

# MIGRATION, HEPATITIS B AND HEPATITIS C

**Manuel Carballo, Rowan Cody, Edward O'Reilly**  
**International Centre for Migration, Health and Development**



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## PREFACE

Viral hepatitis constitutes a global problem that has been neglected by national and international health policy makers alike. Today, despite the fact that it has become one of the most important burdens of disease, few countries have seen fit to take it up in the way it deserves from either a preventative or a treatment point of view. Viral hepatitis is nevertheless not uniformly distributed throughout the world and some regions and people are far more affected than others.

In a world in which human mobility is becoming easier and in which more people are already moving faster and further than ever before in history, the role played by migration in the spread of viral hepatitis merits special consideration and calls for policy and practice initiatives designed to respond to the emerging needs of countries and people.

This brief overview of the scope and magnitude of contemporary migration and its implications for hepatitis B and C has been prepared as a background paper for the Hepatitis B and C Summit Conference in Brussels, 14 and 15 October 2010. The authors wish to thank Dr Anna Paola Felici for her comments.

## 1. INTRODUCTION

Hepatitis B (HBV) and hepatitis C (HCV) have become two of the main causes worldwide of liver disease and Hepatocellular Carcinoma (Perz, Armstrong, Farrington, Hutin, & Bell, 2006; CDC, 2010), and as such have become major and possibly growing threats to global health. In terms of the number of people affected and the burden it represents for them, their families and the health care systems of the countries they live in, HBV and HCV are two of the world's most urgent challenges (CDC 2010). Relative to other communicable and non-communicable diseases, viral hepatitis has nevertheless remained neglected from both a policy and a program point of view in most countries of the EU region.

### 1.1 Not a new problem

Viral hepatitis is not by any means a new disease. As early as the 8<sup>th</sup> century Hippocrates had already proposed that it might be transmissible from person to person. By the latter part of the 19<sup>th</sup> century, a series of periodic outbreaks of jaundice had further convinced health scientists that it was viral and could spread through contaminated blood and skin piercing instruments, among other methods. By 1947, characterization of hepatitis into its A and B forms, the definition of hepatitis B surface antigen's (HBsAg) some twenty years later, had provided a solid basis to understanding the nature of hepatitis and its different transmission routes.

### 1.2 Distribution of the problem and migration

Just as with most other major infectious diseases, the global distribution of viral hepatitis varies significantly between countries and between regions of the world. Similarly, not all people have an equal risk of exposure to either HBV or HCV. There is nevertheless evidence that viral hepatitis is spreading and becoming a more global threat than previously. Among the many factors contributing to the changing epidemiology of viral hepatitis, the movement of people within and between countries is a potentially important one.

### 1.3 Migration in the EU

Migration into and between the countries that make up the European Union (EU) has always been a way in which people and countries have coped with difficult

conditions. At times of economic and political instability, people have tended to move within and especially out of their region of origin in search of a safe haven and a better life. Over the last two decades, the overall direction and pace of migration has changed, however, and for the first time in recorded history the EU region has become more of a receiver than an exporter of people. The range of countries sending people to the EU has also grown to include not only a wider spectrum of people and socio-cultural backgrounds, but diseases as well.

#### **1.4 Migration and disease Migration and disease**

In today's context of rapid global migration, there is a potential for any disease to be moved further and faster than was previously possible. These implications concerning the movement of HBV and HCV merit far more attention by countries and the international community than they have given the problem to date. This is especially important given that the scope and speed of migration is expected to grow in coming years.

## **2. A SILENT AND NEGLECTED DISEASE**

Despite the fact that viral hepatitis has become a global public health threat, both HBV and HCV have remained neglected relative to the attention given to HIV and other diseases. Some of the reasons for this may include:

### **2.1 Clinical problems of diagnosis and reporting**

Both HBV and HCV can be asymptomatic and progression to a life threatening status can be slow (Rantala & van de Laar, 2008). Today, as many as 40% of the individuals infected with HCV in Europe are thought to be unaware of their infection, and in Poland (and probably other countries), where the prevalence of HBV is thought to be high, as many as 90% of those affected by it are estimated to be unaware of their condition (Merkinaitė et al., 2008). Difficulties in diagnosing HCV in the liver (about half of those who are infected do not manifest elevated ALT activity) may also have limited public attention to the problem .

## **2.2 Lack of surveillance standards**

The fact that there are still no global surveillance and reporting system standards continues to be a factor in the lack of awareness about and attention to viral hepatitis (Rantala & van de Laar, 2008). Different countries and regions often use different parameters of measurement and there has not yet been any major attempt to develop national or international registries.

## **2.3 Stigma**

Stigma has been a major obstacle to the surveillance and reporting as well as early diagnosis and treatment of sexually transmitted diseases in general, and while it is not clear to what extent this has been the case with viral hepatitis, it may have contributed to the lack of openness surrounding it. In the case of people arriving from different cultural backgrounds this remains a potentially important theme.

## **2.4 Viral hepatitis and migration**

Although the implications of migration for the spread of infectious diseases have attracted considerable attention, interest in this area has thus far tended to focus primarily on TB, and more recently, HIV. There has been relatively little interest in viral hepatitis in the context of human mobility despite the fact that it is more infectious and is today responsible for greater morbidity and mortality.

# **3. MAGNITUDE OF VIRAL HEPATITIS PROBLEM**

Given the nature and pace of contemporary migration there is a growing capacity for viral hepatitis to be moved rapidly by people, or acquired by them, as they go from one part of the world to another.

## **3.1 Estimated size of viral hepatitis problem**

WHO estimates that about 2 billion people are living with viral hepatitis, and that around 350 million have a chronic form of the disease. Given the tendency for it to be under-diagnosed and under-reported, however, the true figure may be much higher. About 4.5 million people around the world are newly infected with HBV and/or HCV every year, and between 1-10% of adults and 30-90% of infected babies, become carriers, who are likely to develop serious liver diseases (Zanetti, Van



Damme, & Shouval, 2008) that account for around 620,000 deaths each year (Zanetti et al., 2008). In the case of HCV, about 85% of those infected also become chronic carriers (Merkinaitė et al., 2008) and between 15-25% of them go on to develop to life-threatening liver disease in the 30 or so years following infection (Mühlberger et al., 2009).

### **3.2 Infective nature of the virus**

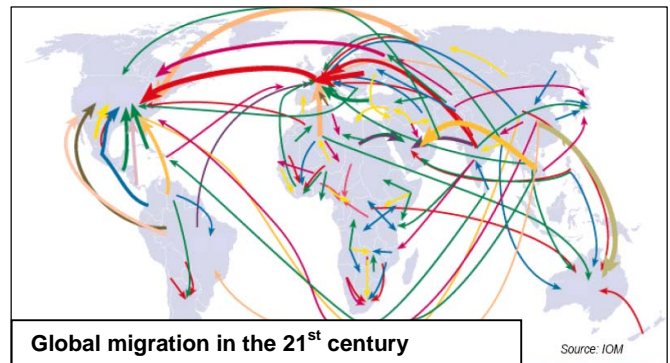
Compared to HIV, a disease that has caught the imagination of both the public and health planners and has inspired global interventions, HBV and HCV, which are essentially transmitted in the same way, are estimated to be 100 and 10 times more infectious respectively (Merkinaitė et al., 2008). The virus, moreover, is far more resilient than HIV and remains highly potent in dried blood or other body secretions outside the body at room temperature for much longer than HIV (Hollinger, *et. al.*, 2001, Robinson, 1995, Alter, 2006).

### **3.3 Routes of transmission**

Viral hepatitis is transmitted in the same way everywhere, but the strength of these modes varies considerably. In the countries that have medium to high HBV endemicity, the most common routes of transmission are mother-to-child at birth, percutaneous or via other contact with infected blood and body fluids, or sexual intercourse (Ganem 2001, Gitlin, 1997, Hollinger *et. al.*, 2001, Mahoney *et. al.*, 1999). HBV transmission in low endemicity countries is especially associated with injecting drug use (IDU), sexual contact and practices such as body piercing using unsterile equipment. In the case of countries with high to intermediate HCV endemicity, infection is most frequently associated with unclean injecting practices by injecting drug users and to a lesser extent, by health care providers (Alter, 2006). Thus in western European countries where transmission of HCV through contaminated blood has been significantly reduced, the prevalence of HCV among injecting drug users has been estimated to range from 15% to 90% (Rantala & van de Laar, 2008; Mühlberger et al., 2009).

## 4. EUROPEAN MIGRATION

Migration has always been an integral part of European development and most of what are now EU countries have historically benefitted from a mix of both out-and in-migration. In the late 19<sup>th</sup> and early 20<sup>th</sup> centuries when most European countries were still plagued by chronic unemployment and frequent conflicts, migration became an important safety valve and over 70 million people left Europe for New World countries such as the USA, Canada, Australia, Brazil and Argentina. Today the global migration scene has changed significantly and migration within and between developing countries has become as intense as the movement of people from developing countries to Europe and North America.



### 4.1 Changing direction of European migration

The dominant direction of European migration began to change with the end of WWII and the reconstruction of industrial countries in northern Europe. The urgent demand for manual labor in north countries was met by southern European countries such as Italy, Spain, Portugal, and Greece and such was the pace of this migration that between 1960 and 1975, at least two million Spaniards left to go to other European countries and another 1.5 million became seasonal agricultural laborers moving between countries such as France, Switzerland and the UK.

### 4.2 New European needs and new migrants

This pattern of post WWII European migration again changed in the 1980's when the establishment of the European Community, including Greece, Italy, Portugal and Spain began to produce dramatic improvement in standards of living and in doing so reduced the need for Europeans to leave to seek work elsewhere. The change in migration need, coincided with unexpectedly rapid falls in European birth rates and a growing longevity of older people. Together, these phenomena gave rise to the growth of new service industries and a demand for "new blood" that could only be

met through the arrival of people from outside the EU, and for the first time in history, Europe became a pole of attraction for people as opposed to a sender of people. Migration from former colonies and then a wider spectrum of countries quickly took hold and created a pattern of migration from developing countries and from countries in transition.

#### **4.3 Migration and migrants as controversial**

Despite its proven historical importance for both sending and receiving countries, migration has become controversial and at times conflictive (G.F. Gensini et al., 2004). Today, when the economic and social benefits of migration into the EU have been well documented, and when overall net EU migration is still relatively low, there is still a tendency for the in-migration of people from outside the EU region to be questioned and at times rejected. One of the implications of this questioning, if not rejection, of migration and migrants has been that European countries have on the whole been caught unprepared to respond to the public health challenges that are inevitably associated with the arrival of large numbers of people from disparate countries and with different health experiences.

## **5. TYPES OF MIGRATION AND MIGRANTS**

The term migration covers a wide range of movement, the motives for it and the conditions under which it takes place. It is nevertheless important to keep in mind that not all migrants come from the same type of background, nor do all migrants move for the same reasons and under the same circumstances. The vulnerability of migrants from different backgrounds to communicable and non-communicable diseases is likely to be different and so is their capacity to respond to their health needs and participate in national public health programs. Much of the literature on viral hepatitis (and health/disease in general) and migration does not address these qualitative differences. The most important forms of migration from the perspective of the numbers of people involved include:

### **5.1 Economic migration**

Poverty and the desire for a better life continue to be among the most important factors motivating people to move. The fact that both real and relative poverty is becoming more pronounced, and that the gap between rich and poor countries is growing, this type of migration is likely to continue. The range of people moving for economic reasons is broad, and includes highly skilled migrants from “good” social and economic backgrounds. However, the largest portion of migrants is, and will continue to be, made up of people fleeing disadvantaged socioeconomic and environmental backgrounds, where the prevalence of HBV and HCV, as well as many other communicable diseases, is high and certainly higher than in most EU countries.

### **5.2 Rural to urban migration**

Although rural to urban migration is rarely mentioned, it is probably the single most important form of migration in developing and rapidly industrializing countries. In China, up to 3.5 million people are estimated to move between rural areas and cities every month, and although these same types of figures are lower in other countries than in China, they are nevertheless proportionately very high. When looking at communicable diseases for which data are available, such as HIV and TB, it is clear that rural-to-urban migration presents many of the same challenges as international migration. Those who move tend to be from poor backgrounds and move into poor, crowded social and physical environments that are replete with opportunities for exposure to a variety of infectious diseases.

### **5.3 Irregular or undocumented migration**

Social and political attitudes to migration have become more stringent in recent years, and countries have introduced measures designed to make in-migration (even for short periods) more difficult. Contrary to many expectations, the result has not been a diminution in the number of people moving, but rather a marked increase in the number of people moving “irregularly” across borders,



deliberately unseen by national and local authorities, including those responsible for public health. Although it is difficult to define exactly how many people are involved in this irregular migration, the number is thought to be growing and possibly exceeding the number of people moving officially and in a recorded fashion (Carballo et al., 2004). From the perspective of public health and viral hepatitis prevention and control, irregular migrants present difficult challenges. Not only do they remain unseen and benignly neglected by local authorities, but they also remain largely unreached by health initiatives. Their conditions of life, which are often characterized by overcrowded and promiscuous housing, poor hygiene, frequent mobility within and between cities, marginalization from health care systems and a reluctance/fear of being identified by judicial authorities, make the task of reaching them with screening, early diagnosis and treatment difficult.

#### **5.4 Smuggled migration**

Some irregular migrants travel unaided, using their own means to cross borders, but many others pay to be smuggled into countries of final destination. While many pay in cash prior to relocation, others arrange to pay over time once they are re-settled in countries. Women who are smuggled are at risk of being asked to provide sexual favors or to work in sex trade much the same way as trafficked women are (see below). Their rights to complain and/or bring charges against smugglers are constrained by the fear of being picked up by police and sent back to countries of origin. Their access to, and use of, health care services is limited by fear of being reported to legal authorities and also by the fact that many are ignorant of what services exist and how to use them, including in the context of sexually transmitted infections.

#### **5.5 Trafficked migration**

The last twenty years have seen an major increase in trafficking, especially of women. Estimates of the numbers involved in this modern form of slavery vary considerably but the European Commission has referred to 120,000 women and children trafficked into Western Europe every year (Salt and Hogarth 2000) and the International Organization for Migration has put the global number of trafficked people at over 12 million (IOM, 2009). Most of the women who are trafficked are

forced into illicit sex work that is poorly supervised in terms of health. Trafficked women are usually moved frequently between cities in order to prevent them developing social networks and their options of seeking or receiving health care for sexually transmitted infections as well as other health problems are few and of little interest to their managers. The risk of sexually-acquired viral hepatitis among trafficked women is not known, but deserves to be seen as a potentially major problem.

### **5.6 Political migration**

Conflicts remain a major cause of forced migration and the last twenty years have seen the number of refugees (people forced to flee across borders) and internally displaced people (people who have to flee but remain within their national borders) come to constitute a significant proportion of all people “on-the-move” around the world. Most refugees move from, and to, other developing countries, but a significant proportion of them eventually make their way to EU countries.



Since 1951, the rights of refugees, including the right to health care, have been protected by the International Convention on the Rights of Refugees, which in 2002 was ratified by 141 countries. The rights of IDPs, however, including their health, essentially remains the responsibility of their own governments and is often neglected, if not further abused once they flee. Many IDPs as well as refugees go on to leave their countries of origin and make their way to third countries, including EU countries. In the case of both refugees and IDPs, the social and environmental conditions in which most of them are forced to live, even temporarily, tend to be poor and conducive to the spread of infectious diseases. Meanwhile, few if any, humanitarian relief programs, including those managed by the UN, have taken up viral hepatitis as a theme for action.

### **5.7 Environmental migration**

Environmental degradation and disasters are an important and growing force in the displacement of people, and the number of people involved has been steadily

growing. Global warming, and the many socio-environmental changes that are predicted to come in its wake, are expected to displace even more people in the coming years (Carballo, 2010). Some estimates have referred to as many as two hundred million people being forced to move as a result of rising sea levels, flooding and coastal erosion in some regions, and chronic, worsening drought in others. Most of the burden of climate change will be borne by developing countries where the prevalence of viral hepatitis and other communicable diseases has traditionally remained high, and where national health care systems continue to be weak. For many of the people who will be forced to move, there will be few economic opportunities and most are expected to move into settings of poverty where the exposure to viral hepatitis will continue to be high and where for girls and women sex work will probably become one of the survival options (Carballo, 2010).

### **5.8 Educational migration**

By the end of the 20<sup>th</sup> century the educational sector had become an international multi-billion dollar industry and a major driver of human mobility (Carballo et al. 1997; DiCerbo, 2001). Usually not considered as “migrants”, people moving to pursue educational careers tend to move from developing to developed countries and share many of the same health and health care challenges with other migrants.

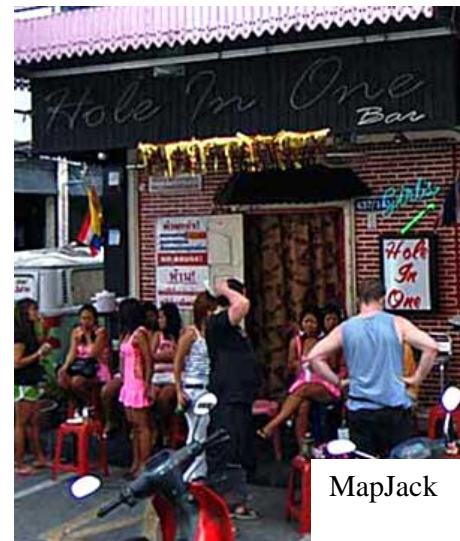
### **5.9 Circular migration**

Improved transportation has made it increasingly possible for people to be given very short-term work contracts. This together with the seasonal nature of some types of migrant work (such as in agriculture), has made circular migration in and out of the EU increasingly common. Within this “circular system”, migrants come and go for periods of months, creating a constant flow of people moving between different socio-ecological and health zones. Circular migrants constitute a growing body of people about whom little is known and whose health and health care is difficult to track. They are often undeclared by employers and the temporary nature of their work makes it easy for employers not to provide health coverage. Their living conditions meanwhile, are often poor and health-risky.



### 5.10 Tourist migration

The last three decades have seen a rapid and still accelerating growth in tourism, that is to say people travelling with the intention of staying "in places outside their usual environment for more than twenty-four (24) hours and not more than one consecutive year" (WTO 1995). They move for purposes of leisure and business rather than work. In 2008, there were over 922 million recorded international tourist movements and the prediction is that by 2020 the global number of tourists will exceed 1.6 billion people (WTO 2009). The World Tourism Organization (WTO) estimates that in 2004 about 461 million tourists visited HBV-endemic countries. Given the changing nature of tourism and the fact that people are not only moving further but also into new more intimate interaction with local and disparate groups of people, the risk of HBV infection is being heightened (El Sayed et al, 1996) and even though a recent Dutch study concluded that the risk of short-term tourists acquiring HBV is no higher than it is for people who do not travel (Sunder et al 2009), the fact is that sex tourism is growing (Michalowski, 2001; Leidholdt, 2005) and bringing people from low endemic countries into contact with sex workers and others in countries with far higher rates of both HBV and HCV. Sex tourism may thus constitute a vital part of the viral hepatitis movement chain.



## 6. DEFINING THE CHALLENGE

Despite the social, economic and health importance of migration, there are few precise figures on the number of people moving in and out of countries, or the conditions under which they are moving.

### 6.1 Numbers involved globally

Official UN figures (UN 2005; IOM 2005) suggest that upwards of 200 million people can be defined as "living outside their place of birth," but this does not take into account the massive number of people moving from rural to urban areas, refugees and the growing number of IDPs, the people moving irregularly across



borders, the growth of regular economically-motivated migrants moving for long periods of time between countries, the people being trafficked and the circular migrants people moving to and from countries for shorter periods of time. If all these people are included, the true number of people on the move who have the capacity to change the global epidemiology of viral hepatitis, as well as other communicable and non-communicable diseases, could be at least and is probably far more than one billion (UNAIDS 2008).

### **6.2 Numbers and fluidity of movement in the EU**

Just as with overall global estimates, it is difficult to say with precision how many people are moving into and within the EU region or for what periods of time. The movement of people, however, is growing in size and scope. Eurostat reports suggest that in 2005, the EU had a net gain of 1.8 million people (Eurostat 2006), and this does not include people entering irregularly and possibly doubling the number of recorded newcomers. The EU Blue Card system, designed to facilitate the movement of skilled third country workers to enter, work and live in partner countries, will gradually facilitate even further movement between EU countries, some of which have very different public health profiles. In some countries, such as the UK, the 565,000 new people who arrived in 2005 primarily from Asia and Africa were offset by approximately 380,000 people who left the UK to go to other countries such as Spain and France, both as retirees and workers (ICMHD, 2009), but in general more people are arriving than leaving the EU. While it is difficult to say exactly how these movements are affecting the overall health profiles of countries or national health care systems, there is no doubt that health care needs are changing (Carballo, Divino and Zeric, 1997).

### **6.3 Proportion of domestic populations**

The extent to which the arrival of people from other parts of the Europe and the larger world is changing the demographic structure of receiving countries varies considerably. The demographic impact of newcomers in small countries such as Luxembourg and Lichtenstein has been more marked than in larger countries, but in many parts of the EU and especially in the western part of Europe, foreign-born people constitute a relatively large proportion of the total population of countries.

In Luxembourg and Liechtenstein, migrants now constitute about a third of the total population, and in Switzerland (EFTA country), they make up 23%

In Austria and Ireland, they represent about 14% of the population and in Germany, Sweden, Spain, France and the Netherlands about 10% and 12% of the population (ICMHD 2009).

#### 6.4 Diversity and distribution

The range of countries migrants arrive from can be an important indicator of their health profiles people and what the implications of this may be for the health system of host countries. In Italy, where about 5 million migrants are officially known to have arrived in recent years, and where the number of irregular migrants may be almost as

Country	Percentages of migrants in selected European countries
<b>Liechtenstein</b>	33%
<b>Luxembourg</b>	33%
<b>Switzerland</b>	25%
<b>Ukraine</b>	14.7%
<b>Austria</b>	14.0%
<b>Ireland</b>	14.0%
<b>Germany</b>	12.3%
<b>The Netherlands</b>	10-12%
<b>Spain</b>	10-12%
<b>Sweden</b>	10-12%
<b>France</b>	10.0%
<b>United Kingdom</b>	9.0%
<b>Russia</b>	8.5%
ICMHD 2009	

high, the diversity of backgrounds has continued to grow. Asian migrants have become increasingly prominent and now exceed migrants from North Africa. Even so they only represent about 16% of the total migrant body which includes as many as 2 million Romanians, as well as newcomers from Ukraine, Poland, Moldova, Macedonia, Serbia, Bulgaria, former East Germany, Bosnia, Russia, Croatia, Slovakia, and Hungary all of whom now make up approximately 54% of the migrant population in Italy. People from North and Sub Saharan Africa constitute an estimated 22% of migrants and people from Latin America about 8.1% (Eurostat 2007). As in other EU countries, most (87%) have settled in parts of the country where there is a labor demand and a relatively good absorbability potential.

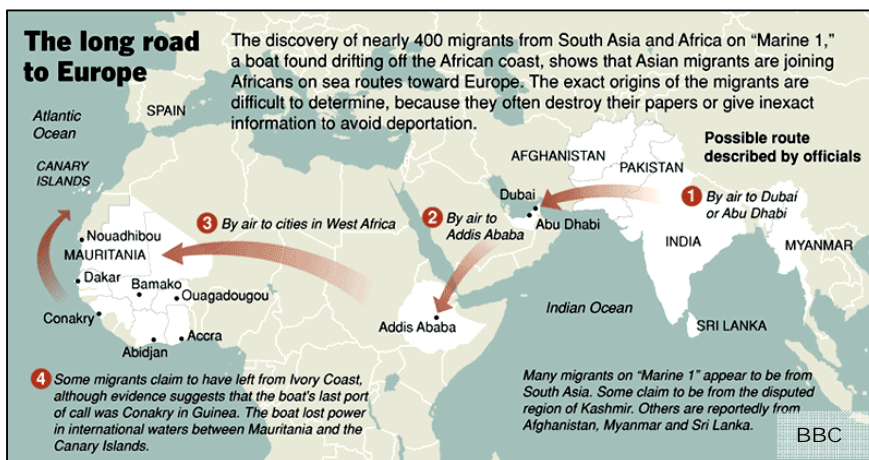
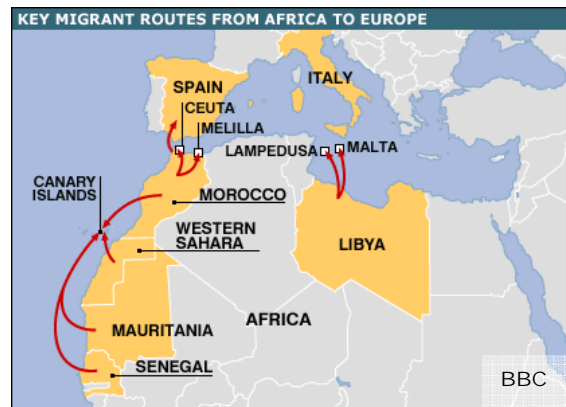
#### 6.5 How many more people are likely to arrive in the EU

Migration is essentially a supply and demand phenomenon and to date migration into the EU has reflected the growing need for new people to compensate for dramatically

falling birth rates, rapidly aging populations and increasingly fragile social security systems. The UN estimates that in order to keep economic and demographic support ratios at their 1995 level, as many as 15 times more migrants than arrived in the 1990s will be required (UN 2001). Thus irrespective of whether these figures are attainable or politically acceptable, the fact is that the EU will inevitably see migration continue to grow for many years to come.

### 6.6 Where will they come from and how will they get there

With time the backgrounds of migrants can be expected to become increasingly diverse as the felt need to leave countries changes and as opportunities for transportation improve. Until the middle of the 20<sup>th</sup> century, when most European migrants went to the USA, Canada, Australia the routes they took were relatively direct and involved few, if any, stopovers. In the context of contemporary migration this has changed, and especially in the case of people who move irregularly, the process is becoming longer, more circuitous and involving many stopovers whose duration can last months or even years. During these stopovers, migrants work and live in poor social and environmental conditions that are replete with risks for new or aggravated infections such as viral hepatitis.

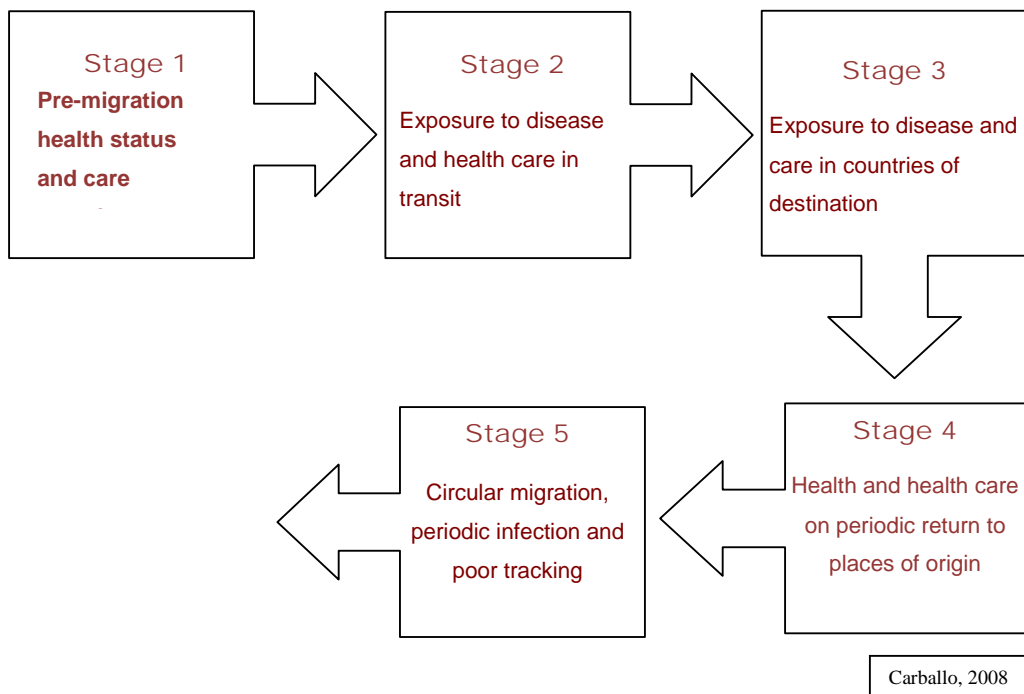


## 7. MIGRATION AND HEALTH

Migration is a major “life event” that can have difficult implications for mental and physical health, health promotion and protection (Mirdal, 1985; Selten et al., 1994; Liebkind, 1996). Migration involves uprooting, leaving family and close friends behind without knowing if and when they will be seen again. In many cases it means moving to countries that migrants know little about and then having to confront chronic job insecurity, complex legal requirements and coping with new languages, cultures and health care systems.

### 7.1 Migration and health as a multi-stage process

Migration is a dynamic, multi-stage process that, from the perspective of health and health care, presents both challenges and opportunities for when and how to intervene.



**7.1.1** In Stage 1 the medical profiles of people are established and their “health prints” are formed by prevailing social, economic and environmental conditions where they are brought up and/or live in. If people move, they inevitably take these “health prints” with them to destination countries. Those moving from countries

with a high prevalence of viral hepatitis, and who have been at “high” risk of acquiring hepatitis in childhood, are more likely to carry it on to their next destination than people who brought up in low prevalence environments.

**7.1.2** In Stage 2, which encompasses the transit of migrants (and tourists) through other countries, a further burden of viral hepatitis can be imposed if the countries they move through have a high prevalence of the disease. In recent years the routes taken by some migrants have become long, and the socio-health conditions in which they live during the process are poor. Their exposure to infectious diseases such viral hepatitis will be proportionate to the time they stay, and the extent to which they interact with local communities. This is true of tourists as well as migrants.

**7.1.3** In Stage 3, which begins once migrants arrive in the countries of final destination, the risk of exposure to diseases of poverty, including viral hepatitis, can continue to be high. For no matter how wealthy these countries may be, the reality is that the living and working situations many migrants move into are often poor. Low-skilled, low-income migrants (especially irregular ones), tend to move or be moved into low-income, overcrowded locations (de Jong & Wesenbeek, 1997; Carballo et al 1997; Carballo et al 2004) and they often find themselves doing the “dirty” jobs that nationals and previous migrants no longer want to do, and which carry an increased risk of disease exposure (Camargo et al., 1994; Bollini & Siem, 1995; Carballo & Siem, 1996).

**7.1.4** In Stage 4, in which migrants return home for holiday and to visit family, the potential for exposure to viral hepatitis can be especially serious for young children who have not been immunized against HBV, or who have not developed a natural immunity. Overcrowding, physical promiscuity and poor environmental conditions of households and other facilities they stay in are additional factors that can add to the increased risk of infection.

**7.1.5** In Stage 5, which involves the on-going circular migration of workers, the constant opportunity for exposure to disease in both countries of origin and host communities is equaled by the inability of health systems to reach migrants or for

migrants to ever “get to know” those health systems and benefit from any health information and interventions that may be available.

## 8. MIGRATION AND CULTURE OF HEALTH CARE

In addition to their “health prints”, migrants also carry with them a set of cultural attitudes and beliefs they have developed or adopted about health, prevention of disease and health care.

### 8.1 Cultural adaption to poor health

The attitudes and beliefs migrants from poor countries reflect the dominant social and health care situations in which they lived. In settings where care is limited and where morbidity and mortality is high, people tend to develop attitudes that assign the reasons for illness to fate, and in these situations they tend to believe that little can be done to either avert or cure certain types of illness.

### 8.2 Impact of fatalism

Public health responses to the needs of migrants can be seriously impaired unless these beliefs and attitudes are taken into account, and even then they are not easily overcome. Thus even if and when migrants do have access to a quality health care system in the countries they move to, they are not always able to use these services effectively or efficiently if they often continue to feel that little can be done to avert what fate has decided for them. In settings where host health care providers are not pro-active in reaching out to migrants these ideas, no matter how ill-founded can continue to dominate their health actions and limit their capacity to benefit from health promotion/protection activities such as HBV immunization.

## 9. MIGRATION AND INFECTIOUS DISEASES

Throughout history, migration and migrants have been met with a suspicion and fear that they carry with them infectious diseases. The Black Plague was associated with the movement of travelers, and city states and countries quickly began to enact laws governing the entry (and rejection) of people thought to be at risk (Sehdev, 2002; G.F. Gensini et al., 2004). The movement of people between countries by ship led to even greater fears about the capacity of travelers to introduce different types of

diseases and gave rise to the quarantine regulations that remain operative in many parts of the world today (Ries, 2004). Quarantine regulations have been most frequently applied to diseases such as TB, HIV, and more recently, SARS, but not viral hepatitis.

### **9.1 Changing patterns of infectious diseases**

The 20<sup>th</sup> century saw significant changes in the prevention and management of infectious diseases (CDC, 1999). This progress, however, did not come at the same pace everywhere, and in some parts of Europe high rates of diseases such as hepatitis A persisted until relatively recently. In developing countries and in countries in transition, where the investment in public health has been limited and where poverty has remained widespread, infectious diseases have continued to spread. Many of these countries are the countries from which people are now moving to come to the EU. This is not to say that the arrival of these people will axiomatically bring with it new infections, but rather that the global situation is changing to a degree that it is no longer possible to think of these diseases as being restricted to particular parts of the world.

### **9.2 Healthy migrants**

Most migrants tend to be young (and getting younger), and on the whole they are the healthy “survivors” of settings otherwise characterized by high rates of infant and young child mortality. In the case of viral hepatitis a significant proportion will have been exposed in infancy and developed immunity. Others will have become carriers but will otherwise be healthy and capable of working without knowing they are infected and without attracting any undue attention.

## **10. MIGRATION AND VIRAL HEPATITIS**

While fears surrounding the links between human mobility and the spread of diseases such as TB have long been around, concern has only now begun to be focused on viral hepatitis and its potential mobility. Given that almost 50% of the world’s population lives in areas of high chronic HBV prevalence (Lavanchy, 2004) and that global migration is increasingly involving people from these areas, this attention is long overdue.

### 10.1 Variability of distribution

As more and better data becomes available, it is increasingly clear that there are major geo-political variations in the distribution of HBV and HCV. Three main prevalence zones of chronic HBV infection: high (>8%), intermediate (2-8%), and low (<2%) can be discerned (Mahoney *et. al*, 1999, Viral Hepatitis Prevention Board, 1998). Thus, while less than 1% of the population of Western Europe and North America is estimated to be chronically infected with HBV, the disease is highly endemic in China and other parts of Asia, where up to 10% of the adult population is thought to be chronically infected. In these two regions, liver cancer associated with HBV has become one of the three leading causes of death from cancer in men, and a major cause of cancer in women.

Region of the world or country from which	% of population estimated positive to:		Route of transmission	
	<u>HBsAg</u>	<u>anti-HBs</u>	Neonatal	Childhood
North, West, and Central Europe, N. America, Australia	0.2-0.5	4-6	Rare	infrequent
Eastern Europe, the Mediterranean, Russian Federation, SW Asia, Central and America	2-7	20-55	frequent	frequent
Parts of China, South East Asia, Asia Tropical Africa	8-20	70-95	very frequent	very frequent

From: Zuckerman AJ. Hepatitis Viruses. In: Baron S, eds. *Medical Microbiology*, 4th ed. Galveston, TX, The University of Texas Medical Branch at Galveston, 1996:849-863,<sup>52</sup> with permission.



## 10.2 High prevalence regions

High HBV prevalence areas include much of Southeast Asia and the Pacific Basin (excluding Japan, Australia, and New Zealand), Sub-Saharan Africa, the Amazon Basin, parts of the Middle East, the Central Asian Republics, and a number of countries in Eastern Europe. In these areas, up to 90% of the population is estimated to be exposed to HBV before the age of 40, and 8-20% of these people become HBV carriers (Hollinger, *et al.*, 2004). In countries such as China, Senegal, and Thailand, HBV infection rates are also high in infants and young children. Conversely, in Panama, New Guinea, the Solomon Islands, Greenland, and in specific native populations, such as Alaskan Indians, HBV infection rates among infants are relatively low, but then increase rapidly in older children (Hollinger, *e. al.*, 2004).

## 10.3 Low prevalence regions

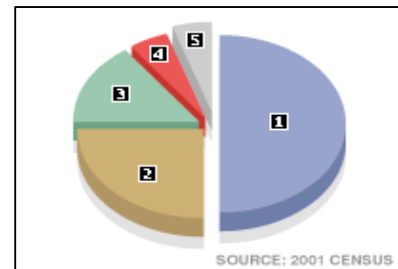
Low HBV endemic areas include most of North America, Western and Northern Europe, Australia, and parts of South America, where less than 20% of the population is infected and less than 2% are carriers (Hollinger *et. al.*, 2004, Mahoney *et.al*, 1999).

## 10.4 Intermediate level regions

Other parts of the world fall into an intermediate range in which between 2-8% of a given population can be expected to be HBV carriers.

## 10.5 Migration from high prevalence regions

Much of migration into EU countries has involved and continues to involve the movement of people from parts of the world that have high or intermediate levels of HBV and HCV. Some of these parts of the world, such as Asia, have become more “mobile” than others and have become prominent “senders” of people to European and North American countries. In the UK, for example, where ethnic minorities now constitute about 6% of the total population, post WWII in-migration primarily involved men from Pakistan, Bangladesh and India, all of which were then and



Ethnic profile of the UK

still are high HBV-prevalence areas. This was followed by a relatively massive migration from East and Southern Africa and the Caribbean, which are also

1. Asian: 50% (Indian, Pakistani and Bangladeshi 1,500,000)
2. Black: 25% (African and Caribbean) approximately 875,000
3. Mixed: 15%
4. Chinese: 5%
5. Other: 5%

considered high to intermediate viral hepatitis areas. Colonial links have also tended to define migration into Belgium, France, Spain and Portugal. Today in Belgium where about 22% of the overall population is of foreign background, in Antwerp 56% of all children are of North and Central African origin. Similarly in France 4-5 million people can trace their roots to former colonies in Africa and the West Indies. Only more recently has it involved large numbers of people from North and Sub Saharan Africa, Asia and Eastern Europe.

### **10.6 Migration and injecting drug use**

For a variety of reasons, migrants and their offspring are often more vulnerable to exposure to drugs (including alcohol and tobacco) than other people of similar socio-economic background. Coping with cultural and socio-economic demands as well as marginal employment and low salaries is not easy and in the case of children of migrants there is the added load of feeling unwanted and different. This has not been lost on drug dealers who target young migrants and children of migrants looking for a “way out” or wanting to make a statement of rejection of both their parents and the host society (Carballo, Morival and Zeric 1998). In the five EU cities that were studied, over 61% of those studied said they had been approached by drug dealers (in Belgium and France the proportions were 79% and 77%), and overall, women were twice as likely as men to have traded sex for drugs (ibid). An association between injecting drug use and HIV in mobile populations has been highlighted by a number of studies (Mayer 2000, Beyrer et al, 2000; Wood et al, 2000; Deren et al 2003; Lagarde et al, 2003; Organista et al, 2004; Parrado et al 2004) and in some cases it has become evident that injecting drug practices in migrant groups frequently involves more sharing and poor cleaning of equipment than in other groups of similar age and socio-economic background (Freeman et al 1999; Pashane and Fisher 2000).

### **10.7 Migration and sex work**

A recent report indicates that as many as 47% of all female sex workers in Europe are migrants, 47% of all transgender sex workers are migrants, and 32% of all male sex workers are also migrants. This “migrantization” of sex work, which has potential implications for viral hepatitis, and can be partially explained by the growing trafficking industry primarily from Eastern Europe and Central Asia, and in general

the low social status and illegal status of many migrants from all over the world. The economic and legal fragility of many migrants, especially but not only women, whose chances of other work are limited lends itself easily to sexual abuse, even in the domestic work place (Carballo et al 2004). Forcing women and men who find themselves in situations of legal and economic fragility into sex work is also facilitated by the fact that in many cases the women concerned hope that more regular relationships will emerge through their work.

## 11. MIGRATION AND PATTERNS OF HBV AND HVC

As far as demonstrated links between migration, migrants and viral hepatitis are concerned, it is important to note that the data are variable. Studies on the dynamics of migration and health have tended to be small and often not representative of larger populations. Some have used different definitions of migrants; others have used very different sampling techniques and study methods. In some instances, questions have simply been added to other surveys that were never designed to address health-related issues among migrants. The implications of all of this for understanding the nexus of migration and HBV and HCV health are considerable, but some picture of the emerging situation can nevertheless be discerned. Some of the more significant data found in our review are presented below. For each country there is also an indication of what is known to be the prevalence of HBV and HCV in the host country and what is known about the main countries of migrant origin and the patterns of HBV and HCV in those countries.

### **Belgium**

**HBV prevalence:** 0.66% in the Flanders population (Quoilin, 2007)

**HCV prevalence:** 0.12% in the Flanders population (Quoilin, 2007)

The prevalence of HBV and HCV in the population of Flanders is estimated to be 0.66% and 0.12% respectively (Quoilin, 2007), and the main countries of migrant origin are Italy, France and the Netherlands (Eurostat, 2008). The estimated prevalence of HBV in these latter three countries is 0.68% in France (Balinska, 2008); 0.91% in Italy (Da Villa et al., 2006) with 2% in the North and 4% in the South (Fabris et al., 2008); and between 0.35-0.53% in the Netherlands (Marschall et

al., 2008). In the case of HCV, France has an estimated prevalence of 1.3% (Pradat et al., 2008) and the Netherlands a prevalence of 0.0169% in blood donors (Slavenburg, 2008). It should nevertheless be borne in mind that Belgium also hosts smaller but nevertheless significant migrant populations from Sub Saharan Africa and Asia where the prevalence of HBV and HCV is much higher than in the three main migrant-origin countries.

**Main countries of migrant origin:** Italy, France, Netherlands (Eurostat 2008)

**HBV prevalence in countries of origin:** Italy 1.5% (Tafari et al., 2010); France 0.68% (Balinska, 2008); the Netherlands 0.35-0.53% (Marschall et al., 2008)

**HCV prevalence in countries of origin:** Italy 2-4% (Fabris et al., 2008); France 1.3% (Pradat et al., 2008); The Netherlands 0.0169% in blood donors (Slavenburg, 2008)

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## Denmark

**HBV prevalence:** 0.03% in the general population (Cowan, 2005)

**HCV prevalence:** 0.3% in the general population (Omland et al., 2010)

A study of children and employees in day-care centers that had a high proportion of migrant children (55% non-Scandinavian origin) found only one HBV case, and concluded that in general HBV prevalence in pre-school children in Denmark is low even among migrants from high endemic areas (Fisker, 2002). Another study nevertheless noted that while declines in the prevalence of HBsAg carriers (from 0.15 to 0.03%) as a result of vaccination programs had not been affected by HBsAg carriers from abroad, the effect of migration on the incidence of acute HBV infections should be taken into account in planning all vaccination strategies (Gjørup, 2003). It also noted that acute HBV infection in children often passes unnoticed because it is subclinical and that notification of acute HBV remains incomplete in Denmark, possibly even more so in migrant groups. Studies of HBsAg in migrants between 1998 and 2002 that found prevalence of 0.6% in children and 2.6% in pregnant women similarly concluded that the prevalence of HBV in migrants was not changing the overall profile of HBV in the general population (Cowan, 2005).

**Main countries of migrant origin:** Turkey, Iraq, Germany (Eurostat 2008)

**HBV prevalence in countries of origin:** Turkey 4-8% (Gurol, 2006); Iraq 2.8% (Omer, 2004); Germany 0.2-0.32% (Wiegand et al., 2009)

**HCV prevalence in countries of origin:** Turkey 1-4% (Gurol, 2006); Iraq 0.5% (Travel Medicine, 2008); Germany= 0.16- 0.21% (Wiegand et al., 2009)

### France

**HBV prevalence:** 0.68% in the general population (2008, Balinska)

**HCV prevalence:** 1.3% in the general population (2008, Pradat et al.)

In France, one study found that pregnant migrant women had significantly higher HBV rates of HBV than pregnant “national” women, and those with a West Indian, South East Asian and Sub Saharan African origin were especially at risk of being HBV carriers (Denis, 2004). Similar findings were reported for HCV in pregnant women (Roudot-Thoraval, 1992). Children of migrants of North African (Algeria, Morocco, Tunisia) origin also appear to be placed at high risk of acquiring HBV and HCV. This is due primarily to visits to the countries of parents’ origin, where a mix of poor hygienic conditions and high prevalence of viral hepatitis means that children who have not been previously immunized, or developed immunity, are especially vulnerable (Siriez, Vitoux, Holvoet, & Bourrat, 2008).

**Main countries of migrant origin:** Portugal, Algeria, Morocco (Eurostat 2008)

**HBV prevalence in countries of origin:** Portugal 7.3% (Távora-Tavira, 2007); Algeria 4-7% (Travel Medicine, 2008); Morocco 6% (Travel Medicine, 2008)

**HCV prevalence in countries of origin:** Portugal 0.5% in the general population (Travel Medicine, 2008); Algeria 0.5% (Travel Medicine, 2008); Morocco 1.1% (Travel Medicine, 2008)

### Germany

**HBV prevalence:** 0.2- 0.32% (Wiegand et al., 2009)

**HCV prevalence:** 0.16- 0.21%

In Germany, where 84% of adult migrants come from countries with intermediate and high carrier rates of HBV, a university hospital study of pregnant women reported a prevalence of 8% HBeAg-positivity (Malamitsi-Puchner et al. 1996).

Additionally, another more recent study, reported that 7.5% of all HBsAg-positive pregnant women from Albania were also positive for HBeAg (Knor et al., 2008). In 2004, it was estimated that there were 503,040 HBV carriers in Germany, and that while migrants only made up 13% of the population, people with a migrant background accounted for 42% of these carriers (Marschall, 2005). A particularly high risk of chronic infection has been found in Ethnic Germans returning from former Soviet Union countries, and in general migrants of all origins were estimated to have a 4.3 times higher risk than “nationals” of developing chronic infection (Marschall et al., 2005). More recently, high rates of both HBV and HCV-related mortality and cancer have been reported in migrants originating from Former Soviet Union countries where both these diseases are common, and where infection in childhood is common (Ott, Paltiel, Winkler, & Becher, 2008). The impact of migration on HBV among IDUs and people attending detoxification centers is also evident. Over 54% of Ethnic Germans and 45% of people of Turkish origin showed evidence of previous HBV infection, and 62% of Turkish patients were also found to have HCV infection (Reimer et al., 2007). Similarly, a study of young offender’s in prison found significantly higher rates of HCV markers in young migrants than in native Germans (Meyer et al., 2007). A concern is that HBV vaccination is not covered by the national health insurance, and migrants or low-income groups may not be covered (Ringwald et al., 2006).

**Main countries of migrant origin:** Turkey, Italy, Poland (Eurostat, 2008)

**HBV prevalence in countries of origin:** Turkey 4-8% (Gurol, 2006); 1.5% (Tafari et al., 2010); Poland 1.0-1.5% (ECDC, 2010), 0.2-1.25% (CDC, 2008)

**HCV prevalence in countries of origin:** Turkey 1-4% (Gurol, 2006); Italy 2-4% in South (Fabris et al., 2008); Poland= 1.4% (Mazurek, 2002)

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## **Greece**

**HBV prevalence:** varies from 2-5% (Zacharakis et al., 2009)

**HCV prevalence:** 1-2% (Manesis, 2009) and 2-4% (ECDC, 2010)

In Greece, where HBV childhood vaccination programs have brought about major reductions in infection, a study of Albanian refugees in Southeastern Europe, including Greece, reported high (12%) rates of HBV and concluded that this could

present a threat for the general population (Katsanos et al, 2004). People coming from the Former Soviet Union countries have been highlighted as being at greater risk for HBV than the general population and other migrants (Elefsiniotis et al., 2009). A study of pregnant women found an HbsAg prevalence rate of 12% among Albanian women and 2.1% among women from other Eastern European countries, together with low (32.5%) vaccination-induced protection rates (Elefsiniotis et al., 2009). Other studies have referred to disproportionately high numbers of foreign-born people requiring treatment for liver diseases in addition to having positive markers for both HBV and HCV (Giannousis et al., 2010). Studies have also found an increased HBV and HCV burden linked to Kurds and people arriving from Albania and Former Soviet Union countries (Raptopoulou et al., 2009). The prevalence of HCV on the other hand seems to be relatively low, but extended epidemiological surveys are needed to provide valid results (Roussos, 2003). A recent retrospective study of viral hepatitis concluded that the implications of migration from countries with high rates of HCV and HBV have not yet been well enough studied (G. V. Papatheodoridis et al., 2009).

**Main countries of migrant origin:** Romania, Albania, Morocco (Eurostat, 2008)

**HBV prevalence in countries of origin:** Romania 6% (ECDC, 2009); Albania 9.5% (Resuli, 2009); Morocco 6% (Travel Medicine, 2008)

**HCV prevalence in countries of origin:** Romania 4.9% (Tiribelli, 2003); Albania 9.5% (Resuli, 2005); Morocco 1.1% (Travel Medicine, 2008)

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### **Hungary**

**HBV prevalence:** < 1% (Gyarmathy, Ujhelyi, and Neaigus, 2009)

**HCV prevalence:** < 1% (Gyarmathy, Ujhelyi, and Neaigus, 2009)

In Central and Eastern Europe, where the Roma constitute about 5-10% of the population their high mobility and mobile group that shares many of the social and living characteristics of migrants. A study of the Roma in Budapest, Hungary found they were less likely to have been immunized against HBV than people in the general population, were more likely to be using injecting drugs, and more likely to have significantly higher rates of HBV and HCV infection. The social marginalization of the Roma, their unhygienic living conditions, poor access to health care services, and

low levels of education were highlighted as possible factors in their elevated HBV and HCV rates (Gyarmathy, Ujhelyi, & Neaigus, 2008).

**Main countries of migrant origin:** Romania, Russia/Ukraine, Germany (Eurostat 2008)

**HBV prevalence in countries of origin:** Romania 6% (ECDC, 2009); Russia and Ukraine 2-7% (Zacharakis, 2009); Germany 0.2-0.32% (Wiegand, 2009)

**HCV prevalence in countries of origin:** Romania 4.9% (Tiribelli, 2003); Ukraine 0.24-2.0% (Butsashvili, 2001); Germany 0.16-0.21% (Wiegand et al., 2009)

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### **Ireland**

**HBV prevalence:** 0.51% in the general population (O'Connell et al., 2000)

**HCV prevalence:** <0.1% (Travel Medicine, 2008)

In Ireland, where the prevalence of HBV appears to be low, a number of groups at high risk of HBV have been identified through prevalence studies; they include IDUs, prisoners, and migrants arriving from high prevalence countries. A 2004 study found that although 88% of people with acute HBV were born in Ireland, over half (56%) of those with chronic HBV were born in Sub-Saharan Africa; another 19% were born in Eastern Europe, 8.3% in East Asia and the Pacific region, and 6.3% in South and South-East Asia (HPSC, 2004).

**Main countries of migrant origin:** Nigeria, Romania, DRC (Eurostat, 2008)

**HBV prevalence in countries of origin:** Nigeria 10-15% (Owolabi, 2008); Romania 6% (ECDC, 2009); DRC hyperendemic (overall hepatitis B (HBsAg) carrier rate in the general population estimated at 15% (Travel Medicine, 2008)

**HCV prevalence in countries of origin:** Nigeria 15.4% in individuals in the 41-50 year age group (Travel Medicine, 2008), and seroprevalence of HCV antibody in blood donors in Enugu is 3.7% (Nwokediuko, 2007); Romania 4.9% (Tiribelli, 2003); DRC estimated at 6.4% (Travel Medicine, 2008).

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**Italy**

**HBV prevalence:** 1.5% (Tafuri et al., 2010)

**HCV prevalence:** 2- 4% (Fabris et al., 2008)

Recent findings from northern Italy suggest that the relatively massive migration from HBV-endemic countries into northern Italy, the overall prevalence of HBV has not changed significantly (Fabris et al., 2008). Even so, a study in Foggia reported a 10.7% HBV prevalence in the over 550 migrants covered by the study; all were males, 42% came from Africa, 16.6% from Asia, and 14.4% from Eastern Europe (Palumbo et al., 2007). Similarly a 2008 study in Verona found 9.3% of sub Saharan would be “refugees” considered as irregular migrants, to be HBsAg positive (Marjori et al., 2008). Another large cohort study in Central Italy reported a prevalence of 17% of anti-HDV antibodies in non-EU migrants coming primarily from Eastern Europe. A more recent study of 529 refugees in Italy also found that over half of them had serological markers of past infections, and that 8.3% of all those covered by the study were positive for HBsAg; the vast majority of were male, and all were from Africa (Tafuri et al., 2010). The same study raised concerns about selection bias, citing the fact that participation in most studies was voluntary and that many people may not have participated because of fear of expulsion and foreign medical practices, or perceived stigma based on the fact that testing could be related to sexual activity (Tafuri et al., 2010). Although a study in north east Italy concluded that the risk of HCV spreading from non-EU migrants to the native Italian population was very low (Chiaramonte et al., 1998) a relatively high (4.5%) prevalence of HCV was found by Tafuri et al (ibid). Two individuals were found to be HCV/HIV co-infected.

**Main countries of migrant origin:** Romania, Albania, Morocco (Eurostat 2008)

**HBV prevalence in countries of origin:** Romania 6% (ECDC, 2009); Albania 9.5% (Resuli, 2009); Morocco 6% (Travel Medicine, 2008)

**HCV prevalence in countries of origin:** Romania 4.9% (Tiribelli, 2003); Albania 9.5% (Resuli, 2005); Morocco 1.1% (Travel Medicine, 2008)

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**Netherlands**

**HBV prevalence:** 0.35%- 0.53% in general population (Marschall et al., 2008)

**HCV prevalence:** <0.5% in one general population study (ECDC, 2010)

In the Netherlands, where almost 10% of the population is estimated to be first generation migrant, 18% originate from low HBV prevalence countries, 71% from intermediate endemic countries, and 11% from high endemic countries, a study reported that 77% of all chronic HBV patients were foreign born and nearly all came from intermediate or high endemic regions (Marschall, Kretzschmar, Mangen, & Schalm, 2008). The overall prevalence of HBV in first generation migrants was estimated to be about 3.77% (0.35-0.53% in the general population) and between 57.93% and 72.28% of all HBsAg carriers in the Netherlands were estimated to be first generation migrants. Another study that concluded that chronic HBV infections are the cause of 23% of all liver cancers identified chronic HBV infection as particularly problematic in ethnic minorities. In Rotterdam where people of Turkish origin are estimated to constitute about 7.7% of the city population, they account for 30% of all reported chronic HBV infections. A recent study of heterosexual HBV reported that in 60% of cases the source of infection was a partner from an HBV-endemic region and estimated that immunization of people who have partners of non-Dutch nationality could prevent up to 36% of HBV in heterosexuals (van der Veen, et al, 2009). In another study that found considerable inter-ethnic variation in the prevalence of HBV the lowest prevalence was found in people from the Antilles (3%) and the highest in those from Cape Verde (57%); overall, however, the difference in prevalence between Dutch and non-Dutch participants in the study was not statistically significant (11% and 23%) (Veldhuijzen, 2009).

**Main countries of migrant origin:** Turkey, Morocco, Germany (Eurostat, 2008)

HBV prevalence in countries of origin: Turkey 4-8% (Gurol, 2006); Morocco 6% (Travel Medicine, 2008); Germany 0.2% in East Germany and 0.32% in West Germany (Wiegand et al., 2009)

**HCV prevalence in countries of origin:** Turkey 1-4% (Gurol, 2006); Morocco 1.1% (Travel Medicine, 2008); Germany 0.16-0.21% (Wiegand et al., 2009)

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## Portugal

**HBV prevalence:** 7.3% in the general population (Távora-Tavira, 2007)

**HCV prevalence:** 0.5% in the general population (Travel Medicine, 2008)

In the last two decades Portugal has taken in migrants from Africa, Brazil and more recently Eastern Europe. A study found a 7.3% HBV prevalence rate in migrants from Sub Saharan Africa as well as elevated rates of other STIs (Tavora-Tavora et al., 2007) and another study that looked at STIs in migrants from Sub Saharan Africa in another area of Portugal reported an HBV prevalence of 5.9% (Tavora-Tavira, 2007).

**Main countries of migrant origin:** Brazil, Cape Verde, Ukraine (Eurostat, 2008)

**HBV prevalence in countries of migrant origin:** Brazil 3-20% (Travel Medicine, 2008); Cape Verde >8% (Travel Medicine, 2008); Russia and Ukraine 2-7% (Zacharakis, 2009)

**HCV prevalence in countries of origin:** Brazil 2.6% (Travel Medicine, 2008); Cape Verde Hepatitis C is endemic but the prevalence is not well documented (Travel Medicine, 2008); Ukraine= 0.24-2.0% (Butsashvili, 2001)

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## Ireland

**HBV prevalence:** 0.51% in the general population (O'Connell et al., 2000)

**HCV prevalence:** <0.1% (Travel Medicine, 2008)

In Ireland where the prevalence of HBV appears to be low, migrants from high prevalence countries have been identified as high-risk together with IDUs and prisoners. A 2004 study found that 88% of people with acute HBV were born in Ireland, but of those with chronic HBV, over half (56%) were born in Sub-Saharan Africa, 19% in Eastern Europe, 8.3% in East Asia and the Pacific, and 6.3% in South and South-East Asia (4.2% of chronic HBV cases involved people born in Western Europe (HPSC, 2004). .

**Main countries of migrant origin:** Nigeria, Romania, DRC (Eurostat, 2008)

**HBV prevalence in countries of origin:** Nigeria 10-15% (Owolabi, 2008); Romania 6% (ECDC, 2009); DRC hyper-endemic (overall hepatitis B (HBsAg) carrier rate in the general population estimated at 15% (Travel Medicine, 2008)

**HCV prevalence in countries of origin:** Nigeria high endemic with a prevalence of 15.4% in individuals in 41-50 year age group (Travel Medicine, 2008), and seroprevalence of HCV antibody in blood donors in Enugu is 3.7% (Nwokediuko, 2007); Romania 4.9% (Tiribelli, 2003); DRC estimated at 6.4% (Travel Medicine, 2008).

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### **Romania**

**HBV prevalence:** 6% in the general population (ECDC, 2009)

**HCV prevalence:** 4.5% in the general population (Travel Medicine, 2008)

Data on viral hepatitis in Romania are scarce and often dated (Gheorghe, 2008), but within the EU framework Romania is thought to have a very high prevalence (possibly double that of Spain or Greece) of HCV. Romania, meanwhile, remains an important source of migrants to other EU countries and especially to Spain and Italy. A study undertaken in 1990 found an HCV prevalence rate of 4.5% in otherwise healthy adults and 16.9% in a group of orphans (Gheorghe et al., 2008). A later study reported a 4.9% HCV prevalence in the general population of three counties in North-Western Transylvania (Molnar et al., 1994). A higher prevalence of HCV infection has been reported for rural areas than urban areas and among older age groups, and people with low educational and income level (Gheorghe et al., 2008).

**Main countries of migrant origin:** Moldova, Turkey, China (Eurostat, 2008)

**HBV prevalence in countries of origin:** Moldova 7-10% (Katsanos et al., 2004); Turkey 4-8% (Gurol, 2006); China >10% (Travel Medicine, 2008)

**HCV prevalence in countries of origin:** Moldova 4.7% (Travel Medicine, 2008); Turkey 1-4% (Gurol, 2006); China 3% (Travel Medicine, 2008)

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### **Spain**

**HBV prevalence:** 5% prevalence of HBV infection overall (Salleras et al., 2009)

**HCV prevalence:** 0.7% (Travel Medicine, 2008)

An early study of HBV in a cohort of recently arrived Sub Saharan African migrants reported past HBV markers in 36.4% of adults and 33.3% of children; HCV markers were found in 8.6% of adults and 2.4% of children (López-Vélez, 1997). A more recent study has reported hepatitis B surface antigens in 10% of Sub-Saharan African

patients and a prevalence of co-infection with HCV of 1.6% and 0.9% with HDV (Monge-Maillo, 2009). Studies of HBV infection among the gypsy (Roma) population have reported a prevalence of 29% and others have similarly reported a higher prevalence of HCV and HIV infection in gypsies than in the general population (Hosseini Asl, et al., 2004).

**Main countries of migrant origin:** Romania, Morocco, Ecuador (Eurostat 2008)

**HBV prevalence in countries of migrant origin:** Romania 6% (ECDC, 2009); Morocco 6% (Travel Medicine, 2008); Ecuador 2-7% (Travel Medicine, 2008)

**HCV prevalence in countries of migrant origin:** Romania 4.9% (Tiribelli, 2003); Morocco 1.1% (Travel Medicine, 2008); Ecuador 0.7% (Travel Medicine, 2008).

### Sweden

**HBV prevalence:** 0.06% in a representative population (Sánchez-Tapias, 2004)

**HCV prevalence:** 0.2-0.5% (Duberg et al., 2008)

A study of the effect of migrants in Sweden found that in spite of the number of people from high endemic countries, this has not meant a measureable increase in overall HBV rates (Christenson, 1997). A later study conducted in 1999 on the other hand noted that the number of chronic carriers in the country is increasing as a result of migration and is especially notable in schools and day care centers (Söderström, et al., 1999). A later study noted that the percentage of migrants (9%) in the HCV infected population was somewhat lower than in the general population of which 12.9% were born in a country other than Sweden (Duberg et al., 2008).

**Main countries of migrant origin:** Finland, Iraq and Denmark (Eurostat, 2008).

**HBV prevalence in countries of origin:** Finland <2% (Travel Medicine, 2008); Iraq 2.8% (Omer, 2004); Denmark 0.03% (Cowan, 2005)

**HCV prevalence in countries of origin:** Finland <0.5% (for all Scandinavian countries) (ECDC, 2010); Iraq 0.5% (Travel Medicine, 2008); Denmark 0.3% (Omland et al., 2010) for HCV.

## United Kingdom

**HBV prevalence:** 0.3% in the general population (2008, Rose)

**HCV prevalence:** 1.2% in the general population (2000, Balogun et al.).

In the UK where an estimated 3,780 new HBV infections occur every year and about 269 people progress to chronic carrier status, the combination of growing tourism by UK nationals to other parts of the world and a widening scope of in-migration is expected to increase rates of infection in the near future (Aggarwal, 2004). The role of migration has been highlighted by the UK Health Protection Agency, which estimates a net migration of 6,571 people with chronic HBV status per year (HPA, 2006) and the UK Hepatitis B Foundation has estimated that HBV rates in the UK have doubled in the past five years to 326,000 (Hawkes, 2007). Over 50% of this doubling is thought to be due to people arriving from Africa, Asia, Russia and the new EU nations (ibid). Another more recent study of HBV concluded that the majority (96%) of chronic HBV infection has been acquired by migrants and tourists in countries of high endemicity (Mann et. al, 2008). Data on ethnic minorities (health statistics in the UK typically refer to ethnic minority rather than migrant status) indicate that people from ethnic minorities are more likely than others to be admitted for care and die from HCV-related severe liver disease, but this may be due to differential access to health services, late care seeking, longer duration of infection or the prevalence of co-morbidities (ibid). The prevalence of HCV is high in many of the countries sending large numbers of migrants to the UK and seroprevalence studies suggest a rising rate of HCV in blood donors of South Asian (2% in people born in Pakistan) and Polish origin (10% in men aged 20-24) (Eziefula, 2009). The World Health Organisation has calculated that migrants may have accounted for 10,000 cases of HCV (Doughty, 2003).

**Main countries of migrant origin:** Poland, Ireland, India (Eurostat, 2008)

**HBV prevalence in countries of migrant origin:** Poland 1.0-1.5% (ECDC, 2010), 0.2%-1.25% (10-12% in IDUs) (CDC, 2008); Ireland 0.51% (O'Connell et al., 2000); India 4.7% (Batham et al., 2007)

**HCV prevalence in countries of migrant origin:** Poland 1.4% (2002, Magurek); in Ireland 2004 data indicate the prevalence of HCV is higher than for HBV (29.5 compared to 20/100,000 population) and that there is a geographic distribution

skewed towards the ERHA. In all, 1,154 new cases were reported, mostly in young adults (HPSC, 2004) and 1,400 new cases were reported in 2009 (Hunter-Editor, 2010). In the general population the estimated prevalence is <0.1% (Travel Medicine, 2008). In India a study reported a prevalence of 1.85% in blood donors in New Delhi (Sy, 2006).

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## 12. EXTRAPOLATING FROM COUNTRIES OF ORIGIN

Because in many countries there were few or no data on migrants and HBV or HCV, we have chosen to highlight what is currently known about the main origins of migrants to these countries and what is known about patterns of viral hepatitis in the countries of migrant origin. This is not to say that equivalent prevalences of HBV and HCV would be found in migrants from these countries if studies were to be done, but it nevertheless provides an image of the relative situations.

**Austria:** The prevalence of HBV and HCV in Austria is estimated to be <1.0% (Travel Medicine, 2008) and 0.7% respectively (Eurosurveillance, 2003). The three main countries of migrant origin are former Serbia and Montenegro, Germany and Turkey (Eurostat, 2008). In two of these countries, namely former Serbia and Montenegro and Turkey the prevalence of HBV is estimated to be 2.08% (Levitt et al., 2004) and 4-8% (Gurol, 2006) respectively. What is known about HCV suggests a high prevalence of infection among IDUs in Belgrade (63%) and Podgorica (22%) (Judd, 2009); in Turkey the prevalence of HCV has been estimated to range between 1 and 4% (Gurol, 2006).

**Bulgaria:** The prevalence of HBV in the general population is estimated to be 3.86% (Petrunov, 2002) and that of HCV to be between 1.28% (Petrunov, 2002) and > 3% (ECDC, 2010). An earlier report placed the prevalence of HCV in specific groups as blood donors at 1.4%, people with hemophilia and being treated for it at 78%, people on haemodialysis at 42% and medical staff at 1.2% (Naoumov, 1999). The three main countries of migrant origin are Russia, Ukraine and Greece (Eurostat, 2008). In Russia and Ukraine the estimated prevalence of HBV is between 2 and 7% (Zacharakis, 2009) and in Greece, between 1.9 and 5.0% (Zacharakis et al., 2009).

The prevalence of HCV in Russia is 5.6% (Shustov, 2005), in Ukraine 0.24 -2.0% (Butsashvili, 2001) and in Greece 1.0 - 1.9% (Manesis et al., 2009).

**Cyprus:** Cyprus is among the most HBV-affected EU countries. A study of HBV reported a prevalence of 11% in armed forces personnel and 14% among blood donors (Papaevangelou et al, 1988) and a more recent study in northern Cyprus found an HBV prevalence of 4-10% (Altindis et al., 2006). The prevalence of HCV in the general population has been estimated to be 0.1% (Lavanchy, 1999). The three main countries of migrant origin are Sri Lanka, UK, and the Philippines (Eurostat report, 2008), and in these the estimated prevalence of HBV is 1.4% (Travel Medicine, 2008), 1.2% (Balogun et al., 2000,) and 3.6% (Travel Medicine, 2008) respectively. The estimated prevalence of HCV in the UK general population in 2000 was 1.2% (Balogun et al., 2000).

**Czech Republic:** The estimated HBV prevalence in the general population of the Czech Republic is between 1-5% (Katsanos et al., 2004) and recent studies of HCV in the general population found a prevalence of 0.68% (Tiribelli, 2003) and 35% in a sample of IDUs (Zabransky et al., 2006). The three main countries of migrant origin are Russia/Ukraine, Slovakia and Vietnam (Eurostat report, 2008). The estimated prevalence of HBV in these countries is 2.7% (Zacharakis, 2009), 0.5-1.5% (Rantala 2008) and 19% (Nguyen2008). The estimated prevalence of HCV in the three countries is 0.24-2.0% (Butsashvili, 2001), 0.4% (Lavanchy, 1999) and 1.0% (Nguyen, 2007).

**Estonia:** With a reported HBV prevalence of 79% in IDUs (Kaldmal et al., 2000) and an estimated prevalence of between 4-7% in the general population (Travel Medicine, 2008), Estonia is one of the more HBV affected countries in the EU. HCV prevalences of 82.6% have been reported for IDUs (Kaldmae et al., 2000) and 1.5-2.0% in the general population (Travel Medicine, 2008). The three main countries of migrant origin are Russia, Ukraine and Belarus (Eurostat 2008) and in these countries the respective prevalence of HBV is estimated to be 2-7% for Russia and the Ukraine (Zacharakis, 2009) and 7% for Belarus (Travel Medicine, 2008). HCV prevalence in the three countries is estimated to be 5.6% (Shustov, 2005), 0.24-2.0% (Butsashvili, 2001) and 1.4% (Travel Medicine, 2008).



**Finland:** HBV prevalence in the general population has been placed at <2% (Travel Medicine, 2008) and the prevalence of HCV in Scandinavian Countries generally at <0.5% (ECDC, 2010). The leading countries of migrant origin are Russia, Estonia and Sweden (Eurostat, 2008) where the estimated prevalence of HBV is 2-7% in Russia and Ukraine (Zacharakis, 2009), 79% in IDUs (Kaldmal et al., 2000), Sweden= 0.06% (Sanchez-Tapias, 2004). The prevalence of HCV in these countries respectively has been placed at 5.6% (Shustov, 2005), 82.6% in IDUs (Kaldmae et al, 2000), and 0.2-0.5% (Duberg et al., 2008)

**Latvia:** HBV prevalence rates of 2% (Zacharakis, 2009) and 2-7% (Travel Medicine, 2008) have been reported for the general population. Latvia has been referred to as a high HCV prevalence country (Norden et al., 2009) and although the incidence of acute hepatitis C has decreased (889 in 2003), the incidence of chronic hepatitis C has increased (38 cases per 100 000 population) (Travel Medicine, 2008). The leading countries of migrant origin are Russia/Ukraine and Lithuania where the prevalence of HBV is respectively 2-7% (Zacharakis, 2009) and 0.5-1.5% (Zacharakis, 2009). The HCV prevalence has been placed at 5.6% in Russia (2005, Shustov) and 1% in 6-18 year olds and 3% in 50-89 year olds in Lithuania (Ambrozaitis, 1995).

### **Lithuania**

In Lithuania the HBV prevalence in the general population is estimated to be 0, 5-1.5% (Zacharakis, 2009), and the estimated HCV prevalence in blood donors is 2.2% (Naoumov, 1999). The top three migrant countries of origin are Russia, Belarus, and Stateless migrants (Eurostat report, 2008). Russia has an estimated HBV prevalence of 2-7% (Zacharakis, 2009), and an HCV prevalence of 5.6% (2005, Shustov). Belarus has an estimated HBV and HCV prevalence of 7% (Travel Medicine, 2008) and 1.4% (Travel Medicine, 2008).

### **Luxembourg**

Luxembourg has both a significant migrant population and prevalence of hepatitis. The HBV prevalence in one study group within the country was estimated at 6.4% (Mosson et al., 2006), and the HCV prevalence was estimated at 0.5-1.0% in the general population (Roman et al., 2006). The top three countries of origin for

migrants in the country are Portugal, France, and Italy (Eurostat report, 2008). Portugal has an estimated HBV and HCV prevalence of 7.3% (Távora-Tavira, 2007), and 0.5% (Travel Medicine, 2008). In France it is estimated at 0.68% (2008, Balinska), and 1.3% (2008, Pradat et al.), and in Italy it is estimated at 0.91% (2006, Da Villa et al.) and 2-4% (Fabris et al., 2008).

### **Malta**

Malta is another country which has a significant hepatitis prevalence rate, but for which migrant hepatitis data is unknown. The estimated HBV prevalence rate within the general population is 2-7% and it is clear that HCV is endemic to the country, although the exact prevalence rate is unknown (Travel Medicine, 2008). The top three migrant countries of origin are the UK, India, and Serbia (Eurostat report, 2008). The HBV prevalence in these countries is 0.3% (2008, Rose), 4.7% (Batham et al., 2007), and 2.08% (Levitt et al., 2004) respectively. The HCV prevalence is estimated at 1.2% (2000, Balogun et al.) in the UK, 1.85% in blood donors in New Delhi, India (Sy, 2006), and in Serbia it is estimated at 63% in IDUs in Belgrade and 22% IDUs in Podgorica (Judd, 2009).

### **Poland**

In Poland, the HBV prevalence is estimated at 1.0-1.5% (ECDC, 2010), and the HCV prevalence is estimated at 1.4% in the general population (Mazurek, 2002). The top three countries of origin for migrants to Poland are Germany, Ukraine, and Russia (Eurostat report, 2008). In Germany, the estimated prevalence of HBV and HCV is 0.2-0.32% and 0.16-0.21% respectively (Wiegand et al., 2009). The Ukraine and Russia both have an HBV prevalence of 2-7% (Zacharakis, 2009), while the Ukraine has an estimated HCV prevalence of 0.24-2.0% (Butsashvili, 2001), and Russia has an estimated prevalence of 5.6% (Shustov, 2005).

### **Slovakia**

In Slovakia, HBV is estimated to be prevalent in 1.0-1.5% of the general population (ECDC, 2010), while HCV is estimated to be prevalent in 0.67% of the general population (Schréter, 2007). The top three migrant countries of origin within the country are the Czech Republic, Poland, and the Ukraine (Eurostat report, 2008). The HBV prevalence in these countries is 0.7% (Krekula et al., 1996), 0.2%-1.25%

(CDC, 2008), and 2-7% (Zacharakis, 2009) respectively. The HCV rates are estimated at 0.68% (Tiribelli, 2003), 1.4% (2002, Magurek), and 0.24-2.0% (Butsashvili, 2001).

### **Slovenia**

In Slovenia, HBV is estimated to be prevalent in less than 0.5% of the general population (ECDC, 2010), with HCV estimated in 22% of IDUs (WHO, 2006), although general population rates remain unclear (Travel Medicine, 2008). The top three migrant countries of origin are Bosnia and Herzegovina, Serbia, and the Former Yugoslav Republic of Macedonia (Eurostat report, 2008). The HBV estimated HBV prevalence in these countries is as follows: 2-7% (Travel Medicine, 2008), 2.08% (Levitt et al., 2004), and 2.0-7.0% (Travel Medicine, 2008) respectively. The HCV prevalence is unclear in Bosnia and Herzegovina (Travel Medicine, 2008), between 22-63% in IDUs in Serbia (Judd, 2009), and also unclear in the Former Yugoslav Republic of Macedonia, although the HCV prevalence in neighboring Greece is 1.5% (Travel Medicine, 2008).

### **Summary**

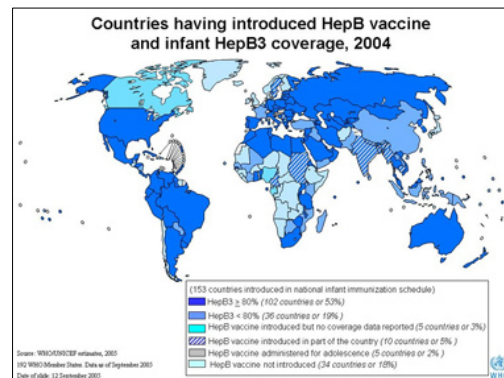
Although there are few data on the observed relationship between migrants and viral hepatitis in many EU countries, there is good reason to believe that patterns of HBV and HCV in these countries are being influenced by the arrival of people from countries with higher prevalence rates of HBV and HCV. Why more information does not seem to be available for these countries may be due to the fact that immigration has been a relatively recent phenomenon and until recently its implications for health may not have been apparent. In some Baltic countries, it may also be due to the fact that historically close ties with Russia and Ukraine (the main sources of migrants) has meant that newcomers from these countries have not been seen as migrants and they have not been the target of research.

## **13. CHALLENGES TO PREVENTION AND CARE**

As soon as the main routes of transmission of HBV and HCV were characterized it became theoretically possible to take steps to reduce the risk of transmission of viral hepatitis in the general population. To what extent those steps were or are being taken varies between countries.

### 13.1 HBV Immunization

HBV is an infection for which a proven effective vaccine exists and people who have been successfully vaccinated<sup>1</sup> or who have spontaneously gone on to develop anti-HBs antibodies after exposure to HBV are protected against HBV infection. Today 168 countries say that they are providing universal vaccination (infants and/or adolescents) but only 131 out of the 168 have achieved more than 80% coverage with three doses (Zanetti et al., 2008b). A study in Italy, Romania, and Slovakia, moreover, found that the proportion of infants who could be serologically confirmed as having been fully vaccinated was much lower than what was being officially reported (Nardone et. al. 2008).



### 13.2 Alternative approaches to HBV vaccination

Not all EU countries approach HBV immunization in the same way. The UK, Ireland, the Netherlands, Denmark, Finland, Iceland, Norway, and Sweden have adopted targeted vaccination strategies (Rantala & van de Laar, 2008) in which only those who are considered to be at high risk (healthcare workers and others with possible occupational exposure, injecting drug users (IDUs), those living with family members with HBV, men who have sex with men (MSM), sex workers, people with hemophilia or regularly receiving blood and blood products) are routinely vaccinated. Critics of this approach have pointed out that because more than 30% of those living with acute HBV infection have no identifiable risk factors, targeted population approaches are likely to miss a sizeable proportion of those for whom vaccination would be justified (Zanetti et al., 2008). Migrants from high or intermediate HBV prevalence countries have not been identified within this approach.

<sup>1</sup> Individuals vaccinated in infancy (3 doses at 0, 1, and 6 months of age) gain almost 100% immunity and those vaccinated as adolescents or as healthy young adults gain almost 95% immunity (Zanetti et al., 2008b). In 1991 WHO put out a call for worldwide universal HBV vaccination.

### **13.3 HBV vaccination and migrants**

After many years of significant and well-documented success in bringing down rates of common childhood infections such as pertussis, mumps and measles, there is now a growing resistance to childhood vaccination, including for HBV vaccination. The situation is not helped by the fact that there is no standardized approach to vaccination of migrants and/or their children, and while most countries provide health care coverage for migrants once they acquire residency status, the time conditions required for residency differ between countries, and many migrants tend to see emergency wards as their main source of health care (Carballo et al. 2004). In EU countries where irregular (undocumented) migrants have the right to emergency or essential health care, HBV immunization is not covered (Zanetti et al., 2008). Poverty, distance and poor transport, low levels of parental education in the case of children, and cultural, linguistic and religious differences are all important factors in determining the extent to which migrants can and do access vaccination (Rechel et al, 2009).

### **13.4 Administrative barriers**

Administrative rules and procedures can be important barriers to migrant access and use of health care services (Carballo et al 2004). Complex, time-consuming processes that also call for work and residence permits, health insurance papers and permanent addresses which irregular migrants can rarely provide are all reasons for not continuing with health care seeking (ibid). In some cases migrants simply do not have the pre-requisite number of years of residence to have full access to health services other than essential (emergency) care that excludes immunization; in other cases it can be a problem of incomplete or non-existent medical insurance because employers do not fulfil their obligations with migrants who do not understand their rights (ibid). For all these reasons migrants use public health care facilities far less than the general public (Romero-Ortuno 2004). Experience in the area of HIV/AIDS also suggests that charges for health care treatment can be off-putting for low-income migrants (Stanciole, Huber, 2009). In some EU countries the introduction of more difficult-to-meet requirements for acquiring refugee status is also preventing many people from benefitting from immunization initiatives (Stanciole, Huber, 2009).

### **13.5 Socio-cultural barriers**

Among the many socio-cultural barriers to the care and treatment of migrants, the issue of health literacy has emerged as particularly important. Health literacy, including the capacity of people to understand the system and be able to work their way through health service networks presents difficult challenges for people who are unfamiliar with health services in host countries (Newman, Papadopoulos and Sigsworth, 2006; Carballo et al 2008). Proximity of health care services and the timing of service openings can also be important challenges to migrants who do not live near hospitals (which are visible) and do not know or who are not in principle eligible to access primary care physicians, who in any event may be less visible and less well known (Carballo et al. 2004). In many cases the work schedules of low-income migrants who often have to take two and three jobs to accumulate a decent income are so time-demanding that they cannot meet health care facility opening hours. Their “right” to take time off for medical reasons is often not known to them and rarely explained by employers, many of whom are irregular domestic employers (ibid). For many female migrants, cultural attitudes to gender in their countries of origin and in the migrant communities they live in can also be restrictive of health care seeking behavior and be poorly understood by health care personnel (Mumtaz et al. 2006). Health care seeking behavior is also affected by previous experience in countries of origin where there may have been a tendency or need to rely on traditional medical practitioners than western-type medicine (Quesadaa and Heller 1977). Mistrust of health care personnel and clinical trials that are sometimes seen as dangerous for migrants has also been highlighted as an obstacle (Mahwash, Atkin and Leese 2004).

### **13.6 Health belief barriers**

How people perceive health and disease, and what they believe can be done at an individual and health system level, to influence them is what determines in great part the extent to which people are willing or encouraged to engage in health promotion and protection. The mix of factors involved have been subsumed in a variety of models that essentially build on the model proposed by Rosenstock (1988) and which include five constructs representing perceived threat and the net benefits of

engagement: (a) perceived susceptibility, (b) perceived severity, (c) perceived benefits, (d) perceived barriers and (e) self-efficacy.

- (a) The initial concept of perceived susceptibility is a complex one in which the individual must be able to place him or her in a broader context of what is known about the incidence and prevalence of viral hepatitis and be aware of the factors contributing to it. For example, knowledge of the role played by sex and injection as well as other skin piercing acts is essential. In the case of migrants who have not been previously been reached with information which they can understand and who are not reached in the countries they re-settle in, the issue of perceived susceptibility may be void. This is especially so given that viral hepatitis can be asymptomatic.
- (b) The concept of severity, that is to say a person's personal assessment of the seriousness of the problem and its potential consequences, calls for people to have been able to identify a disease such as HBV or HCV. However, in cultures where viral hepatitis is very prevalent and where services to deal with it remain undeveloped, it is quite possible that viral hepatitis has not been characterized and is hence not known by people in a way that would permit or encourage them to take action to either prevent it or diagnose and treat it.
- (c) As far as perceived benefits are concerned, much may depend on the experience the person has previously had with health care, especially preventative initiatives. In the case of people coming from poor socio-economic countries and communities, which is likely in the case of many migrants, there may not have been good or any experiences that can guide the person.
- (d) The concept of perceived barriers, that is to say the assessment by people of what might prevent them acting on information and advice given to them, requires that people be able to distinguish between real and perceived barriers. In the case of viral hepatitis, especially HBV vaccination and screening for both HBV and HCV, a number of real and

perceived barriers can immediately be identified. Among the real ones is the fact that health services with a viral hepatitis component may not exist, or that if they exist they do not have ready access to for reasons such as medical insurance as outlined above. Among the perceived barriers might be the idea that vaccination is dangerous and that its purpose is not what is said by the health care providers.

- (e) The concept of self efficacy has been shown to be a major one in the treatment of chronic diseases in migrant populations (Carballo et al. 2009). Some people have simply not been encouraged in their upbringing to “take their lives in their hands” and do not have a body of experience to suggest that they can intervene to change the course of a disease such as viral hepatitis. Thus even if and when all the options for personal action are presented to people, some may sense a loss of power (locus of control) to do what is required. In poor educated people originating from developing countries, this is not uncommon and can undermine compliance/adherence capacities.

### **13.7 Other factors**

Demographic variables such as age, gender, ethnicity and occupation can be mediating factors. Young migrants and the children of migrants, for example, are typically more able to converse in the language of host and may be able to benefit from supportive health promotion infrastructures if these exist. Men are freer in some cultures to participate in health initiatives than women (Foley, 2005), and migrants (including cleaners) working in and around health care facilities may feel more at ease with personal health action requirements than people who are unfamiliar with health care environments and the range of activities that go on in them.

### **13.8 Linguistic barriers**

Language and linguistic differences are paramount in the operational relationship between health care providers and patients (Kang, Kahler, and Tesar 1998; Bischoff et al, 2003; Giardano et al, 2009; Hwang et al, 2009; Wu et al, 2009; Tran, 2009; Cooper 2010). Where there is no common language and where there is no competent cultural intermediary, discussions about symptoms, implications of treatment options,



and need for follow-up may lead to nothing because while both parties may feel they have communicated well, in fact there may have been little exchange of real or correct information Carballo et al (2009).

## 14. POLICIES

### 14.1 Lack of standardized approaches

Although viral hepatitis has come to constitute a major threat to health in the EU, the region is still characterized by a lack of standardized policies and practices, especially with respect to migrants. As indicated earlier, while 20 countries say they have universal hepatitis B vaccination (including for at risk groups), seven others only provide routine HBV vaccination to high risk groups (Johansen et al, 2010) and irrespective of their origin, migrants do not appear to be targeted.

### 14.2 Roma

14.1 The need to out-reach to special groups such as the Roma has been taken up by some countries such as Bulgaria where universal infant HBV immunization was started in 1991. The fact that the UN Development Program (UNDP) is having to give assistance nevertheless suggests that providing services to the Roma (UNDP, 2004) is still seen as a responsibility of others. Certainly there is little evidence from other countries with large Roma populations that they are being given special viral hepatitis attention.

### 14.3 Immunization

In some countries children of asylum seekers are eligible for HBV vaccination, and in others adult asylum seekers are also eligible (UNHCR, 2005; Peters, 2006; Norredam, 2007) but again, the policies vary considerably and are often so rigid with respect to the legal conditions that have to be met that the right to coverage is not clear to health care providers or potential beneficiaries (Gyarmathy 2004; Vuorenski, 2008). In other situations regulations concerning refugees as opposed to asylum seekers appear to make it impossible for the latter to benefit from viral hepatitis initiatives (Stranberg-Larsen, 2007).

#### **14.4 Administrative barriers**

There are also situations in which policies may be having a counter productive effect. Forced isolation of asylum seekers, for example, is not likely to encourage voluntary participation in HBV prevention programs (Austria TODAY, 2008). Similarly, some countries require irregular migrants seeking health care to do so through national immigration services, and these are in turn required to report their presence to the police, thus making the process highly unlikely to attract involvement in viral hepatitis or other programs (Hansen, 2007).

#### **14.5 Openings**

In countries where irregular (undocumented) migrants are not covered by national health insurance, there are often laws regarding the control of infectious diseases that are considered to be dangerous for the larger public, and where these exist, they can provide an opening for HBV and/or HCV prevention and treatment to be extended to migrants and others who might not otherwise be able to benefit from public health initiatives (Bryndova 2009; Andri et al 2008).

## **15. CONCLUSIONS**

### **15.1 Constraints**

In preparing this report on the link between migration and viral hepatitis we have had to confront a number of limitations that have plagued much of the research on the dynamics of migration and health. Because most EU countries have been net exporters of people and until recently have not been faced with large-scale immigration, many countries do not have precise data on the number of people who might fall under the definition of migrants, their countries of origin, and the length of their stay. In some EU countries health information systems do not even identify people by migration status and instead use self-identification by ethnic minority status as a surrogate indicator. The field of migration and health has also suffered from the problem of how what few studies have been done have defined migrants. What data are available sometimes come from studies that have used different definitions and different concepts of the dynamic nexus of migration and health. The problem of unofficial and unrecorded migration, which is thought to be increasing,

also poses a major obstacle to understanding how the process of population movement is affecting health in the EU region, as indeed elsewhere.

### **15.2 Overall findings**

Despite lacunae in data there is nevertheless considerable evidence that migrants are arriving in the EU in greater numbers and are increasingly coming from high/intermediate viral hepatitis endemic regions. Because these people are more likely to present with HBV and/or HCV than people from low endemic regions and far more than nationals in EU countries, they call for far more attention than has been given to them to date. The fact that in two countries that were identified in the review, researchers have concluded that the overall epidemiological profile of HBV and HCV in those countries is not being affected should not be taken to mean that action is not required. These may be a very country-specific findings, and even so the burden on health care services will inevitably becoming heavier everywhere as migrants with HBV and/or HCV morbidity present for treatment in greater numbers than national do. Nor should the fact that there is little or no evidence of spread of viral hepatitis from migrant groups to host populations be taken to mean that this is not occurring. The social networks of many migrants may be such that there is little opportunity for transmission, but the growing industry of trafficking of migrants into the sex industry calls for special attention.

### **15.3 Screening**

For both ethical and pragmatic public health reasons the cycle of transmission in migrants must be broken, and HBV and HCV in people from high prevalence countries must be diagnosed and treated early and efficiently. Migrants of all kinds have the right to be offered means of improving their health and from a public health point of view this is essential. In this regard, screening of migrants for viral hepatitis probably deserves to be considered. Much is already known about the prevalence of viral hepatitis in the countries that migrants are coming from, and certainly enough is known to provide the basis for screening policies and practices that could target migrants according to the countries they come from or have passed through.

### **15.4 Avoiding stigma**

If screening is to be proposed, however, it must be done in an evidence based way that defines when and how often screening should be offered. It must also be done in way that respects human rights. Targeted screening must not stigmatize people because of national origin or because of viral hepatitis status. At all times it must be done in ways that encourage voluntary participation in both the screening and then the treatment that must follow. In this regard, much can be learned from the work that has been done in the area of HIV/AIDS and voluntary counselling and testing (VCT). More out-reach in the form of culturally competent information and counselling is also called for if HBV and HCV awareness is to be improved in migrant groups and if any stigma associated with viral hepatitis is to be reduced within migrant populations.

### **15.5 Prevention**

Prevention of viral hepatitis will also have be highlighted far more than it has been to date, and steps will have to be taken to ensure that the children of migrants and Roma are not being missed by otherwise universal immunization programs. There is a feeling that children of migrants and Roma are possibly being overlooked missed because immunization policies and practices do not address the special logistical needs of mobile populations that are at times ill-defined, marginalized from mainstream society and have different expectations with regard to health and health care. In general far more attention needs to be given to providing migrants with information and education on viral hepatitis in languages and in ways that are attractive and understandable. Reaching migrants on entry and through the communities they settle using local leaders deserves to be tried.

### **15.6 Tailored approaches**

In general the evidence calls for more and better tailoring of out-reach programs that address the psychosocial, cultural, legal and economic factors that affect the capacity of migrants to participate in and benefit from public health initiatives. For migrants coming from countries of high and intermediate viral hepatitis prevalence, HBV and HCV may not mean the same as it does to people in European host countries, and attitudes to compliance in testing and treatment may be very different. In some cases,

however, the problem is not simply one of migrant cultures but rather one of a broader denial of viral hepatitis in the general public. This must be overcome before anything else if national strategies on migrants are to be developed.

### **15.7 Technical assistance**

As the international community moves forward to respond to the challenges of preventing and treating HBV and HCV in migrant populations, support to some governments will be required if they are to adopt international standards and operating procedures to the challenge of viral hepatitis in the context of migration. That support should include support in assessing their national situations better and more consistently, sharing common reporting and databases, using common guidelines on action including prevention and treatment, screening and reporting. It will also call for sensitizing public health and clinical personnel to the many complexities of the migration-health nexus.

### **15.8 Who are migrants**

Finally it must be remembered that migrants are a heterogeneous group. They come from different countries and regions of the world with very different viral hepatitis profiles. They also come from different socio-economic backgrounds and have different health and health care histories. Their levels of health literacy may also differ and while some may require targeted assistance, many others will not require more than host populations need in terms of viral hepatitis prevention and treatment.

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