MEASURES OF HEPATITIS C (HCV) INCIDENCE IN THE ERA OF HCV PREVENTION

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Background: Measuring changes in hepatitis C (HCV) incidence is important for assessing the impact of interventions to prevent and control HCV, including treatment as prevention (TasP). Incidence estimates from cross-sectional studies use biological markers, such as HCV RNA among individuals negative for HCV antibodies (anti-HCV), and anti-HCV avidity. However limitations include duration and variability of the window periods. We compared these two markers of HCV incidence to inform surveillance planning for TasP.

Methods: Samples collected through a national unlinked-anonymous bio-behavioural monitoring survey of people who inject drugs (PWID) between 2011-2013 were tested for two markers of recent infection (HCV RNA among anti-HCV negative, and anti-HCV avidity). Those who reported they had injected in the previous year were included in the analysis, and those HIV positive excluded (n=25). The two markers were used separately and in combination to estimate HCV incidence.

Results: Between 2011-2013, 2,816 HIV negative PWIDs were either anti-HCV negative or had one of the two recent infection markers. 57 (2.0%) were HCV RNA positive and anti-HCV negative ('RNA'), and 90 (3.2%) had weak anti-HCV avidity with HCV RNA present ('avidity'). The two markers had similar distributions with risk and demographic factors. Pooled estimated incidence was 12.3 per 100py (95% credible interval 8.8-17.0) with no significant difference compared to avidity-only (p=0.865) and RNA-only estimates (p=0.691). The window period was driven by that for the RNA approach.

Conclusion: RNA and avidity provide similar HCV incidence estimates. However, RNA is limited by a short window period and avidity by uncertainty about the duration of its longer window period. Where HCV incidence is high, one marker may provide an accurate incidence estimate. However, in the context of falling incidence, e.g. due to TasP, their use in combination may be required for a robust measurement of incidence. The optimal approach requires further assessment.

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