

REVIEW

Where next for hepatitis B and C surveillance?

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SUMMARY. Hepatitis B and C infections are responsible for significant burden of disease accounting for 1.3 million deaths globally. There is a lack of quality data on the burden of disease due to these infections. One approach to informing policy makers on trends in hepatitis B and C is through case reporting of diagnosed cases. Data on these cases can identify outbreaks of hepatitis and monitor trends in acute and chronic infection. The European Centers for Disease Control (ECDC) has developed standardized case definitions and a harmonized reporting framework. Two articles in this issue summarize the trends in hepatitis B and C infection in Europe. The results show considerable

variability in reported cases across countries, reflecting in part differences in testing practices. Risk factor information highlights the continued importance of injecting drug use as a risk factor for hepatitis C infection. Hepatitis case reporting provides valuable information, and more complete reporting will improve the utility of the data. For a comprehensive epidemiologic assessment of the burden of hepatitis, case reporting should be complemented by other sources of data, such as serologic and behavioural surveys.

Keywords: Europe, case reporting, hepatitis B, hepatitis C, surveillance.

The epidemics of hepatitis B virus (HBV) and hepatitis C virus (HCV) infection present a major challenge to public health authorities. Recent estimates suggest that approximately 1.3 million persons die each year from hepatitis B and C [1]. Without appropriate treatment, infection with either virus can progress to cirrhosis and liver cancer in a significant proportion of cases. Globally, the epidemiology of these viruses varies considerably. Both HBV and HCV are prevalent in the general population in some countries, primarily in Africa and Asia. While in other countries, primarily in Europe and North America, HBV and HCV infections are concentrated in certain groups such as persons who inject drugs (PWID) or among immigrants. Furthermore, the incidence of new infections is declining through improved infection control practices and infant HBV vaccination.

Across the World Health Organization (WHO) European region, almost one in fifty adults is infected with HBV and a similar proportion of people have chronic HCV infection [2]. Data on the precise burden of disease caused by these infections are lacking in most countries [3], but available information suggests that the disease-related burden of cirrhosis and hepatocellular carcinoma is considerable and

associated with high levels of mortality across Europe [4–6]. There is also growing evidence that the hepatitis B- and C-related morbidity and mortality in Europe will increase over the next decade [7–10]. With the emergence of highly effective medicines to treat hepatitis B and C, there is growing recognition of the need for better epidemiological information to inform the effective planning of services.

To plan appropriate prevention and treatment services, public health authorities need accurate estimates of the level of infection in the general population as well as in the populations, for example PWID, most heavily affected by HBV and HCV. However, obtaining reliable estimates of hepatitis-related incidence, prevalence, morbidity and mortality is challenging. Indeed, surveillance of hepatitis B and C is not straightforward and is more complex than for many other infections. Both acute and chronic infections are frequently asymptomatic, thus remaining undetected, availability of testing services and policies on who should receive hepatitis testing varies within and between countries, and the laboratory diagnosis of both diseases is complex [11]. Confirming the stage of hepatitis B and C infections requires a combination of serologic and molecular tests. Even when these tests are available, a clear differentiation between acute and chronic HBV and HCV infections is difficult and many cases are misclassified [12,13]. Furthermore, estimates of the HBV and HCV burden of infection and disease require information from multiple data sources, including case reporting, serologic surveys, cancer and death registries.

Case reporting is one of the important elements of hepatitis surveillance. It is based on the regular notification to

Abbreviations: ECDC, European Centre for Disease Prevention and Control; EEA, European Economic Area; EU, European Union; HBV, hepatitis B virus; HCV, hepatitis C virus; PWID, persons who inject drugs; WHO, World Health Organization.

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health authorities by clinics or laboratories of all newly diagnosed cases of hepatitis infection that meet a standard case definition. These data can identify outbreaks of hepatitis and are used to monitor temporal trends in numbers of persons infected as well as identifying the groups most affected. However, the utility of case-reporting data is limited by the fact that it is primarily a reflection of testing availability and practices and on the willingness of health-care providers to report cases to the relevant health authorities. Because of these limitations and the asymptomatic nature of many cases of hepatitis B and C, case reporting will always provide an underestimate of the true number of acute and chronic cases of hepatitis B and C infection.

This edition includes two papers by the European Centre for Disease Prevention and Control (ECDC) on data collected as part of ECDC's enhanced hepatitis B and C surveillance in the European Union (EU)/European Economic Area (EEA) countries. Surveillance is one of the cornerstones of ECDC's efforts towards the goal of reducing the incidence and prevalence of communicable diseases in Europe [14]. In developing enhanced surveillance of hepatitis B and C, ECDC aimed to collect comparable data from countries using standard case definitions and a common data set. The achievement of this goal depends on obtaining valid and complete data that are comparable across countries.

European hepatitis B and C surveillance has only been partly successful in harmonizing the differences across countries, as the comparability of data is still hampered by differences in reporting and problems with data completeness. Moreover, interpretation of surveillance data is seriously hampered by the often silent nature of these infections, which results in the differences between countries being more influenced by local testing practices than differences in local epidemiology. Indeed, the rates of hepatitis infection estimated from the reported cases of chronic hepatitis B and C are contrary to what may be expected based on the known prevalence [15]. The rates of infection reported by the ECDC surveillance system show higher rates in Northern Europe, while estimates based on prevalence surveys indicate that countries in southern Europe have higher rates of hepatitis B and C. Other limitations included the low proportion of cases with information on the reported route of transmission and the high proportion of cases with an unknown disease state. For hepatitis C, only 10.8% of reported cases were classified as acute or chronic, the remainder being 'unknown'. Understanding the local context will aid the interpretation of data, but the results of these analyses highlight the importance of complementing case reporting with other methods of surveillance such as seroprevalence surveys in the general and at-risk populations, as well as disease outcome surveillance based on cancer and death registration systems to gain a clearer understanding of the disease burden.

Despite the known weaknesses of case-reporting data, the ECDC results provide some important insights into the dynamics of hepatitis B and C transmission in Europe. The reduction in acute cases of hepatitis B between 2006 and 2012 provides indirect evidence of the impact of universal hepatitis B vaccination. The increase in reported cases of chronic hepatitis B may reflect increased testing efforts as well as the impact of immigration of persons from countries with higher prevalence of hepatitis B. The information on transmission routes, although incomplete, reinforces the continued importance of injecting drug use as the leading route of transmission for hepatitis C. The results also show the risk of infection through nosocomial transmission as well as sexual transmission, particularly among men who have sex with men.

In 2010 and in 2014, WHO's World Health Assembly adopted resolutions on viral hepatitis which called for a comprehensive approach to the prevention and control of viral hepatitis. The resolutions urge Member States to put in place adequate surveillance systems to support evidence-based decision-making and stipulate that the WHO works closely with Member States to develop necessary guidelines, strategies and tools for hepatitis surveillance [16,17]. Responding to the new resolution will require considerable action, as a recent survey undertaken by the WHO and the World Hepatitis Alliance found surveillance efforts to be varied and at different stages of development across the European region [18]. WHO is drafting viral hepatitis surveillance guidance in order to support countries, especially low- and middle-income countries, in establishing and strengthening surveillance systems and is planning to provide technical assistance to countries in strengthening their surveillance systems. This guidance aims to assist Ministries of Health in tailoring surveillance activities by level of resource, geographic area, populations at risk and by type of hepatitis.

Despite impressive progress regarding HBV vaccination programmes and hepatitis treatment, viral hepatitis is not being addressed in a comprehensive manner in many countries [18]. Surveillance programmes are often weak, laboratory capacity is often poor, access to testing is limited, and only a small proportion of persons receive treatment for chronic hepatitis. Indeed, globally, the public health response to hepatitis B and C has been disproportionately small in relation to the enormous burden of disease presented by these infections and in comparison with other communicable diseases with a similar disease burden. The lack of robust information on the burden of disease and the potential impact of key interventions upon this burden, as well as the low profile of many of the risk groups affected, have undoubtedly contributed to this lack of scale-up. Better epidemiological estimates would allow decision-makers to maximize the impact of resources by tailoring interventions to their specific epidemic profile.

Organizations such as WHO and ECDC are well placed to support countries in their prevention efforts, and especially in relation to improving availability and quality of

information. Better information should facilitate a more proportionate response to these infections that is long overdue.

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