

## Prevention of the healthcare worker-to-patient HBV, HCV, HIV transmission Summary

The transmission of a hematogenous virus from a medical professional to a patient is an exceptional occurrence.

The risk depends on the type of treatment performed, the compliance with standard precautions and the plasma viral load in the infected healthcare worker. The main agents involved are the Hepatitis B (HBV) and Hepatitis C (HCV) viruses and the Human Immunodeficiency Virus (HIV). In September 2009, the Directorate General for Health referred the case to the High Council for Public Health so that it could update scientific advice on HCV and HIV spread by healthcare workers to patients, in complement with the Directorate General for Health request of August 2007 concerning the same issue for HBV.

This report summarizes the High Council for Public Health (HCSP) working group's discussions dealing with updating the recommendations for the prevention of healthcare-associated HBV, HCV and HIV transmission. Despite important differences between these three viruses, in particular in terms of contagiousness, the possibility of vaccine prevention or therapeutic resources, their related infections can all produce chronic infections in the infected patient. Moreover, non-specific prevention strategies and behaviors that must be adopted by infected healthcare workers are broadly similar, regardless of the agent involved. For these reasons, the working group has chosen to merge its recommendations into one report for the three viruses. It was drafted over the course of work meetings attended by experts from the "Patient safety" expert committee (CSSP) and the "infectious diseases" expert committee (CSMT). The recommendations were discussed by the two commissions and the technical committee for vaccination (CTV). Data from the literature are mainly descriptive epidemiological studies. These recommendations are based on an experts' agreement.

Although some healthcare professionals are more affected than others (surgeons, obstetricians, dentists, etc.), the recommendations concern all healthcare professionals, either from the public or the private sector, and in particular all medical and paramedical healthcare workers liable to deliver treatment to patients, dental care professionals and all the healthcare students. Occupational physicians, healthcare institution managers and healthcare authorities are particularly concerned by the application of recommendations by healthcare professionals.

The first part of the report deals with the prevalence of viral hepatitis B and C and HIV infection among the general population and among healthcare workers. The latter can be infected by these three agents according to the same transmission methods as the general population with, in addition, an occupational risk of contamination after a blood exposure accident (BEA). Outside the period prior to the obligation for all healthcare workers to receive HBV vaccination, this method of contamination remains very marginal. Since 2005, no HIV occupational contamination of healthcare workers has been reported to the National Institute for Public Health Surveillance (InVS) and the number of annual HCV contaminations remains very low. The prevalence of HIV and HCV infections among healthcare workers does not seem higher than in the general population.

The second part of the report analyzes situations that could lead to healthcare worker-to-patient infection. For such transmission to occur, the healthcare worker's blood or biological fluid contaminated by his or her blood needs to be in contact with the patient's membrane, tissue,

operating site or wounded skin. This type of contact can be direct or indirect. Direct transmission, which is rare in surgery, does not involve intermediate equipment. It involves contact between the healthcare worker's wounded skin, blood or another infectious biological fluid and a patient's membrane or wounded skin. This mechanism could however explain some HBV transmission that could occur during long interventions without changing gloves. In the case of indirect transmission, the infected healthcare worker has to be injured and the equipment responsible for the injury must continue to be used for the patient. This can occur when the injury goes unnoticed. The healthcare workers that are the most exposed to injury are surgeons. Surgical interventions also have the highest risk of contact between the blood of the healthcare worker and that of the patient. There is no universal classification for surgical procedures with respect to the risk of viral transmission between healthcare worker and patient. They are usually classified into two groups (high or low risk) or three groups (high, intermediate or low risk), depending on their complexity and their invasiveness. The risk of healthcare-associated viral transmission also depends on how healthcare workers behave, which requires on-site risk assessment. With this in mind, compliance or non-compliance with standard precautions is key.

The third part of the report covers risks of healthcare worker-to-patient transmission according to the type of virus. After a brief reminder on the concept of viral load and on each of the three incriminated viruses, the report examines, virus by virus, the healthcare worker-to-patient and vice versa.

Part four consists in prevention measures on healthcare worker-to-patient virus transmission. Four major points are addressed: (i) to avoid patients infection following standard precautions and systematic HBV vaccination of healthcare workers; (ii) to identify infected healthcare workers by early diagnosis and systematic screening of infected ones; (iii) to measure and to reduce the viral load of infected healthcare workers; (iv) finally, to propose a responsible approach to infected healthcare workers. Compensation of healthcare workers, information of future healthcare professionals and patient information are also mentioned. It is specified with respect to HBV vaccination that checking the effective immunization by vaccination is required among healthcare professionals. This allows the identification and revaccination of the healthcare workers who have not responded to vaccination. It also allows the screening of the healthcare workers who, despite having shown that vaccination has been done properly (vaccination certificate), could have been infected beforehand. Two Orders dated March 6 2007 and currently in application will therefore be reexamined in the light of these conclusions. Under the section "proposing a responsible approach to infected healthcare workers", the working group restates the following principles: (i) the first duty of the healthcare professional is not to aggravate his/her patient's health status; (ii) however, the fact that healthcare-associated HBV, HCV and HIV transmission is rare calls for a measured attitude; (iii) finally, the healthcare professional is entitled to confidentiality concerning his/her health status, in order to avoid any stigmatization. In view of these principles, the working group proposes the following measures to ensure both the healthcare workers' awareness and responsibility. He or she has the triple duty to voluntarily and regularly be informed of his/her serological status, in the case of the diagnosis of chronic viral infection, be followed by a specialist and, in the case of detectable viral load and high risk treatment activities, think about an antiviral treatment and referral of the case to the Commission mentioned below. At the same time, the institutions responsibility should be clearly stated to ensure confidentiality for infected healthcare workers both with respect to other professionals and to patients.

In the last part, the working group insists on the urgency of creating a national healthcare-associated virus transmission risk assessment Commission. The complexity and multitude of situations as well as the aforementioned ethical issues make it necessary to set up this national commission in order to centralize cases concerning infected healthcare workers in the hands of professionals able to assess individual situations. Moreover, this commission would be qualified to reassess these recommendations. The essential role of this commission would consist in providing recommendations to the (future) healthcare professional on prevention issues and rule on any necessity to restrict his or her professional work. This opinion would be consultative, it would not be opposable. The (future) healthcare worker would however be required to put forward

strong arguments to justify not following the advice, particularly in the event of a subsequent problem arising from non-compliance with it. This commission would include experts from various specialties (infectious pathology, hepatology, virology, hygiene, public health, occupational medicine, surgery) and could, if necessary, seek other specialists' advice. An annual synthesis of decisions and their rationale could be drafted by the commission and broadly circulated. The commission could also take on functions such as expertise (e.g. drafting a list of risk-inducing interventions) and individual advice, proposal of educational actions and production of information documents. A doctor in charge of the healthcare trainee or professional, including prevention doctors, would report cases to the commission in an anonymous way. The concerned healthcare professional should be informed of this report but should not oppose it. The commission could also receive direct referral - anonymous or not - from the infected healthcare professional (already working or trainee). This referral would come along with an information sheet including infectiousness factors and the type of treatment interventions undertaken. The information sheet should not contain anything that would allow identifying the healthcare worker in his/her place of work. The commission's advice would include recommendations on the healthcare worker's activity, with a validity period of these recommendations and a possible recommendation for monitoring and further examination by the commission. The strictest confidentiality should be guaranteed and members of the commission would be bound by professional secrecy. Advice would be reported directly to the person referring the case. If this person is a doctor but not the infected healthcare worker, the commission's notice should then be transmitted to the concerned healthcare professional.

To conclude, it appears that the generalization of standard precautions and the compulsory nature of HBV vaccination have considerably reduced the risk of healthcare-associated hematogenous viruses' transmission. New virological tools allow efficient tracking of the HBV, HCV or HIV carriers' infectiousness and therapeutic advances have considerably reduced transmission risks and even increased chances of a cure in the case of Hepatitis C. All these points suggest that in the future, healthcare-associated hematogenous viruses' transmission should be reduced. However, for working subjects or those wishing to work in a medical specialty comprising high risk interventions, it seems urgent to set up a national consultative commission in charge of appraising litigious cases and reporting anonymous advice on durable or temporary restrictions on the (future) infected healthcare worker. This would thus protect the patients and healthcare professionals' interests transparently.

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