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Lessons Learned From Global Hepatitis C Elimination Programs

Senad Handanagic,[1,©] Shaun Shadaker,[1,©] Jan Drobeniuc,[1] Maia Tsereteli,[2] Maia Alkhazashvili,[2] Clement Adesigbin,[3] Ibrahim Adamu,[4] Ruth Adabe,[4] Chukwuemeka Agwuocha,[5] Olayinka Adisa,[5] Amy Azania,[6] Caroline E. Boeke,[6] Alida Ngwije,[7] Janvier Serumondo,[8] and Paige A. Armstrong[1]

[1]Centers for Disease Control and Prevention, Division of Viral Hepatitis, Atlanta, Georgia, USA; [2]National Center for Disease Control and Public Health of Georgia, Tbilisi, Georgia; [3]National AIDS/STIs Control Programme, Federal Ministry of Health, Abuja, Nigeria; [4]Nasarawa State Ministry of Health, Lafia, Nasarawa, Nigeria; [5]Clinton Health Access Initiative, Abuja, Nigeria; [6]Clinton Health Access Initiative, Boston, Massachusetts, USA; [7]Clinton Health Access Initiative, Kigali, Rwanda; and [8]Rwanda Biomedical Center, Kigali, Rwanda

In 2016, the World Health Organization introduced global targets for the care and management of hepatitis C virus (HCV) infection to eliminate hepatitis C as a public health threat by 2030. Despite significant improvements in testing and treatment, in 2020 only 23% of all persons infected with HCV globally were diagnosed. We explore examples from global hepatitis C programs in Georgia, Rwanda, and Nigeria that have used decentralized and integrated models to increase access to HCV testing. Georgia established the world's first national hepatitis C elimination program in 2015. In 2022, 2.6 million people (80% of the adults) have been screened for antibodies for HCV infection, and 80 000 persons with HCV RNA detected were treated. To achieve these results, Georgia implemented HCV core antigen testing, utilization of point-of-care (POC) HCV RNA testing, and simplification of HCV viremia detection by qualitative HCV RNA testing. Rwanda was the first country in sub-Saharan Africa to commit to HCV elimination in 2018, and as of 2022 it has achieved its screening target of 7 million people and initiated approximately 60 000 patients on hepatitis C treatment by rapid decentralization and integration of HCV services. In Nigeria, the integrated near-POC testing approach in Nasarawa State has been effective in expanding access to HCV viremia testing and enabling the possibility of same-day testing and treatment initiation. Examples of decentralization and integration of HCV testing and linkage to care in Georgia, Rwanda, and Nigeria could help inform effective strategies to reach 2030 hepatitis C elimination goals in other countries.

Keywords. Georgia; hepatitis C; Nigeria; Rwanda; viral hepatitis elimination.

Since the introduction of direct-acting antivirals (DAAs) in 2014, the number of people treated for hepatitis C virus (HCV) infection globally has increased dramatically (almost 10-fold since 2015) [1]. Despite the significant improvements in testing and treatment for HCV infection, in 2020 only 23% of all persons infected with HCV globally were diagnosed, and only 1% were treated for HCV infection [1]. In 2016, the 69th World Health Assembly passed a resolution to eliminate viral hepatitis as a public health threat by 2030, and the World Health Organization (WHO) introduced global 2030 targets for the care and management of HCV infection [2, 3]. In June 2022, the WHO adopted new Global Health Sector Strategies on human immunodeficiency virus (HIV), viral hepatitis, and sexually transmitted infections for the period 2022–2030, which focuses on bringing integrated, people-centered health services to the community in a model that looks to expand universal health coverage and emphasizes primary healthcare delivery, decentralization, and integration of hepatitis C services.

In the United States from 2013–2016, approximately 2.4 (2.0–2.8) million persons were estimated to be infected with HCV, and in 2020 there were approximately 100 000 cases of newly reported chronic hepatitis C [4, 5]. From 2013 to 2018, 49% of persons with HCV infection were not aware of their infection [6]. Approximately 1.2 million patients were treated with DAAs from 2014 to 2020 [7]. In light of the WHO Viral Hepatitis Elimination efforts [3], the United States also developed a Viral Hepatitis National Strategic Plan [8]. One of the 5 main goals of the elimination plan is to improve viral hepatitis-related health outcomes by increasing the proportion of people who are tested and aware of their viral hepatitis status and by supporting the development and uptake of new and improved diagnostic technologies.

In this manuscript, we explore examples from global hepatitis C programs in Georgia, Rwanda and Nigeria that have used decentralized and integrated models to increase access to HCV testing. These examples may be useful to inform HCV screening and testing approaches in the United States and other countries.

Correspondence: Senad Handanagic, MD, MPH Division of Viral Hepatitis, National Center for HIV, Viral Hepatitis, STD, and TB Prevention U.S. Centers for Disease Control and Prevention, 1600 Clifton Road, Atlanta, Georgia, USA (ndv9@cdc.gov).

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DECENTRALIZATION, INTEGRATION, AND EXPANSION OF HEPATITIS C DIAGNOSTIC SERVICES AS PART OF THE HEPATITIS C ELIMINATION PROGRAM IN GEORGIA

Georgia established the world's first national hepatitis C elimination program in 2015. By December 2022, 2.6 million people, or approximately 80% of the adult population, have been screened for antibodies to HCV (anti-HCV) for evidence of HCV infection, and of the 150 000 estimated to have chronic HCV infection, 100 697 have been identified and 80 897 treated with DAAs. The cost of treatment at the beginning of the Elimination Program in 2015 was very high and unaffordable for Georgia. Therefore, a key partnership was established with Gilead Sciences, who agreed to support the elimination program by providing free-of-charge treatment directly to the country because of the government's commitment to hepatitis C elimination nationwide [9, 10]. Since 2018, Georgia switched to using generic DAAs. These efforts resulted in a reduction in the estimated number of persons with HCV infection from 150 000 in 2016 to 48 000 in 2021 or 67%, and they put Georgia on the path to reaching HCV elimination goals by 2030 [11].

To achieve these excellent results, Georgia implemented evidence-based tactics of using HCV core antigen (HCVcAg), utilization of POC HCV RNA testing (eg, GeneXpert), and simplification of HCV viremia detection by qualitative HCV RNA test. These tactics opened opportunities for an extensive expansion of its screening program, the use of alternative cost-efficient tests for the detection of viremia, and, most importantly, decentralization and integration of HCV testing and treatment [12].

The HCV screening programs became available in 2015, before the launch of the HCV Elimination Program, and screening services continue to be provided at various settings at no cost (eg, blood donor centers, in-patient and outpatient clinics, harm-reduction services, and prisons) [13]. In 2015, when the Hepatitis C Elimination Program in Georgia began, HCV treatment was offered only to persons with advanced liver disease. A widespread hospital screening program started in 2016, and all patients admitted to the hospital are now screened for anti-HCV [14]. This led to a 3-fold increase in the number of persons screened in the first 6 months [15].

The essential part of the widespread screening program was raising awareness about hepatitis C. The government of Georgia has supported communication campaigns (social media, government websites, and TV and radio media) to raise awareness about the importance of early HCV diagnosis and to ensure that all Georgians can be tested and receive highly effective treatment for free. A variety of activities were undertaken with the contribution of numerous stakeholders working across a range of settings to increase professional and public understanding of hepatitis C and to help find patients who are undiagnosed and untreated. For example, the Hepatitis C Cured Patient Association identified 20 Elimination Program Ambassadors who participated in a train-the-trainer program on hepatitis awareness, media communication, and peer-to-peer consulting techniques led by health promotion and strategic communication specialists [16]. The Ambassadors trained 185 people and participated in 5 community outreach testing campaigns conducted in 5 regions of the country, including among ethnic minority groups (Azerbaijani and Armenian populations). More than 30 000 flyers and 1000 posters were disseminated during testing campaigns carried out by Hepatitis C Cured Patient Association, local governments, public health organizations, and primary healthcare specialists.

The Georgia Hepatitis C Elimination Program also identified additional costs and access barriers and adjusted the program to improve access to HCV testing, including through simplification of diagnostic algorithms. Since the start of the Hepatitis C Elimination Program, rapid HCV screening tests or laboratory-based immunoassays are offered in more than 1000 locations across Georgia and are free of charge for patients. However, subsequent testing for the virus was not widely accessible and required a copayment from patients. This was a significant barrier to diagnosis, and at the end of 2017, among hospitalized patients, less than 20% of HCV antibody-reactive persons had a HCV RNA test [15]. To address this challenge, a modified reflex testing approach was implemented in hospital settings in 2018 whereby a new blood sample is drawn for viremic detection immediately after a reactive antibody test result. This was done to ensure that HCV antibody-reactive samples were tested for HCVcAg or HCV RNA. As a result, in 2021, the proportion of people diagnosed with HCV infection within the hospital screening program increased to 78% [17].

In addition to reflex testing in inpatient clinics, blood banks, and antenatal clinics, to improve the accessibility to viremia testing, HCVcAg and GeneXpert HCV RNA testing were introduced in Georgia in 2017. These testing approaches were piloted in collaborative studies conducted by National Center for Disease Control and Public Health and US Centers for Disease Control and Prevention and were shown to be simpler to perform, quicker, and cheaper than the conventional polymerase chain reaction (PCR) methods for determining the presence of HCV RNA [13].

After the implementation of HCVcAg testing as an alternative to the HCV RNA testing in Georgia, HCVcAg was recommended by the WHO Euro Compendium as a cost-effective and productive alternative to HCV RNA testing for diagnosis and medical follow-up during hepatitis C treatment with DAAs. The analysis of 976 serum samples, collected at baseline, week 4, end of treatment, and 12 weeks after treatment completion, demonstrated that agreement between HCVcAg and HCV RNA test results was 98% at pretreatment, 96% at week 4, 99% at end of treatment, and 100% at 12 weeks after treatment completion [18]. The findings suggest that the

HCVcAg test could be used as an alternative to HCV RNA testing for the diagnosis of HCV infection among people who previously tested reactive for anti-HCV. This was confirmed in similar studies and included in WHO recommendations for simplified service delivery and diagnostics for HCV infection [12, 19, 20]. In addition, in a situation in which large numbers of anti-HCV-positive samples need to be tested for viremic infection every month (500–1000 per month in Georgia), HCVcAg testing has been shown to be quicker, simpler, and cheaper than testing all these samples using standard HCV RNA testing.

GeneXpert HCV RNA testing was expanded to 40 different locations across the country and has the added value of being able to be done onsite in less than 1 hour with minimal additional laboratory infrastructure. The Georgia Harm Reduction Network has even used modules in mobile units, bringing access to viremia testing to remote communities. These efforts led to substantial improvement in linkage to viremia testing and as of 2022, 86% of 148 743 anti-HCV-reactive persons were tested for HCV virus RNA. The successful use of reflex testing, HCVcAg, and GeneXpert HCV RNA testing in Georgia are echoed in the recent WHO recommendations on simplified service delivery and diagnostics for hepatitis C published in 2022 [12], where all 3 approaches are recommended as important interventions to increase access to HCV testing and treatment to reach the HCV elimination goals by 2030.

Although linkage to viremia testing is high in Georgia, from 2015 to March of 2023, of 150 333 anti-HCV-reactive persons, 13% (19 803) had not completed a viremia test. Of the 130 530 who tested for viremic infection, 78% had HCV infection, and 85% (81 959) of those eligible for treatment started on DAAs. More than 95% completed one round of treatment, 74% of them were tested for sustained virological response (SVR), and 99% of the ones tested for SVR achieved cure. To further improve the linkage to viremia testing, in 2021 and 2022 Georgia piloted a project to link individuals who already screened reactive for anti-HCV but did not complete a test for HCV infection. Researchers used phone numbers listed in the HCV screening database to contact individuals by phone or arrange home visits by patient navigators (eg, trained epidemiologists and primary healthcare physicians) and refer them to viremia testing. Incentives were provided to navigators for each patient who was successfully tested for viremia. In total, 70% of patients who were in the database were able to be reached by phone or in person, 18% of them presented for viremia testing, and 73% had HCV RNA or HCVcAg detected. This pilot project is an example of how innovative approaches can be used to improve linkage to viremia testing even in programs that are already highly effective.

In addition to expanding the testing for HCV infection in hospital settings, Georgia has achieved great success in integrating HCV testing (and treatment) into primary care settings. This approach was first piloted in 2018 as a "one-stop shop" in 4 primary care centers [21]. The evaluation of this pilot showed that primary health centers are an effective place for HCV screening and that primary care physicians can provide excellent care and treatment for patients with hepatitis C. As of 2022, 11 primary healthcare centers screened 96 253 patients for HCV infection, 1142 (1.2%) of whom were reactive. In addition, those 11 centers tested 1015 persons for viremia and treated 1110, including patients screened and/or diagnosed elsewhere.

Another way Georgia improved the coverage for HCV testing was by integrating HCV testing with HIV and tuberculosis (TB) testing. This was first piloted in 2018 at primary care centers in one region: all people presenting to the facility were offered screening for all 3 infections [22]. After the successful pilot, by end of 2020, the integrated testing approach was expanded to 1044 primary care sites nationally and conducted 636 401 screening tests, which accounted for 31% of all HCV screening tests performed in the country from 2018 to 2020 [23]. Screening for HIV and hepatitis B surface antigen (HBsAg) is included in the diagnostic algorithm for all patients with HCV infection before they start treatment.

Similar success was achieved with the integration of HCV testing and treatment in harm reduction services such as needle and syringe service programs (NSP) and opioid substitution treatment sites (OST). The HCV screening has been integrated with 16 NSPs, 9 mobile NSPs, and 21 OST clinics. Of those, 4 NSP sites offer viremia testing with GeneXpert and provide DAA treatment. This led to significant increases in screening rates of persons who inject drugs (PWID), from an average of 3638 tests per year during 2006–2014 to 21 551 tests per year from 2015–2018 [24]. More importantly, engagement in the care continuum among clients of NSPs and OSTs showed viremia testing uptake and treatment initiation was comparable to the general population [25], and it was better when services were provided in harm-reduction settings than if clients of harm-reduction services needed to be referred for care [26]. Successful service decentralization and integration in primary healthcare and harm-reduction services would not be possible without efforts to simplify the HCV testing algorithms and to use POC HCV RNA testing.

An analysis to evaluate the effectiveness of various modalities for linkage to viremia testing and treatment from 2018 to 2020 showed that persons engaged through the HCV provider sites (eg, specialized clinics for HCV treatment with care provided by infectious diseases specialists) had the highest rates of both viremia testing and engagement in treatment (91% and 87%, respectively), and these were significantly higher than all other models, including harm reduction, hospital testing, integrated screening for HCV/HIV/TB, and primary healthcare [27]. From 2018 to 2022, approximately 45% of all patients were treated in approximately 30 specialized clinics. However, although HCV provider sites showed great effectiveness in linkage

to testing and treatment, the specialized resources needed to scale up this model means multiple testing models, including decentralized models in primary healthcare settings and harm-reduction sites, are needed to reach the remaining persons infected with HCV and achieve hepatitis C elimination targets.

NATIONAL SCREENING CAMPAIGNS AND RAPID DECENTRALIZATION OF HCV SERVICES IN RWANDA

Rwanda launched a national HCV program in 2014 and was the first country in sub-Saharan Africa to commit to HCV elimination in 2018 [28]. The plan set out to reduce the prevalence of chronic HCV infection from an estimated 4% to 1.2% and reduce hepatitis-related cancer in the national population from an estimated 8% to less than 1%. As of today, Rwanda has achieved its screening target of 7 million people aged 15 years and above (out of a population of approximately 12.6 million) and initiated approximately 60 000 patients on treatment [29]. In Rwanda, sustained virologic response at 12 weeks (SVR12) data has not been recorded consistently in the past, with current efforts to collect this information. Among treated individuals with SVR12 data, the proportion cured is approximately 94%.

The case finding strategy in Rwanda initially focused on targeted screening in groups at higher risk of HCV infection (eg, people with HIV [PWH], prisoners [all prisoners screened], older age groups, and sex workers) and then expanded to the general population. To reach these ambitious targets, the program focused on decentralization, task-shifting, and the introduction of simplified testing and treatment methods, which allowed the expansion of screening and treatment services at the primary healthcare level.

Details around the initial program and numbers of patients screened and treated have been published previously [30]. The HCV screening has generally occurred concurrently with hepatitis B virus (HBV) screening. Until 2016, hepatitis screening campaigns focused on disproportionately affected groups. The early screening of groups at higher risk provided insights into the epidemiology and burden of HCV infection in the country and provided evidence-based information to the program's case-finding strategy. Over 6 months in 2016, 117 258 individuals were screened through this campaign; the prevalence of HCV antibodies among a cohort of PWH was 4.6% [31]. The prevalence was higher in males and older individuals and varied by geographic region of the country, with the highest prevalence in the Eastern Province and the City of Kigali, and in urban compared with rural areas. In 2017, among 124 223 individuals screened in the general population, the anti-HCV-reactive rate was 8.9% (95% confidence interval [CI], 8.7%–9.0) with reactive results highest in people aged >55 years (16.5%; 95% CI, 16.1%–16.8%). In this 2017 cohort, more than 55% of those who screened reactive had chronic HCV infection; older individuals who screened reactive were more likely to be viremic compared to younger individuals [32].

Moreover, in 2018, 326 263 individuals were screened as part of the community screening campaigns in 24 districts with high disease burden; 6.8% were reactive, and the main risk factors for anti-HCV reactivity were identified to include traditional operation or scarification, family history of HCV infection, older age (≥65 years), and being from particular geographic regions (Southern Province), among other factors [33].

Higher prevalence in older individuals may have been tied to limited quality of health services, traditional practices including scarification, and other factors. After the genocide against the Tutsi in Rwanda, the general population aged ≥45 years were targeted for the next screening campaigns during 2016–2018, starting first with individuals in the lowest socioeconomic levels. Screening campaigns, which involved HCV antibody rapid diagnostic tests and when reactive, linkage to HCV RNA testing and treatment, occurred for short intervals (eg, 1 week) within each district. These campaigns were publicized through multimedia announcements and by leaders of local government and local churches and required individuals to voluntarily present at hospitals and health centers for screening. Prisoners were screened in health dispensaries of all 13 prisons in Rwanda through a collaboration with the National Correctional Services. Finally, thanks to a collaboration with a local nongovernmental organization support group, targeted screening was also conducted among female sex workers during this period. In total, during 2016–2018, approximately 700 000 Rwandans were screened and 9000 were treated for HCV infection across these groups (including the initial group of PWH).

After the launch of HCV elimination in December 2018, major actions were taken that took HCV screening and treatment to another level. The case-finding campaigns were expanded to the general population, and the program negotiated a price record for DAAs ($60 for a full generic treatment course) that revolutionized access to HCV treatment. Testing and treatment services were decentralized to the lowest level and viral hepatitis management was shifted from general practitioners to nurses. The country leveraged the WHO simplified approach to HCV programming, using rapid diagnostic tests for HCV antibodies, followed by HCV RNA testing, and HCV pangenotypic treatment for those with HCV infection. The country's efforts have made HCV screening, diagnosis, and treatment services widely accessible to all and have allowed the country to move rapidly toward HCV elimination.

Furthermore, the Ministry of Health decided to pair with the Ministry of local governance in the elimination journey. Through this joint goal, districts were requested to set specific screening targets through their "*Imihigo*" campaigns. *Imihigo* is a public service performance contract that originates from Rwandan traditional systems of accountability whereby each administrative entity sets specific annual targets to respond to a national health, social, or economic challenge. As part of

Imihigo, districts received annual screening targets for viral hepatitis, and all persons age ≥15 years were expected to be screened. This campaign was implemented by district health directors, offered at the health center level with community healthcare workers involved in patient follow-up, and ultimately resulted in over 3 million Rwandans being screened and over 40 000 being treated.

A key reason the HCV program has been successful in identifying persons with HCV infection and linking them to care is from leveraging existing HIV infrastructure, including laboratory platforms and sample transportation system, and the same healthcare workers were leveraged to treat viral hepatitis patients.

Another important development in Rwanda's program has been the development of an electronic DHIS2-based individual patient tracker system that is designed to track all individuals who screen reactive for HCV antibodies and ensure linkage to HCV RNA testing and, for viremic patients, to treatment. This system allows real-time, national-level tracking of diagnostics and treatment activities in the national program and is used to track patients and prevent/reduce patient loss to follow up.

Other key components that have been critical to rapidly scale up Rwanda's HCV program include strong political will, community engagement, and program funding strategies. Initial data were gathered on the burden of hepatitis nationally, which was presented to the leaders at the Ministry of Health to raise interest and awareness. The program identified champions within the Ministry of Health who have helped to bring and keep relevant leaders engaged in hepatitis scale up efforts. Community leaders including political and religious leaders were crucial in promoting screening campaigns within the community. The program used data from screening PWH to secure initial program funding through The Global Fund to Fight AIDS, Tuberculosis and Malaria, which has been catalytic to subsequent funding from this organization. Finally, the pricing negotiations for testing and treatment commodities also reduced the required program budget and therefore contributed to increased access to hepatitis services.

Moving forward, as a last mile, Rwanda plans to screen family members of HCV-infected patients, and the country will continue to prioritize individuals from other groups at higher risk for screening, as well as anyone else who may have not yet been screened through routine care. In addition, efforts are deployed to ensure that individuals who have screened reactive receive HCV viral load testing and, where appropriate, are linked to treatment.

Rwanda's campaign strategies for screening, followed by rapid decentralization and integration of HCV services, have been incredibly effective to screening and treating a large proportion of the population and building sustainable systems to ensure integrated surveillance of viral hepatitis in Rwanda.

NEAR-POINT-OF-CARE DIAGNOSTICS FOR RAPID TREATMENT INITIATION IN NASARAWA STATE, NIGERIA

Nigeria has an estimated prevalence of HCV infection of 1.1%, and an estimated 90% of people with HCV have not yet been diagnosed (population approximately 200 million). Disease burden varies by state and subgroups [34]. Nasarawa State was one of the first in Nigeria to launch a public sector program for viral hepatitis. The program is supported by different partners including partnerships with distributors and pharmaceutical companies and other organizations such as the World Hepatitis Alliance and some local implementing partners. Programmatic support in Nasarawa has been provided by the Clinton Health Access Initiative (CHAI). In the early stages of the program, all patients had to pay out of pocket for services. Beginning in 2022, the Nasarawa State Program has been funded by Nasarawa State Government; PWH have been prioritized for this support. Currently, monoinfected patients still pay out of pocket but have benefitted from pricing reductions over time.

In Nasarawa, rapid diagnostic tests are used for HCV antibody screening; however, there remain challenges linking individuals to HCV RNA testing for diagnosis and treatment. Program challenges include high costs of HCV viral load testing (approximately $140 out-of-pocket costs when conducting testing in the private sector), poor access to HCV RNA testing (due to limited numbers of sites offering HCV viral load, many individuals must travel long distances for a viral load test), and long test processing times (approximately 3 months from sample collection to results available to the patient).

The 2022 WHO-updated hepatitis C recommendations include a recommendation on the use of POC HCV RNA assays as an alternative approach to laboratory viral load HCV RNA testing to diagnose HCV infection [12]. Before this, in 2017, Nigeria leveraged existing TB laboratory infrastructure to implement near-POC HCV RNA testing for HCV infection, enabling more rapid diagnosis of chronic HCV infection and increasing linkage to treatment initiation. Government buy-in was secured to proceed with this integrated TB/HCV testing approach, and pharmaceutical company support was leveraged for initial stock for pilot testing through a public-private partnership model.

Nasarawa State identified 13 existing near-POC devices (GeneXpert) in use by public sector TB programs with additional testing capacity available; capacity varied across facilities depending on the TB testing demand. Sites were selected after conducting a readiness assessment including capacity utilization. The analysis of the pilot site demonstrated 21% unused capacity on the GeneXpert machine before integration. Adjustments were made to extend laboratory working hours from 8 to 12 hours at these sites, which then expanded the unused capacity to 47%. This served as a model to the other

selected sites. Clinicians and laboratory staff were trained on case detection and testing, and roles and responsibilities were clarified to enable integrated testing within the laboratory.

Initially, a 6-month observational pilot was conducted in Nasarawa State in 2017 at a tertiary hospital to evaluate the feasibility of adding HCV RNA testing to the existing near-POC device. The pilot demonstrated that HCV testing could be successfully integrated to existing near-POC devices without compromising the volumes or processing times of TB tests being conducted, reducing HCV RNA test processing times from 90 days to 1–2 days. As a result, during 2017–2018, integrated testing was expanded to 6 district hospitals across the state and external sample referral systems were set up, resulting in a dramatic increase in the number of patients accessing HCV RNA testing. As a result of negotiations with suppliers during this period, the cost of HCV RNA testing was reduced to $28 per test and the proportion and number of viremic patients initiated on treatment increased. To date, an estimated 4473 patients have been tested on near-POC devices and 2700 have been initiated on treatment. Limited SVR12 data are available to assess a number of individuals cured. As of January 2023, integrated testing is being conducted across 9 platforms at 8 sites in the state.

Nasarawa has leveraged this integrated TB/HCV testing approach to build momentum towards HCV elimination in the state. Other important components of the recent strategy include implementing statewide policy guidelines around HCV testing and treatment, routine capacity building for healthcare workers to identify and manage HCV infection, and evidence-driven discussions to drive negotiations. These negotiations led to price reductions for drugs in Nasarawa State, which now stand at $60 for a 12-week course of generic DAAs. Moving forward, activities that will be prioritized to strengthen Nasarawa's program include further system strengthening by leveraging and integrating with other programs, implementing digital data systems to monitor decentralized testing, exploring financing options to accelerate diagnostics, and treatment uptake.

In Nigeria, integrated near-POC testing has been an effective approach to expand access to HCV RNA testing and reduce test processing times, enabling faster initiation on treatment. With greater availability of near-POC devices due to the coronavirus disease 2019 pandemic, this approach should be considered in other countries to improve the efficiency of HCV diagnosis, enabling the possibility of same-day testing and treatment initiation, which has the potential to be transformational for vulnerable and hard to reach patients.

CONCLUSION

We described 3 case studies from Georgia, Rwanda, and Nigeria to demonstrate different approaches that can be used to expand access to HCV testing. Although each country used slightly different approaches, (1) decentralization of testing services from centralized laboratories to primary healthcare and POC testing and (2) integration of testing for HCV infection with other services (eg, HIV, TB, harm-reduction) were shown to be effective ways to increase access to testing and improve linkage to care. Two recent systematic reviews of evidence came to similar conclusions [19, 35], and the WHO included decentralization and integration as 2 main strategies for achieving 2030 elimination goals [12].

Similar principles could be used in the United States and other settings to improve access to HCV testing services. This could be particularly important for expanding services for PWID—both integrating HCV testing with HIV or TB testing and harm-reduction services and offering same-day diagnosis and treatment initiation in community settings. Simplification of the testing and treatment algorithms and use of POC viremia testing could enable the integration of these services into primary healthcare and community organizations such as harm-reduction sites. Exploring opportunities for anti-HCV with reflex to HCV RNA testing for complete HCV diagnosis would allow providers to screen large portions of a population and link them to treatment.

CONCLUSIONS

The Viral Hepatitis Elimination Plan for the United States notes that new and improved diagnostic technologies will be needed to achieve viral hepatitis elimination goals by 2030 [8]. Lessons learned, and the benefits and challenges that other countries have experienced when implementing different models for improving HCV testing systems, could help in designing effective strategies to reach 2030 hepatitis C elimination goals in the United States.

Notes

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