Marked reduction of hepatitis C prevalence in the prison setting during 2nd year of TraP HepC (Treatment as Prevention for Hepatitis C) program in Iceland

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Background: Hepatitis C virus (HCV) infection is common among prisoners due to high rates of incarceration of people who inject drugs (PWID). In Iceland at least thirty percent of the prison population is serving sentences for drug related crime (Figure 1). One facility acts as the receiving prison for all inmates initially brought in for enforcement of their sentencing, making it an ideal setting for testing of inmates. A nationwide treatment effort was launched in January 2016, offering all HCV infected individuals treatment, and included an outreach nurse-led program within the penitentiary system.

Methods: In June 2016 nurses visited the two main prisons (Figure 2) offering all inmates testing for HCV, revealing a viremic prevalence rate of 29%. All infected inmates were then offered treatment with direct acting antivirals (DAAs) while incarcerated in any of the 5 prisons, using sofosbuvir/ledipasvir +/- ribavirin throughout October 2016 and sofosbuvir/velpatasvir thereafter. Nurses visit the prisons on a regular basis offering testing to any new inmates and all previous inmates that request retesting. Efforts are made to link all inmates to care with any of the three TraP HepC treatment centers operated outside the prison when/if released.
In January 2018 testing was again offered to all inmates. We compared the prevalence of HCV viremia among prisoners in June 2016 and in January 2018, 19 months after the start of the penitentiary program.

Results: At the initiation of the program, 59 (84%) out of a total of 68 inmates were tested for HCV. Among those tested, 17 (29%) were PCR positive, of which 16 accepted treatment. During subsequent screening of new inmates during the first eighteen months of the program, 22 additional patients were identified and initiated on treatment, for a total of 38 patients.
In January 2018, 57 (68%) out of a total of 84 inmates were tested for HCV. Among those tested 4 (7%) inmates were found to be PCR positive, of which all accepted treatment. Out of the 27 inmates who were not tested, 10 had previously tested negative and reported no new risk behavior, 3 accepted testing at a later visit and tested negative, 3 inmates were already receiving treatment prior to incarceration and 2 inmates refused testing citing no risk behavior. Five inmates were in isolated custody, 3 being released and 2 tested at a later visit (one PCR positive and initiated on treatment, one PCR negative). Finally, four inmates were scheduled for deportation and not tested. Thus, HCV status was established for 75 (89%) of the 81 inmates requiring testing. In total 5 (7%) were found to be PCR positive, accounting for a 76% drop in prevalence within the prison population in Iceland from June 2016 to January 2018 (p<0.001, two-tailed Fischer´s exact test). These results are summarized in Figure 3.

Figure 1. Sentences of prison population in Iceland (2016)

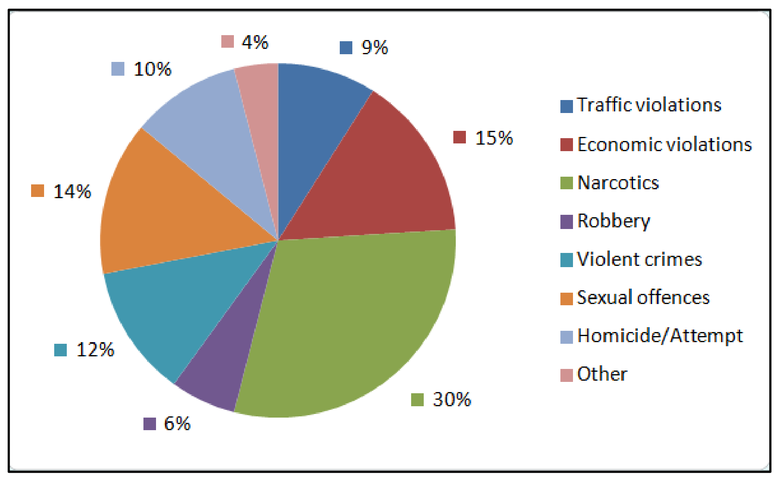


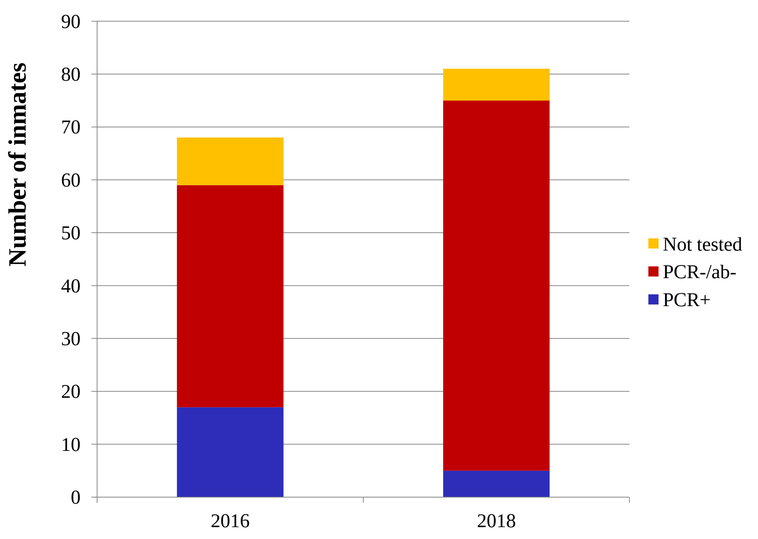
Table 1. Penitentiary system statistics (2016)

Official capacity of prison system*	186
Occupancy level (%)	83
Prison population rate (per 100.000 inhabitants)	43

*Including pre-trial detainees/remand prisoners

Figure 2. Prison locations in Iceland

Figure 3. Summary of testing results



Conclusion:
Testing and treatment for HCV is well accepted within the prison setting in Iceland and can be delivered safely and effectively. The TraP HepC program has resulted in a significant reduction in prevalence of HCV viremia in this high-risk population but continued surveillance is essential. To further reduce the risk of HCV transmission, needle exchange programs should be implemented in Icelandic prisons.