Reply to Gyarmathy

To the Editor—In her letter, Gyarmathy [1] suggested that our analysis of hepatitis C virus (HCV) seroconversion in injection drug users [2] may have failed to detect an association with syringe sharing because we did not account for the practice of cleaning used syringes with bleach. She cited data from her cross-sectional study of Hungarian injection drug users [3], in which prevalent HCV infection was associated with syringe sharing without first cleaning with disinfectant bleach during the 30 days prior to the study. Injection drug users in that study had been injecting drugs for 7.5 years, on average, so it is likely that the majority of HCV infections had occurred many years before the 30-day referent period [3]. Indeed, one would not expect very recent behavior to reveal much about how these infections were acquired.

We conducted additional analyses and estimated the association between syringe sharing (with and without cleaning) and drug preparation equipment sharing in a model that adjusted for confounding. The results were unchanged. There were 4 fewer cases as a result of missing data on syringe cleaning with bleach. The odds ratio (OR) for the “shared and did not always clean” category was 0.87 (95% confidence interval [CI], 0.58–2.89), and the OR for the “shared but always cleaned” category was 1.14 (95% CI, 0.62–5.88). The OR for sharing preparation equipment remained significant (OR, 2.60 [95% CI, 1.02–22.74]). The new model did not explain significantly more variance than the old model by likelihood ratio test. Thus, we believe that our published results appropriately explain acquisition of HCV infection in this sample in relation to injection practices [2].

We hesitate to recommend bleaching or cleaning syringes as an HCV prevention method for injection drug users because there is little support for this approach. There have been a number of HCV seroconversion studies that measured syringe sharing, bleach use, and other risk factors during the period when infection was acquired [4–7]. Meta-analysis of the data reported in these studies suggests a distribution around a null association between bleach use and HCV incidence (summary OR, 1.04 [95% CI, 0.47–2.31]) (H Hagan, unpublished data). Similarly, in the case of human immunodeficiency virus (HIV), laboratory studies have shown that undiluted bleach reduces its viability in contaminated syringes, but field studies have failed to demonstrate its effectiveness in preventing HIV seroconversion [8, 9].

Cross-sectional studies can be useful in examining correlates of infection, but extreme caution should be exercised in interpreting this type of data in terms of causality. The conclusion drawn from the Hungarian study, that “cleaning with bleach diminished risk of HCV infection to the level of using sterile syringes” seems to push beyond the limits of this particular study design. In the face of consistently high HCV incidence rates among injection drug users, the search for an effective HCV infection prevention strategy is ongoing and urgently needed [2, 5]. The Institute of Medicine recently completed a review of the evidence on prevention and control of viral hepatitis in the US and concluded that, “At a minimum [programs to reduce the risk of HCV infection through injection drug use] should include access to sterile needles, syringes, and drug-preparation equipment because the shared use of these materials has been shown to lead to transmission of hepatitis C virus” [10]. Access to safe injection materials is of paramount importance to HCV infection control, and there is no compelling evidence to suggest that cleaning syringes with bleach may substitute.

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References


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