Reviewer's report

Title: Infection by the hepatitis C virus in chronic renal failure patients undergoing hemodialysis in Mato Grosso State, Central Brazil: a cohort study.

Version: 4 Date: 2 January 2007

Reviewer: Nicola Petrosillo

Reviewer's report:

General
The authors modified the article according to the suggestions of the reviewers.

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Major Compulsory Revisions (that the author must respond to before a decision on publication can be reached)
The Discussion section is difficult to read, and it is difficult to understand logical order of the sentences in the section. I suggest to modify it as follows (reference numbers should be logically modified):

"This article represents the first seroepidemiologic study on HCV spread among patients undergoing hemodialysis in the state of Mato Grosso, Brasil. The prevalence of antibodies to HCV in our population was similar to that found in the United States, Japan, and other Brazilian states, but lower than that found by Carneiro et al. (2001) in Goiania, that is a central region of Brazil 900 Km apart from the region of the present study [2,4,22,23]. However, in our study, in three units (1, 2, and 3) that did not adopt all internationally standardized infection control measures, we found higher HCV prevalence and incidence rates. Particularly in these three units items were likely shared among patients, clean and disinfection of equipments were insufficient, and a policy of glove use and handwashing was lacking. Similar findings were evidenced in other studies on hemodialysis units analyzed in other large Brazilian cities [4,8,11]. Moreover, as already reported [21] higher HCV incidence rates were associated with a high burden of HCV positive patients treated in the same unit. It is likely that also understaffing [21], not studied in our report, played a role in the spread of HCV infection among patients undergoing dialysis in units with high HCV prevalence rates. Additionally, higher incidence rates occurred in those units were a break of infection control measures was evident. This further suggests that improper practices and environmental infection control breaks, more than the blood transfusion, may represent the major factors in the HCV transmission among hemodialysis patients [12,13,14]. Indeed, the number of transfusions received up until admission into the study was associated with higher HCV prevalence rates, but not with the frequency of new HCV seroconversions. Patients who had received transfusions before entering the study could have been exposed to HCV if they received these transfusions before the blood banks started testing for anti-HCV and when the serologic methods were less sensitive. Moreover, as reported by several authors [24,25,26,27,28] in our study the duration of the hemodialysis treatment was associated with HCV acquisition, thus suggesting a nosocomial route of transmission of HCV infection.

Another interesting point raised by our study, was the lack of association between isolation of HCV infected patients, adopted in all the units, and lower HCV incidence rates. Indeed, high HCV incidence rates were independent from isolation policies and were associated with a break in infection control measures, including lack of glove exchange between patients, handwashing, cleaning, and disinfection.

Our study has some limitations. First, we did not perform assays for HCV-RNA, by using polimerase chain reaction (PCR). This method permits to evidence HCV infected individuals without antibodies to HCV, a condition that involves approximately up to 5% of patients in the hemodialysis setting ( Schroter M, Feucht HH, Schafer P, Zollner B, Laufs R. High percentage of seronegative HCV infections in hemodialysis patients: the need for PCR. Intervirology 1997;40:277-8. However, this methodology is still expensive to be performed as a screening test in most of developing countries. In Brazil, immunoenzymatic assays (EIA) are routinely employed in blood banks and hemodialysis units to search for HCV-infected patients. Although anti-HCV positivity by EIA does not discriminate between patients with HCV viremia and those who had HCV cleared, it is very sensitive and may occasionally identify hemodialysis patients with very low viremia not detected by PCR. Aiming to increase EIA specificity only successively positive anti-HCV patients were considered as a case in the present study. Furthermore, the positive predict value of anti-HCV by EIA increases in high prevalence settings such as hemodialysis environment. Some of the anti-HCV positive patients detected in the first evaluation could have already had the HCV cleared. Since our goal was assessing prevalence of infection instead of viremia, EIA was more appropriate than
PCR.
Second, we did not studied other factors likely involved in HCV transmission in the hemodialysis settings, such as having received hemodialysis treatment in different units, and having been submitted to surgical interventions on previous months [21].
In conclusion, the lesson from our study is that the implementation of a isolation policy for patients with antibodies to HCV is insufficient to prevent new HCV infections when infection control measures are lacking, especially in units with a high burden of HCV infection and, likely, understaffing. In addition, isolation does not prevent superinfections by other HCV genotypes circulating the hemodialysis setting [29].

Local public health authorities were alerted about these findings in order to implement a surveillance system and to strengthen awareness of hemodialysis healthcare workers on the need for strictly applying infection control measures.

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Minor Essential Revisions (such as missing labels on figures, or the wrong use of a term, which the author can be trusted to correct)
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Discretionary Revisions (which the author can choose to ignore)

What next?: Unable to decide on acceptance or rejection until the authors have responded to the major compulsory revisions
Level of interest: An article whose findings are important to those with closely related research interests
Quality of written English: Needs some language corrections before being published
Statistical review: Yes, and I have assessed the statistics in my report.
Declaration of competing interests:
I declare that I have no competing interests