HBV infection. The controlled system of IFN treatment for the infection in these patients has only been developed in Poland.

There is, presently, insufficient data on HCV infection in Eastern Europe, and the data available highly underestimates the problem as a whole.

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