

# The Road to Elimination of HCV in Egypt

Wahid Doss<sup>1</sup> and Manal H El-Sayed<sup>2</sup>

<sup>1</sup> Department of Endemic Medicine and Hepatology Gastroenterology, Cairo University; Chair of the Egyptian National Committee for Control of Viral Hepatitis

<sup>2</sup> Department of Pediatrics and Clinical Research Center, Ain Shams University; Member of the Egyptian National Committee for Control of Viral Hepatitis

---

## Q. Can you tell us about the burden of HCV in Egypt?

For more than two decades, Egypt has been recognized as hosting one of the highest prevalence rates of hepatitis C virus (HCV) infection worldwide. The Egyptian Demographic Health Survey (EDHS), in 2008 identified HCV antibodies among 15% of the population aged 15-59 years, 10% of studied population were viremic and genotype 4 was the major infecting genotype<sup>1</sup>. The national campaign with parenteral anti-schistosomal therapy, which took place between the late 1950s and 1980s, is known to be responsible for the reservoir of chronic HCV infection in Egypt<sup>2</sup>. Other risk factors sustaining transmission and infection include blood transfusion, needle reuse or unsafe injection practices<sup>3</sup>, nosocomial infection from medical procedures and household transmission<sup>4</sup>. The numerous published epidemiological studies have resulted in increased awareness and advocacy about the disease among key stakeholders including physicians and their associations, media, public and politicians. Every family in Egypt has had either a member or related family member afflicted by chronic HCV or its serious complications.

## Q. When and how was action against hepatitis C prompted?

The scale of the problem was recognized by the Ministry of Health (MOH) in 2006 prompting the foundation of a National Committee for Control of Viral Hepatitis (NCCVH). The committee was tasked with planning and implementing a strategy for prevention and control of blood-borne viral hepatitis, through a novel model of care ensuring nationwide access to HCV treatment and continuous patient care delivery<sup>5</sup>. The program established a robust infrastructure with a nationwide network of digitally connected viral hepatitis-specialized treatment centers, within existing health care facilities, across all regions of the country, to enhance treatment access. Between 2006 and 2014, the only available treatment was pegylated interferon and ribavirin. All eligible patients could access treatment and received their injections on a weekly basis in the NCCVH treatment centers fully subsidized by the government. During this period the NCCVH published the first strategy for control of viral hepatitis in 2008<sup>6</sup> in parallel with a communications strategy promoting awareness and preventive activities. By 2014, more than 350,000 patients with chronic HCV had received interferon therapy with no more than 50% sustained virological response rates and an estimated 165,000 new infections on a yearly basis<sup>7</sup>.

## Q. Is the Egyptian program of hepatitis C elimination in alignment with the WHO strategy?

Yes. To complement the program with better strategic and operational planning to improve preventive activities,

the committee sought technical assistance from the WHO and US-CDC in 2011. The technical advisory group (TAG) liaised with experts from all disciplines and health care facilities for different components covering infection, control, blood safety, vaccination as well as information, education and communication; in addition to the screening, care and treatment component. The exemplary strategy and action plan were published in 2014<sup>8</sup> in the same period when direct-acting antivirals (DAAs) were approved globally and prices were negotiated for Egypt by the NCCVH/MOH. The introduction of DAAs for the HCV program at 1% of its global price led to a massive uptake and scale-up, with Egypt's national HCV treatment program becoming the largest in the world.

### **Q. How many people have been screened and linked to care to date?**

A web-based registration system was established since the introduction of DAAs in 2014. During the first week, more than 300,000 registered to receive treatment, they were all aware of their disease and were either interferon ineligible or non-responders. Patients with advanced fibrosis were initially prioritized, within 6 months and after the introduction of newer DAAs, the guidelines were updated with no prioritization and all patients were to receive interferon-free regimens<sup>9</sup>. Pragmatic guidelines adapted to local settings were regularly updated, distributed and implemented in all affiliated centers. Trained health care providers in 65 well-equipped centers were able to accommodate the increasing numbers of patients, shortening the waiting time between diagnosis and receipt of treatment and improving accessibility for patients to within 50 km of their residence. In the meantime, the declaration by the government that the disease is endemic coupled with presidential advocacy led to the local production of high-quality generic DAAs. The medications were introduced into the national program during the third quarter of 2015, at more affordable prices, prompting substantial scale-up of treatment. An estimated 2 million individuals received HCV antiviral therapy up to 2018, mostly supported through government expenditure or health insurance, but an estimated 3 million remain undiagnosed and unaware of their disease.

The presidential initiative and political will to eliminate HCV in Egypt by 2020 motivated the government and community to undertake an ambitious elimination model program to fulfil the WHO's elimination goals. A mass screening program was recently launched in a test and treat program targeting the whole adult population "cure as prevention" during the first year and all those under 18 years of age in 2019 through the first two quarters of 2020. In the first 50 days of the campaign more than 10 million people from 9 Governorates were screened for HCV antibodies by an RDT in addition to non-communicable diseases including diabetes, hypertension and obesity in the first and largest global survey of its kind. A monitoring and evaluation program set in place and strict surveillance will define the way forward and impact on morbidity and mortality from liver disease and incidence of liver cancer.

### **Q. What challenges remain?**

One of the important challenges with HCV infection, however, is the fact that it rarely induces immunity, and those who have been cured with DAAs remain at risk for reinfection. Thus, it is very unlikely that global eradication and elimination of HCV infection can be achieved without a vaccine. Additionally, the small percentage of patients who fail to respond or develop resistance to the currently used DAA combination need a mechanism for diagnosis and retreatment. Awareness about the disease and other blood-borne infections sharing the same mode of transmission should be sustained and hard to reach and high-risk populations should be pursued and monitored.

The presidential pledge to eliminate hepatitis C, the support of civil society and community engagement and indeed the local production of generic DAAs sets Egypt apart from other countries and made the mass scale-up

of treatment and elimination an achievable objective. Egypt sets a prototypical model for states, organizations and policy-makers setting up programs for care and management of people living with hepatitis C.

## References

1. Ministry of Health, Egypt, El-Zanaty and Associates, Egypt, ICF International. Egypt Health Issues Survey. Cairo, Egypt and Rockville, MD, USA: Ministry of Health and ICF International; 2015.
2. Frank C, Mohamed MK, Strickland GT, et al. The role of parenteral antischistosomal therapy in the spread of hepatitis C virus in Egypt. *Lancet*. 2000;355:887–889.
3. Paez Jimenez A, Sharaf Eldin N, Rimlinger F, et al. HCV iatrogenic and intrafamilial transmission in greater Cairo, Egypt. *Gut*. 2010;59:1554–1560.
4. Arafa N, El Hoseiny M, Rekacewicz C, et al. Changing pattern of hepatitis C virus spread in rural areas of Egypt. *J Hepatol*. 2005;43:418–424.
5. El-Akel W, El-Sayed MH, El Kassas M, et al. National treatment programme of hepatitis C in Egypt: Hepatitis C virus model of care. *J Vira Hepatol*. 2017;24(4):262-267.
6. [http://www.hepnile.org/images/stories/doc/NSP\\_10\\_April\\_2008\\_final2.pdf](http://www.hepnile.org/images/stories/doc/NSP_10_April_2008_final2.pdf)
7. Breban R, Doss W, Esmat G, et al.: (short report) Towards realistic estimates of HCV incidence in Egypt *J Viral Hepat*. 2013; 20(4):294-6.
8. [http://www.emro.who.int/images/stories/egypt/VH\\_Plan\\_of\\_Action\\_FINAL\\_PRINT1.pdf](http://www.emro.who.int/images/stories/egypt/VH_Plan_of_Action_FINAL_PRINT1.pdf)
9. Aisha Elsharkawy, Maissa El-Raziky, Wafaa El-Akel et al. Planning and prioritizing direct-acting antivirals treatment for HCV patients in countries with limited resources: Lessons from the Egyptian experience. *J Hepatol*. 2017 pii: S0168-8278(17)32478-9.