

# PREVENTING HEPATITIS C VIRUS (HCV) TRANSMISSION IN HEMODIALYSIS

**Michel Y. Jadoul, MD**

Cliniques Universitaires St. Luc, Université Catholique de Louvain  
Brussels, Belgium

Hepatitis C Virus (HCV) infection is a common cause of chronic liver disease worldwide. HCV infection in dialysis centres depends on the prevalence of the disease in general and in the hemodialysis (HD) population in particular.

HCV is not transmitted orally, and that the infection is mainly blood borne, either by transfusion or through the skin/mucosa. The main risk factors predominantly are through exposure to infected blood or blood products, such as: transfusion, needle-sharing as a major risk factor for infection, and needle-stick injuries in health care workers.

Molecular virological studies have clearly shown the nosocomial transmission of HCV to hemodialysis patients, but the exact modes of transmission remain unclear. Studies suggest several risk factors, including transmission through blood components, patient-to-patient transmission through shared equipment, devices, or multidose vials, and between patients treated on the same shift but not sharing equipment.

## **Bolstering Hygienic Precautions**

- Organize staff meetings (nurses, doctors, etc.)
- Discuss a variety of issues, such as
  - SC in the unit and local risk factors
  - Mechanisms of HCV transmission
- Distinguish between protecting staff and protecting patients
  - Protecting staff = wearing gloves
  - Protecting patients = changing gloves
- Monitor and give feedback to the staff

An increased risk for HCV infection emerged for patients attending the dialysis units with a high prevalence of HCV-infected patients at baseline and for those attending units with a low personnel-patient ratio were reported.

The Dialysis Outcomes and Practice Patterns Study (DOPPS) showed that anti-HCV (+) prevalence in HD has decreased markedly over the last decade with implementation of HD specific infection control practices in most European countries. However, DOPPS data did not indicate that isolation of HCV-positive patients reduces the risk of HCV seroconversion.

To prevent HCV transmission in HD settings, universal precautions and HD-specific infection control practices should be used. Some suggestions for increasing awareness of hygienic precautions in the dialysis unit are listed below.

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It is debatable whether or not HD patient isolation and dedicated dialysis machines prevent HCV transmission. For efficient isolation, infective patients must be correctly identified. The window between infection and seroconversion makes serologic tests imperfect for that purpose, especially in immunocompromised patients. In addition, loss of antibody in persistently infected patients has been documented in some HD patients.

HCV is a flavivirus with multiple genotypes. Even within the genotypes there are closely related sequences or quasi-species. The antibody response that is elicited by infection is not protective and will not cross neutralize virus of other genotypes or quasi-species. It is possible for an individual to become infected with more than one type of HCV since infection does not produce immunity and up to 100 percent of individuals infected will have persistent infection. Clustering of anti-HCV-positive patients, most of whom test positive for HCV RNA, in the same room might increase their risk for infection by multiple HCV strains

Isolation is costly, especially in units with HbsAg (+) patients, because up to four wards (i.e., for B+C+, B-C+, B+C-, and B-C- patients) may be required. Isolation may lead to less than adequate implementation of universal precautions, with an attendant higher risk of cross-infection by multiple HCV stains and/or other viruses.

Increasing the complement of highly trained staff is associated with reduced HCV prevalence and seroconversion risk. Arenes et al investigated the degree of compliance with hand hygiene and use of gloves by health workers in HD units, and the factors that influenced adherence to hand hygiene protocols. Gloves were actually used on 92.9% of the opportunities to wear gloves for. Hands were washed only 35.6% of the time after patient contact, and only 13.8% of the time before patient contact. Poor adherence to hand washing was associated with the number of shifts per HD unit per day and with higher patient-to-nurse ratios. The personnel's knowledge of patients' infectious status did not modify their adherence to hand hygiene practices. A higher patient-to-nurse ratio independently influenced hand washing both before and after patient contact.

Continuously educating HD unit staff on how to prevent nosocomial transmission is very important. Monitoring the use of HD infection control practices to prevent the transmission of all blood borne pathogens is preferable to isolating patients according to HCV status.

#### References

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