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Opinion

Point of Care Policy for Eliminating Hepatitis C, its Applicability and Acceptability

Mahdi Sheikh, MD[1,2]; Hossein Poustchi, MD, PhD[1*]

[1]Liver and Pancreatobiliary Diseases Research Center, Digestive Disease Research Institute, Shariati Hospital, Tehran university of Medical Sciences, Tehran, Iran

[2]International Agency for Research on Cancer, the World Health Organization (WHO), Lyon, France

Abstract

Chronic infection with hepatitis C virus (HCV), can now be safely treated with oral, well-tolerated medications with >90% success rates, however, currently <5% of the infected individuals have been diagnosed and <1% have received treatment. This is believed to be due to the complicated, time-consuming and expensive disease management processes that require several referrals to specialized laboratories and hospital-based clinics, and also the epidemic of HCV infection among populations who have low uptake for evaluation, appointments, and treatment. Point of care (POC) policy emphasizes on delivering healthcare tests and services to patients at or near the place and time of patient care. A reasonable design for POC policy should contain all parts of the HCV management continuum including screening, diagnosis of viremia, genotyping, cirrhosis evaluation and treatment. Furthermore, successful implementation of this policy requires acceptability from the perspectives of healthcare providers, target populations, and policymakers. In this letter, we discuss the current applicability, acceptability, and cost-effectiveness of POC policy for the management of HCV infection.

Keywords: Elimination, National, Rapid, Viral

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Despite the availability of oral, well tolerated medications with >90% success rates for chronic hepatitis C virus (HCV) infection, it is estimated that < 5% of the infected individuals have been diagnosed and <1% have received treatment worldwide.[1] Current HCV management continuum can be divided into three parts: screening, diagnosis, and treatment.[2] Screening is performed through detecting antibodies to HCV (HCV-Ab) using immunoassay techniques. Diagnosis consists of three steps; first, evaluation of HCV viremia through detecting either HCV ribonucleic acid (RNA) or HCV core antigen; second, genotyping, using the line probe assay, real-time reverse transcriptase polymerase chain reaction (RT-PCR) or other expensive methods; and third, evaluation of fibrosis through liver biopsy or non-invasive transient elastography.[2] Finally, treatment is currently carried out only by specialists in hospital-based clinics. Considering this time-consuming and expensive management process that requires specialized laboratories, advanced equipment and expert personnel, along with the epidemic of HCV infection in resource-limited settings, the World Health Organization (WHO) goal of HCV elimination seems impossible using the current approach.

Although each country needs to plan its public health, human rights-based approach for HCV elimination considering its resources and HCV epidemics, the priority populations in most countries mainly include people who inject drugs (PWID) and people in custodial settings that have low uptake for evaluation, appointments, and treatment.[1] Therefore the WHO recommends developing point of care (POC) policy for the management of HCV infection in priority populations to ensure the widest access to high-quality, simplified and standardized HCV diagnostics and therapeutics.[2] POC policy emphasizes on delivering healthcare tests and services to patients at or near the place and time of patient care.[2] A reasonable design for POC policy for managing HCV infection should contain the three parts of screening, diagnosis and treatment, and requires acceptability from the perspectives of healthcare providers, target populations and policy makers to be successfully implemented.

The first part of POC policy, screening, can now be easily performed using rapid diagnostic tests (RDTs) which are commercially available and can provide the results within 20 minutes.[3] A meta-analysis showed that a pooled sensitivity of 97.4% and specificity of 99.5% for different RDTs in detecting HCV-Ab, make RDT

***Corresponding Author:** Hossein Poustchi, MD, PhD; Liver and Pancreatobiliary Diseases Research Center, Digestive Disease Research Institute, Shariati Hospital, Tehran university of Medical Sciences, Tehran, Iran. Address: Digestive Diseases Research Institute, Shariati Hospital, N. Kargar St., Tehran 14117, Iran. Tel: +98-21-8241-5141, Email: h.poustchi@gmail.com

an acceptable screening tool from healthcare providers perspectives.[3] From the target population perspectives, RDTs are also more acceptable than the standard phlebotomy method; as shown in a study by Hayes et al when PWID were offered HCV screening via either RDT or phlebotomy, 82.9% of them chose RDT mainly due to its quick results and being less painful.[4]

Second part of POC policy is diagnosis. For the first step of diagnosis which is evaluation of viremia, a few rapid tools for POC detection of HCV RNA or HCV core antigen are either in the pipeline or have been recently launched.[2,5] Xpert HCV Viral Load POC assay that uses finger-stick capillary blood sample has been shown to have a sensitivity of 95.5% and specificity of 98.1% for HCV RNA detection,[5] however, it is still too expensive to be used in resource-limited settings. Dried blood spots method (DBS) is another feasible and reliable alternative to virologic assays that can be used in resource-limited settings[2] since it does not require expert personnel, neither advanced nor expensive equipment. DBS also solves the problem of specimen withdraw, storage and shipment. Although, delayed reporting of results is a drawback in DBS, it is more feasible than standard methods and is highly accurate.[6,7] Studies with paired serum and DBS samples for HCV RNA detection, showed a sensitivity of 93.8–100% and a specificity of 94.0%–100% for DBS, even with low serum viral loads of 150–250 IU/mL.[6] From target population perspectives, as shown in a systematic review, introduction of DBS testing in custodial settings, needle and syringe exchange sites (NSE) and methadone maintenance therapy centers (MMTs) was associated with an increased uptake of testing in priority populations.[7] The second step of diagnosis, genotyping, could be removed in resource-limited regions where pan-genotypic medications are highly effective and available.[2] In regions where these medications are not available, DBS can also be used with high accuracy for HCV genotyping.[6] The third diagnostic step is evaluation of liver fibrosis to detect patients with advanced fibrosis/cirrhosis who require referral to specialized centers to receive appropriate diagnostic procedures and management. Screening for advanced fibrosis can also be performed in POC settings using simple, cheap and commonly available biomarkers (aminotransferases and platelet count). The WHO recommends using aminotransferase/platelet ratio (APRI) or Fibrosis-4 (FIB-4) indices for fibrosis evaluation in resource-limited settings[2] The APRI and FIB-4 indices have an acceptable sensitivity and specificity in diagnosing hepatic cirrhosis.[8] Even if checking hepatic enzymes is not available, platelet count alone is another alternative that has been shown to have an acceptable negative predictive value (84%–95%) for ruling out cirrhosis using a cutoff value of 150×10^6/mL.[8]

Third and the most important part of a successful POC policy is treatment that should be decentralized from specialized and hospital-based clinics.[1] Primary healthcare centers and community-based settings should also get involved in the treatment and management of HCV infections,[1] otherwise, most patients will drop out during the referral process. The primary results of the ASCEND study that compared sustained virologic response at 12 weeks (SVR-12) with direct-acting antivirals (DAAs) among 304 HCV infected patients who were treated by nurses, primary care physicians and specialists revealed that 96.7% of the patients treated by primary care physicians, 94.9% treated by nurse practitioners and 92.1% treated by specialists, had undetectable HCV RNA at 12 weeks after completion of treatment.[9] Some studies also have shown that offering HCV treatment on-site in custodial and community based settings such as MMT and NSE, results in increased patients uptake, adherence and response to treatment.[9,10]

From the government perspectives, the best and most cost-effective policy for hepatitis elimination is POC policy.[11–13] Cost-effectiveness ratio of on-site rapid HCV test in MMT and NSE compared to referral non-rapid HCV test is $26 000/quality adjusted life years (QALY),[11] while in prisons, the cost-effectiveness ratio of on-site HCV test is $29 200/QALY,[12] and for on-site HCV treatment with Sofosbuvir based regimens is $25 700/QALY.[13] POC policy is more cost-effective because it targets the high risk populations, reduces the ongoing transmission, and helps to identify more cases and reduce the number of patients who drop out during the referral process, and therefore can lead to more cases being treated.[11-13]

Authors' Contribution

Both authors contributed equally to this study.

Conflict of Interest Disclosures

The authors have no conflicts of interest.

Ethical Statement

Not applicable.

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