

Enhancing hepatitis C treatment in the custodial setting: a national roadmap

Challenges and opportunities for enhanced services

Over 300 000 Australians have been exposed to hepatitis C virus (HCV), of whom an estimated 226 700 are living with chronic infection, including 16 000 Indigenous Australians.^{1,2} Transmission of HCV occurs via blood-to-blood contact, most notably via injecting drug use.³ About 10 000 new infections are estimated to occur annually, and only 25% of infected individuals clear the virus during acute infection. Accordingly, the population living with chronic infection is steadily increasing.^{3,4} Over the next 20–40 years, about 20% of individuals with chronic hepatitis C are estimated to progress to cirrhosis,⁵ and thereafter 3% will die each year from liver failure or hepatocellular carcinoma.⁶ Chronic hepatitis C is already the leading indication for liver transplantation in Australia.⁴

Curative treatment exists for chronic HCV infection but uptake in Australia is low — only 3000–4000 patients are treated annually.^{3,4} Until recently, treatment consisted of pegylated interferon (PEG) and ribavirin (RBV) administered for 24 or 48 weeks, with cure rates of 70%–80% in those with genotype 2 or 3 infections and 40%–50% for genotype 1.⁷ Recently, the first two of a new class of “direct acting antivirals” (DAAs), telaprevir and boceprevir, were listed on the Pharmaceutical Benefits Scheme (PBS) for genotype 1 infection. Combined with PEG–RBV, DAA treatment results in a 30% increase in cure rate. However, adverse effects are a major obstacle, with frequent constitutional symptoms, mood disturbance and cytopenia requiring intensive clinical and laboratory monitoring. Assessment of pretreatment liver biopsy specimens for fibrosis is no longer required for the use of DAAs under the PBS. Instead, non-invasive fibroelastography may be used, but is largely restricted to tertiary referral liver clinics.

To control the growing burden of HCV disease, new infrastructure and models of care to enable assessment and treatment outside tertiary referral liver clinics need to be developed.⁴ Prisoners have been identified as a priority population.³ Australian prisons hold about 30 000 individuals at any one time, with considerably more cycling through the system annually.¹ Nationally, 21% of prison entrants test positive for HCV, with higher rates in people who inject drugs (51%).⁸ Despite this, treatment coverage is low. Even in settings with well developed infrastructure, less than 1% of those potentially eligible receive treatment.⁹

Recently, a national workshop was convened to delineate a national roadmap for enhancing hepatitis C treatment in custodial settings. Thirty-one invited stakeholders from all states and territories attended, including specialist physicians, researchers, nurses, health administrators, prison managers, community group

representatives and pharmaceutical industry representatives.

Workshop attendees were surveyed before the meeting on the hepatitis C services in their jurisdiction. All stated that antiviral treatments were potentially available to prisoners, but the numbers of patients undergoing treatment were very small (<50 patients annually in most jurisdictions). Identified barriers to service delivery included: a lack of specialist nurses (88%); limited capacity to access hospital-based hepatitis specialists (85%), including 69% reporting long waiting lists; and limited or no access to fibroelastography (86%).

Many challenges and opportunities to enhance services were identified in the workshop, including: impeded efficiency in the clinical pathway from diagnosis to treatment completion; and opportunities to improve access to and uptake of treatment, particularly via improved infrastructure (Box). A key challenge identified nationwide was limited access to specialist physicians able to care for prisoners in a tertiary referral model of care, as community-based services are responsible for ensuring assessment and treatment of inmates, involving costly transport to hospital clinics.¹⁰ In addition, since the numbers of specialist physicians involved in hepatitis treatment delivery are limited, the typically complex health care needs of prisoners (eg, needs relating to drug and alcohol use and psychiatric comorbidities) may discourage physicians from participating in treatment programs for prisoners with hepatitis C. Nevertheless, prison-based hepatitis services provide opportunities for managing HCV disease, as they are feasible to set up and effective.^{9,11} Furthermore, outcomes of hepatitis C treatment in incarcerated and non-incarcerated populations are comparable, with reported sustained virological response rates ranging from 36% to 69% in studies with both standard interferon and PEG in combination with RBV.¹² Recently, a program using nurse-led telemedicine and a portable fibroelastography service was successfully implemented in New South Wales prisons to overcome the lack of specialist providers.¹³ Integration of hepatitis treatment with harm minimisation interventions is critical to reduce reinfection.¹⁰

Many systems-level factors relevant to the delivery of hepatitis C treatment in prisons were identified, but the perspective of prisoners was not sought. This is being addressed by other research initiatives.

For hepatitis C, there is the prospect of highly efficacious, minimally toxic, interferon-free (ie, oral) regimens of shorter duration. Accordingly, new prison-based models of care need to be implemented to enhance awareness and diagnosis of hepatitis C, facilitate timely referral and institute treatment safely. While benefiting prisoners directly, successful treatment of prisoners with hepatitis C could reduce the risk of transmission to other

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Enhanced treatment of hepatitis C virus (HCV) infection in Australian prisons: challenges and opportunities	
Challenges	Opportunities
Clinical pathway	
Diagnosis	
Ensuring diagnostic screening tests are done and results given to the patient before release or transfer to another facility	Implement enhanced targeted screening of individuals at risk of hepatitis C and those with behaviour conducive to treatment (eg, a controlled drug use pattern)
Missed opportunities for HCV testing when patients come into contact with health services staff	Encourage testing at primary care, drug and alcohol, and psychiatric services, as well as public health services with appropriate counselling and follow-up Offer HCV testing in conjunction with bloodborne virus and sexual health screening
Lack of effective information systems across and between custodial facilities	Establish electronic laboratory test results and medical records for prisoners being transferred to avoid repeat testing
Assessment with a view to treatment	
Variable sentence length	Select inmates with > 1 year sentence length to complete antiviral treatment in prison Post-release medical support services linked to community-based hepatitis services to provide continuity of care
Cost of and security for transporting patients to community-based health facilities	Establish within-prison facilities for blood collection and portable fibroelastography
Lack of psychiatric and psychological services	Train staff delivering hepatitis treatment to routinely use standardised psychiatric assessment tools
Patient willingness to be treated	
Prisoners without enough knowledge of HCV disease and treatment	Develop and implement prisoner education programs, including peer-based approaches
Treatment	
Prisoners' human rights	Provide inmates with access to Medicare rebatable services
Frequent transfers between custodial centres	Establish medically requested "holds" to keep inmates in one place for treatment
Security-driven lockdowns affecting access to patients	Emergency supplies of medications in custodial centres for hepatitis C treatment
Continuity of care on release	Discharge planning and coordination of care with community-based hepatitis services for those who may be released
Monitoring of treatment	
Toxicity and adverse effects of treatment	Optimised protocols to manage adverse effects of treatment Protocol based on clinical review decisions to escalate care if symptoms progress
Infrastructure	
Skilled and well equipped staff	
Limited access to specialist physicians	Establish specialist clinics in prisons, or, alternatively, nurse-led and telemedicine-based care
Negative attitudes towards care of inmates with hepatitis C	Break down negative culture through senior management leadership Involve custodial staff in health care decision making and shared protocols for HCV management
High nursing staff turnover and lack of specialist nurses in prisons	Improve training and specialisation opportunities
Contractual arrangements	
Lack of awareness of hepatitis C as a health priority by private prison providers	Embed key performance indicators for hepatitis C assessment and treatment in contracts
Inequity in hepatitis services	Ensure uniform key performance indicators across private and public prisons, and across jurisdictions Partner with private and non-government organisations (eg, pharmaceutical industry or Hepatitis Australia) for education programs Identify cost efficiencies (eg, telemedicine for non-urban prisons) ♦

inmates and the general population. Prisons therefore represent an unfortunate, but underutilised, opportunity to manage the Australian hepatitis C epidemic.

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- Kirby Institute. HIV, viral hepatitis and sexually transmissible infections in Australia: annual surveillance report 2012. Sydney: University of New South Wales, 2012.
- Ministerial Advisory Committee on AIDS, Sexual Health and Hepatitis C Sub-Committee. Hepatitis C Virus Projections Working Group: estimates and projections of the hepatitis C virus epidemic in Australia 2006. Sydney: National Centre in HIV Epidemiology and Clinical Research, 2006.
- Department of Health and Ageing. Third national hepatitis C strategy 2010–2013. Canberra: Commonwealth of Australia, 2010.
- Gidding HF, Topp L, Middleton M, et al. The epidemiology of hepatitis C in Australia: notifications, treatment uptake and liver transplantations, 1997–2006. *J Gastroenterol Hepatol* 2009; 24: 1648–1654.
- Freeman AJ, Dore GJ, Law MG, et al. Estimating progression to cirrhosis in chronic hepatitis C virus infection. *Hepatology* 2001; 34: 809–816.
- Fattovich G. Progression of hepatitis B and C to hepatocellular carcinoma in Western countries. *Hepatogastroenterology* 1998; 45 Suppl 3: 1206–1213.
- Sarrazin C, Hézode C, Zeuzem S, Pawlotsky JM. Antiviral strategies in hepatitis C virus infection. *J Hepatol* 2012; 56 Suppl 1: S88–S100.
- Butler T, Papanastasiou C. National prison entrants' bloodborne virus and risk behaviour survey report 2004 and 2007. Perth: National Drug Research Institute, 2008.
- Boonwaat L, Haber PS, Levy MH, Lloyd AR. Establishment of a successful assessment and treatment service for Australian prison inmates with chronic hepatitis C. *Med J Aust* 2010; 192: 496–500.
- Bate JP, Colman AJ, Frost PJ, et al. High prevalence of late relapse and reinfection in prisoners treated for chronic hepatitis C. *J Gastroenterol Hepatol* 2010; 25: 1276–1280.
- Batey RG, Jones T, McAllister C. Prisons and HCV: a review and a report on an experience in New South Wales Australia. *Int J Prison Health* 2008; 4: 156–163.
- Post JJ, Arain A, Lloyd AR. Enhancing assessment and treatment of hepatitis C in the custodial setting. *Clin Infect Dis* 2013; 57 Suppl 2: S70–S74.
- Lloyd AR, Clegg J, Lange J, et al. Safety and effectiveness of a nurse-led outreach program for assessment and treatment of chronic hepatitis C in the custodial setting. *Clin Infect Dis* 2013; 56: 1078–1084. □