Hepatology Snapshot:

# Remaining challenges in HCV elimination

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Camelia Capraru[1], Jordan J. Feld[1]*

[1]Viral Hepatitis Care Network (VIRCAN), Toronto Centre for Liver Disease, Toronto General Hospital, University Health Network, University of Toronto, Canada
*Corresponding author. Address: Toronto Centre for Liver Disease, Toronto General Hospital, University Health Network, 200 Elizabeth Street, 9EB 240, Toronto, ON, M5G 2C4; Tel.: 416 340 4584, fax: 416 340 5133.
E-mail address: Jordan.feld@uhn.ca

| Journey stage | Prevention | Awareness and diagnosis | Linkage to care | Care and treatment | Cure | Ongoing prevention |
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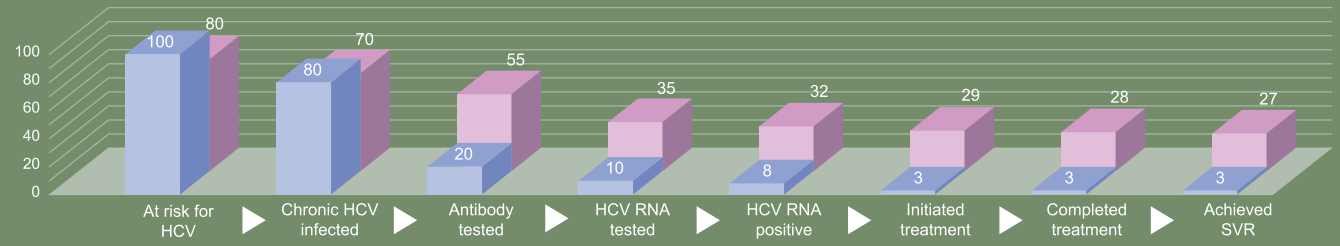
| Current patient journey | At risk for HCV | HCV Ab testing | HCV RNA and genotype testing | Specialist visit | Treatment coverage / Start treatment visit / End treatment visit | SVR visit | Long-term follow-up visits |
| Challenges Pre-COVID-19 | • No effective vaccine<br>• Scarce or no access to harm reduction (HR) programs<br>• Stigma by HCPs and population<br>• Criminalization of risk activities | • Lack of awareness and screening in general and high-risk (PWID, prisons) populations<br>• Stigma by public and HCPs<br>• Multi-step testing process<br>• Limited access to POC tests<br>• POC tests expensive<br>• Phlebotomy usually required | • Expensive particularly in low and middle income countries<br>• Requires central laboratory programs with slow turnaround<br>• Multiple visits from diagnosis to treatment start | • No universal treatment access<br>• Limited number of providers able and willing to treat<br>• Lack of providers for priority populations (PWID, prisons)<br>• Fibrosis, sobriety, provider restrictions to access treatment<br>• Daily medication for 8-12 weeks | • Lack of SVR confirmation | • Lack of ongoing HCC monitoring post-SVR<br>• Lack of reinfection surveillance<br>• Lack of HR programs |

HCV cascade of care




| During COVID-19 | • Reduced access to HR programs<br>• Increased drug use (?) | • Reduced testing<br>• Outreach difficult<br>• HCV programs put on hold | • Limited access to labs<br>• Linkage to care on hold | • Reduced/deferred HCV treatment<br>• Programs put on hold<br>• Funding limitations | • Limited access to labs | • HCC surveillance postponed<br>• Reinfection risks increased |
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***Pre-requisites for success: political will, national action plan and community involvement***

| Solutions | • Effective vaccine<br>• Expansion of HR programs<br>• Decriminalization of personal risk activities<br>• Stigma training | • Increase awareness<br>• Screening strategies including population and high risk groups<br>• Multiplex testing for STBBIs including HCV<br>• Reduced cost POC tests<br>• Task shifting – peer or self testing in non-health care settings (no phlebotomy)<br>• Leverage COVID Ab testing to expand HCV testing | • Reflex RNA/core Ag testing<br>• Dried blood spot testing – self collection<br>• RNA POC testing at the site of linkage to care<br>• Regulate costs of diagnostic tests to ensure access | • Universal treatment access (incl. prisons, refugees/migrants)<br>• Reduce drug costs and increase access to generic drugs (*e.g.* Medicines Patent Pool)<br>• Increase capacity for care (task shifting to non-specialists)<br>• Co-location of services<br>• Simplified treatment guidelines<br>• Injectable long-acting drugs | • Simplified treatment guidelines<br>• Simple rules for post-SVR follow-up requirements (APRI/FIB4) | • Better models for HCC risk stratification<br>• Increase access to HR programs |
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Future patient journey


Impact: HCV care continuum


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The remarkable advances in HCV therapeutics have raised the prospect of elimination of HCV as a public health threat. However, many remaining barriers must be overcome to achieve this ambitious goal. The emergence of the global COVID-19 pandemic has unfortunately created additional challenges that will likely slow global progress towards elimination.

Before even considering those with HCV infection, a major focus needs to be on prevention. Without the near-term prospect of an HCV vaccine, reducing incidence requires a major focus on harm reduction for people who inject drugs (opiate agonist therapy, needle syringe programs, supervised injection sites) as well as avoidance of iatrogenic infection. Emerging data support treatment as prevention as an additional tool to decrease new infections but this requires active case-finding and early treatment in hard-to-reach populations.

A high proportion of those living with HCV remain unaware of their infection. Increased awareness and targeted screening strategies based on local epidemiology are critical to increase diagnosis rates. Acceptance of screening requires destigmatization of HCV among the public and in health care settings. Simplification of the diagnostic approach is also required. The standard paradigm of antibody testing followed by HCV RNA testing risks losing people before diagnostic confirmation or treatment initiation. The cost of HCV RNA testing surpasses the cost of a full course of therapy in many low- and middle-income countries, adding a major additional barrier. Increased use of point-of-care antibody testing followed by reflex HCV RNA, ideally delivered by peer workers without the need for phlebotomy at sites where treatment can be immediately initiated, would greatly reduce loss to follow-up and drop-offs in the cascade of care.

Even after diagnosis, significant drop-offs before treatment initiation are a consistent finding globally. Patient and provider restrictions on access, as well as the cost of therapy, continue to be major barriers. Use of pangenotypic regimens following very simplified guidelines allow for task-shifting to reduce the need for specialists and increase treatment capacity. Increased access to high quality generic medications is critical in low-income settings. Ideally low barrier treatment with minimal or no monitoring can be co-located with other services. Development of long-acting injectables as has been done for HIV could be transformative, allowing for immediate treatment (and cure) at the time of diagnosis.

After cure, those with advanced liver disease require ongoing surveillance for hepatocellular carcinoma. Improved tools for risk stratification could greatly enhance the efficiency of surveillance. Those at risk of reinfection require continued access to harm reduction services, bringing the cascade full circle back to prevention. Development of a vaccine is likely required for true global eradication.

The COVID-19 pandemic has exaggerated challenges at every step in the cascade of care from reduced access to harm reduction services to delayed treatment initiation.

Strategies to improve retention across the continuum of care exist. However, implementation of good practices requires coordinated efforts specific to the local epidemic. Countries/regions on track for elimination have clear action plans developed with strong community engagement, leading to critical political buy-in. Hopefully, the major public health challenge we currently face will not hamper our efforts to achieve the major public health triumph of eliminating HCV by 2030.

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## Conflict of interest

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## Authors' contributions

Study concept and design: CC, JJF. Drafting of the manuscript: CC, JJF.

## Supplementary data

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