



Editorial

Eliminating hepatitis C from countries with high prevalence: When infrastructure comes first

Hepatitis C virus (HCV) is a significant public health issue that affects over 71 million people worldwide¹. The World Health Organization (WHO) released a document in 2016 describing its global vision to eliminate viral hepatitis by 2030². The pillars of this ambitious public health plan to realize HCV elimination are to achieve a reduction of 90 per cent in new infections and 65 per cent in mortality, and an increase of 90 per cent in HCV diagnosis and 80 per cent in treatment rates. The recently utilized pan-genotypic HCV antiviral regimens with their low-cost and high potency helped in treating millions of infected patients worldwide. However, all components in the HCV management flow must be improved, beginning with the numbers of the screened population, then the number of HCV RNA testing performed for patients who are tested positive for HCV antibodies, and finally, the fraction of patients who are referred to receive proper treatment^{3,4}. While advances in safety measures and damage reduction can be made and will result in a drop in HCV new infections, diagnosing HCV is still far from ideal, with less than one-fifth of the projected 71 million chronic HCV patients in the world being diagnosed. Only 11 high-income nations are on the route to announce HCV elimination by 2030, and five additional countries could achieve the same goal by 2040, according to a large study including 45 high-income countries⁵. The remaining countries are not expected to eliminate HCV before 2050. This delay is primarily due to the fragilities in diagnosis, linkage to care and treatment of HCV patients in most countries.

The global prevalence of viral hepatitis in general and HCV in particular shows marked variations, with more than 75 per cent of the world's hepatitis burden and its complications encountered in only 20 countries². Accordingly, it is evident that a one-size-

fits-all approach to worldwide elimination would not be successful. The diverse geographic distribution of chronic HCV infection will require tailored strategies and highlight the importance of focusing on the hepatitis elimination programmes in these countries⁶. A shift in policy towards providing treatment for all people with HCV, regardless of disease stage, with pan-genotypic direct acting antiviral regimens helped considerably simplify care delivery and reduce morbidity, mortality and disease transmission⁷. Almost all measures meant to reduce hepatitis might be incorporated into more extensive efforts to enhance health systems and increase safety such as transfusion screening, safe injections and infection control in healthcare settings.

Many of the interventions required to treat the already diagnosed viral hepatitis cases could also be incorporated with current relevant services where possible. The situation could be different when discussing eliminating HCV from nations with a more considerable disease burden. Developing nation-specific public health programmes is required in such a context. These programmes shall include designing education and training plans and regulatory changes as part of a decentralized service transition. Specialist-dependent care will also have to be limited to a bare minimum, with a stronger focus on simplified models in which less specialized workers administer the required care⁸.

The model of care for HCV has traditionally had many fragilities, beginning with low detection rates that eventually lead to fewer treated patients and, hence, improper disease control. It was anticipated that as highly effective and safe medicines were available, the entire management system for HCV will recover quickly and that the majority of affected individuals

would be managed and, ultimately, cured. Many of the imperfections in the provided services, on the other hand, arise long before treatment is contemplated. To achieve considerable progress towards eliminating HCV in a country with a substantial disease burden, tailored measures to boost diagnostic rates, linkage to care and retention in care will be required. Establishing a national treatment programme for HCV management was adopted in many of the developing countries with extensive disease prevalence such as Georgia, Egypt and Mongolia⁹⁻¹¹.

There are a variety of obstacles to achieving HCV elimination on a national level. According to the actual disease situation, these obstacles vary from one country to another due to economic conditions and spread of the disease in particular groups. The most important of these is the access to diagnostics and the cost of antiviral new medications. However, other constraints like difficulties in screening particular populations, such as those who use intravenous drugs, the lack of community awareness and the stigma of the disease, could represent other limitations for disease control measures. Additional barriers include the long waiting lists for treatment and the complicated refunding procedures in some countries¹².

All successful HCV elimination programmes need to involve the most relevant parties, including officials from the local government, health professionals and patient advocacies. The most important feature is to personalize admission to services based on patients requirements in specific circumstances to break down obstacles and obtain higher diagnostic and treatment rates. To achieve such a goal, the availability of a well-established infrastructure of logistics and management systems is crucial.

HCV is a substantial health problem in Egypt, which has long been thought to have the world's highest disease prevalence rates¹³⁻¹⁵. The long-running anti-*Schistosoma* treatment programmes adopted by the Egyptian Ministry of Health (MOH) between 1950 and 1980 are primarily responsible for the high prevalence of HCV in Egypt¹⁶. The high prevalence of HCV in Egyptian rural regions could be explained by using poorly sanitized, non-disposable needles in these campaigns¹³. To tackle such an outbreak, Egypt's MOH established the National Committee for Viral Hepatitis Control (NCCVH), which was made responsible to tackle the HCV spread in the country^{10,13}. Since its inception in 2006, the Egyptian NCCVH has been

at the forefront of developing strategies and policies to combat the HCV epidemic in Egypt. Designing Egypt's national treatment programme and overseeing the screening programmes were two examples of the NCCVH responsibilities. Between 2006 and 2014, a total of 26 well-equipped, dedicated facilities for viral hepatitis care and management were established throughout Egypt, serving chronic HCV-infected patients. These centres are run by highly experienced hepatologists who provide patients with a full range of services, from initial screening for therapy eligibility to the standard of care administration following defined protocols. The prior standard of care therapy (pegylated interferon and ribavirin combination) was provided free of charge or at a discounted price in these centres, and this line of therapy was used to treat almost 350,000 patients during the pre-directly acting antiviral agents (DAAs) period^{13,14}. All treatments centres were linked together with a dedicated intra-network that is controlled centrally at the NCCVH headquarter. A web-based registry was created to coordinate patient appointments and follow up visits and document patient data in a single database at the NCCVH headquarter¹⁰. With the launch of using DAAs in Egypt in the late 2014, a total of 34 specialized treatment centres were added to the NCCVH affiliated centre network. Negotiations with the manufacturers of new DAAs helped Egypt to get these medications at a markedly reduced cost. Over the past few years, the number of treatment facilities increased to exceed 300 centres all over the country. More than four million HCV patients were treated through these centres mainly by using the locally manufactured generic DAAs¹³. Treatment of more patients and faster disease eradication became achievable when the cost of direct-acting antivirals in Egypt decreased (from \$1650 for 12 wk of sofosbuvir+daclatasvir in early 2015 to \$ 85 for local generics in 2018)¹⁷. The availability of this readymade network of treatment centres paved the way for starting the most prominent campaign for screening 65 million citizens in Egypt for HCV. The Egyptian government decided in early 2018 to launch a massive campaign to identify and treat all HCV-infected people to eliminate the disease in the shortest time possible. Within a year, everyone in Egypt aged 18 yr and above was screened, and all those with HCV viraemia were to receive state-funded therapy¹⁵. Additional 1.5 million patients were diagnosed with HCV infection during screening and referred to receive their care in the treatment centres. The Egyptian NCCVH adopted the microelimination

strategy with screening and treatment efforts directed towards high-risk groups, including renal dialysis patients and intravenous drug abusers¹⁷.

Based on what Egypt has accomplished so far in eliminating HCV, particularly in giving simple access to treatment, we are confident that this target will be met in the following years. In addition to past work to ensure prevention and blood safety precautions, implementing a planned screening programme that targets high-risk patient groups within the next few years will support the early achievement of the HCV elimination goal. In countries with similar situations to Egypt, where endemicity is high, and safety and infection control measures are lacking, establishing an infrastructure of a dedicated HCV model of care will be of value in eliminating the disease.

Conflicts of Interest: None.

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