THE CONTRIBUTION OF UNSTABLE HOUSING TO HIV AND HEPATITIS C VIRUS TRANSMISSION AMONG PEOPLE WHO INJECT DRUGS GLOBALLY, REGIONALLY, AND AT COUNTRY LEVEL: A MODELLING STUDY

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Background
People who inject drugs (PWID) experience high levels of unstable housing (22% globally), which is associated with increased risk of HIV and hepatitis C virus (HCV) acquisition. We estimated the contribution of unstable housing to HIV and HCV transmission among PWID globally, regionally, and at country level.

Methods
We developed simple dynamic models of unstable housing and HIV/HCV transmission to estimate the contribution of unstable housing to each country's HIV/HCV epidemics among PWID. Each country's model was calibrated using country-specific data from systematic reviews on duration of injecting, mortality, and prevalences of unstable housing, HIV and HCV among PWID. Based on our systematic review and meta-analysis, unstably housed PWID were assumed to have a 39% (95%CI: 6-84) and 64% (95%CI: 43-89%) higher risk of HIV and HCV transmission, respectively, than stably housed PWID. We estimated the population attributable fraction (PAF) of unstable housing to HIV and HCV transmission as the percentage of infections prevented over 10-years from 2020 by removing the additional transmission risk due to unstable housing.

Results
The HIV and HCV models included 56 and 55 countries, respectively (two-thirds of global PWID population). Globally, unstable housing contributes 7.8% (95% credibility interval [CrI] 2.2-15.5) and 11.2% (7.7-15.5) of new HIV and HCV infections among PWID over the next 10-years, respectively. PAFs were higher across high-income countries (HIV: 17.2%, 95%CrI: 5.1-30.0; HCV: 19.4%, 95%CrI: 13.8-26.0) than low/middle-income countries (HIV: 6.5%, 95%CrI: 1.8-12.9; HCV: 8.3%, 95%CrI: 5.5-11.7). The PAFs for HIV and HCV were highest (>20%) in Afghanistan, Czechia, India, USA, and England due to their high levels of unstable housing (>26%).

Conclusions
Unstable housing may contribute substantially to incident HIV and HCV infections among PWID in many countries. Efforts to achieve HIV/HCV elimination goals should not overlook the importance of implementing Interventions and policies to reduce housing instability.

Disclosure of Interest: *Dr Stone has no conflicts of interest to report. No pharmaceutical grants were received in the development of this study.*