

A village without hepatitis C in Egypt: will micro-elimination lead to macro-elimination?



The 2015 global prevalence estimate of people living with hepatitis C virus (HCV) worldwide was around 1.0% of the total population, or 71.1 million people, which was substantially lower than previous estimates.¹ One explanation for why the estimated prevalence is lower than for previous years is that most studies from which data were taken for the 2015 estimate were done in the adult population, and when estimates have been applied to a country's total population the disease burden is frequently overestimated.

HCV is a major public health burden in Egypt, with a prevalence that is one of the highest in the world. Estimates for prevalence in Egypt are based on data reported from the 2015 Egypt Demographic Health Surveys.² The seroprevalence among people aged 15–59 years was 10%, and for those younger than 15 years was 0.4%.

Progress in HCV antiviral drug development has been remarkable. Drug development initially focussed on infection with HCV genotype 1, since this genotype was the most prevalent in the USA and Europe. The availability of direct-acting antivirals, with excellent efficacy and good tolerability profiles, offers a unique opportunity to achieve HCV elimination worldwide.³ Direct-acting antiviral combinations can now cure HCV in more than 95% of patients infected with HCV after 8–12 weeks of treatment, and direct-acting antiviral regimens are now available to cure infections with HCV genotype 4, which is the most prevalent genotype in Egypt.⁴

In 2016, to eliminate hepatitis infection by 2030, WHO introduced global targets for the care and management of HCV including “a 90% reduction in new cases of chronic hepatitis C, a 65% reduction in hepatitis C deaths, and treatment of 80% of eligible people with chronic hepatitis C infections”.⁵

Micro-elimination strategies break down national and international elimination goals into smaller goals that are relevant for defined populations. Micro-elimination strategies have several advantages, including realistic targets with higher feasibility (time to achievement is shorter) and fewer costs. These micro-elimination projects could act as proof-of-concept studies, and be a bridge to global elimination.

In *The Lancet Gastroenterology & Hepatology*, Gamal Shiha and colleagues⁶ report on such a micro-elimination project in Al-Othmanya—a typical village in north Egypt in the governorate of Gharbiah, with a high burden of HCV in the general population—with the establishment and successful implementation of a comprehensive community outreach programme to eliminate HCV. The educate, test, and treat project combined preventive strategies of community education on practices to reduce transmission with systematic household testing to identify those infected, followed by prompt linkage to care and treatment.

At the time of the study, 6997 people lived in approximately 1242 households in Al-Othmanya village—one of 317 villages in the governorate of Gharbiah, which has an overall population of 4.6 million. Screening and linkage to care were proposed, and between June 6, 2015, and June 9, 2016, 312 (59%) of 530 participants who underwent screening were confirmed to be HCV viraemic via HCV-RNA PCR. Of these HCV-positive participants, 300 (96%) were given 24 weeks of treatment with sofosbuvir (400 mg orally, daily) and ribavirin (1000–1200 mg orally, daily). Virological testing after the treatment course confirmed that viral clearance or cure was achieved for 293 (98%) of 300 treated participants.

Several strengths of this study contributed to its success. First, a comprehensive and integrated approach was used that incorporated both preventive approaches to reduce transmission and new infections, and testing and treatment to reduce burden of disease and associated morbidity. Second, the organisation of testing at a household level ensured high coverage of the village, since patient engagement is key to achieve implementation. Third, a wide range of complementary promotional educational tools was used to raise awareness. Finally, there was strong community engagement, and the investigators were committed to implementing the project activities through the community.

However, the project had two main limitations. The programme did not include promotion of the exclusive use of safe auto-disposable syringes in health-care facilities or the reduction of unnecessary injections—a



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crucial part of the global strategy to reduce new infections of HCV. And the treatment protocol was 24 weeks of sofosbuvir and ribavirin in all patients, which would be considered a suboptimal regimen by current guidelines since more potent direct-acting antiviral combinations are now available.

This community-based and community-led project is an important model for the delivery of testing, treatment, and education about prevention, particularly for rural and deprived communities in Egypt, which account for 57% of the country's population of 92 million people. The elimination of an infection is defined as reduction to zero of the incidence of infection caused by a specific agent in a defined geographical area as a result of deliberate efforts.⁷ Control is defined as the reduction of disease incidence, prevalence, morbidity, or mortality to a locally acceptable level as a result of deliberate efforts. To maintain the reduction achieved through control, continued intervention measures are required.^{7,8} Regarding HCV infection, control appears to be more realistic than elimination in the short-term. Will micro-elimination (or control) lead to macro-elimination (or control)? This proof-of-concept study is an excellent example of methods that might be of use in similar rural regions in Egypt and elsewhere. To fight against hepatitis C, we need several

programmes adapted to the local environment, rather than seeking to establish a one-size-fits-all solution.

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