

Hepatitis C Infection Elimination until 2030 in the world and in IRAN

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Overview and Epidemiology

Introduction

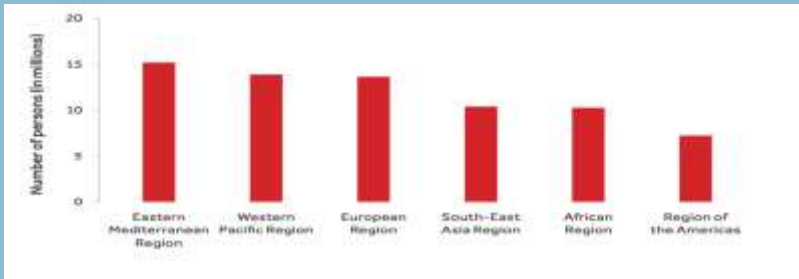


- Hepatitis C is a major global health problem and the progression leads to life threatening complications.
- Most of the global HCV burden is in **low- to middle-income countries**.

PREVALENCE OF HCV INFECTION BY WHO REGION

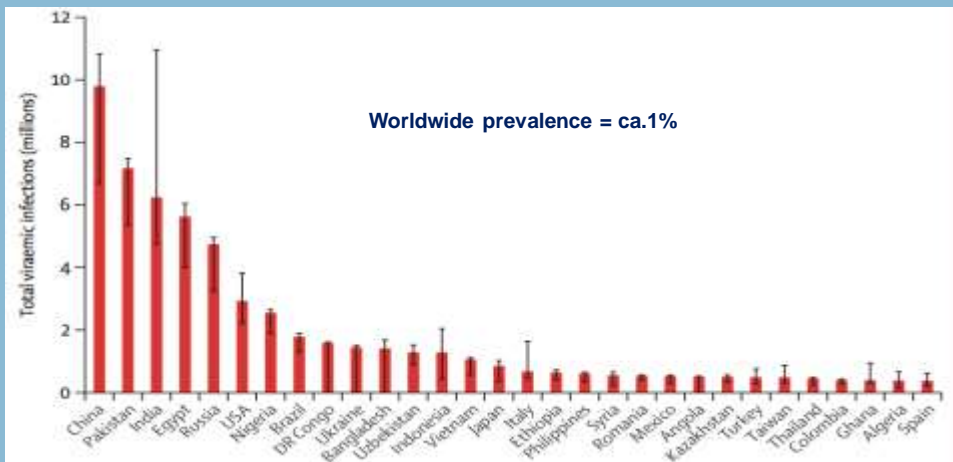
WHO region	Estimates of the prevalence of HCV infection (%)			Estimated number of persons living with HCV (millions)		
	Best	Lower	Higher	Best	Lower	Higher
African Region	3.9	0.7	3.8	11	7	16
Region of the Americas	0.7	0.6	0.8	7	6	8
Eastern Mediterranean Region	2.3	1.9	2.4	11	11	12
European Region	3.3	1.2	3.3	14	12	14
South-East Asia Region	0.2	0.4	0.3	10	8	10
Western Pacific Region	0.7	0.6	0.8	14	13	15
Total	1.8	0.8	1.3	71	62	79

Previously reported Worldwide Infection: Between 130-170 Million



WHO Global Hepatitis Report 2017

GLOBAL PREVALENCE OF HCV BY COUNTRY



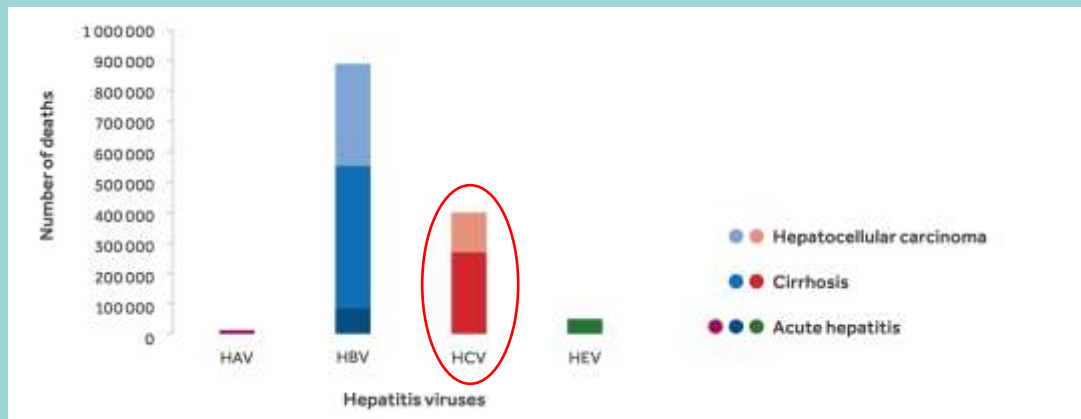
Razavi H. Polaris Observatory HCV Lancet Gastroenterol Hepatol 2017

The HCV Epidemiology Calculated in 2016 Overview and Epidemiology vs WHO Estimated Data for 2015

	WHO estimate (2015 data)	This analysis (2016 data)
New infections	1,700,000	1,597,812
Cures	843,000	1,512,759
HCV-related deaths	399,000	383,998
Epidemic size	71,000,000	69,554,808

Hill A M et al. J Virus Eradication 2017; 3: 117–123

Mortality Rates Due to Viral Hepatitis in 2015 Overview and Epidemiology



WHO Global Hepatitis Report

Hepatitis C as a Neglected Disease

Overview and Epidemiology

- NO Symptoms
 - No effective treatment (before 2013!)
 - Lack of knowledge (general population, healthcare workers and patients)
-

Hepatitis C in IRAN

HCV seems to emerge as the leading cause of viral hepatitis-related advanced liver disease and death in the near future.

1. Given the high coverage of HBV vaccination in infants.
2. implementation of HBV vaccination programs among adolescents in Iran.

- First report in Iran is related to Rezvan et al in 1994 in IBTO: 0.3% of blood donors in Tehran.

The main risk factors

- Transfusion
- Endoscopy
- Extramarital sexual activities
- Non IV drug abuse
- IV drug abuse
- Receiving wounds at war
- No apparent risk factors in 24.5% of HCV positive cases

Table 3 Logistic regression analysis of risk factors

Risk factor	Odds ratio	95% CI
Extramarital sexual activities	42.2*	5.3-335.7
Being wounded at war	5.2*	1.2-21.9
History of undergoing endoscopy	4.0*	1.3-12.5
i.v. drug abuse	52.8*	6.8-412.0
Needle-stick	8.9	0.8-93.9
Non-i.v. drug abuse	34.4*	4.2-278.2
Transfusion history	17.0*	7.0-41.0

*Odds ratio is statistically significant. CI, confidence interval; i.v., intravenous.

0.12% were HCV positive

Epidemiologic profile and estimated disease burden of HCV in Iran in 2014

HCV epidemiology and burden	Frequency
Individuals living with chronic HCV infection	186,500 individuals
HCV prevalence (viremic)	0.24% (0.17% - 0.31%)
HCV incidence (annual)	11 per 100,000
HCV diagnosis	35%
HCV treatment rate (annual)	2.4% (n ~ 4,500)
HCV genotype	Genotype 1: 64% Genotype 2: 2% Genotype 3: 33% Genotype 4: 1%
Less than 0.5% HCV seropositivity	
HCV-related decompensated cirrhosis	140 individuals
HCV-related HCC	160 individuals
HCV-related death	120 individuals

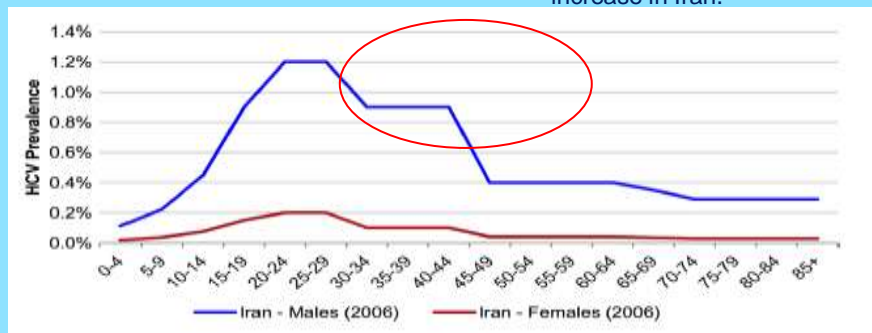
Hajarizadeh B, Razavi-Shearer D, Merat S, **Alavian SM**, Malekzadeh R, Razavi H. Liver disease burden of hepatitis C virus infection in Iran and the potential impact of various treatment strategies on the disease burden. *Hepatitis Monthly*. 2016;16(7):e37234

Younger HCV infected patients in Iran

Median age of 30 years and 70% between 20 and 44 years old

Iran, one of the lowest rates of HCV prevalence in the Middle East.

Under the current treatment paradigm, HCV infections will increase in Iran.



Less than 0.4% in general population

Liakina V, Hamid S, Tanaka J, Olafsson S, Sharara AI, **Alavian SM**, et al. Historical epidemiology of hepatitis C virus (HCV) in select countries. *J Viral Hepat*. 2015

HEPATITIS C VIRUS INFECTION AND ITS PREVALENCE IN IRAN

- Less than 0.5% of General population are HCV infected in Iran and the main risk factors are **history of blood transfusion before 1996** and **history of IDUs**
- The special group such as **Hemophilia** and **Thalassemia** and **Hemodialysis** patients selected for screening and treatment during recent 10 years and now.
- IDUs cases are the main high risk group now and harm reduction and other strategies should attenuated now.
- Treatment is a part of prevention for decrease the chance of transmission

Hepatitis C Elimination in Iran

2011-2014

- *Revolutionized treatment*
- *Direct Acting Antivirals (DAAs)*
- *No injections*
- *Once daily*
- *Minimum side effects*
- *Highly effective*

HEPATITIS STRATEGY, 2016: ELIMINATION BY 2030

	Interventions	2030 targets	
1. Service coverage	1. Three dose hepatitis B vaccine	90%	
	2. HBV PMTCT	90%	
	3. Blood and injection safety		100 % screened donations
			90% reuse-prevention devices
	4. Harm reduction	300 injection sets/PWID/yr	
	5. Treatment		90% diagnosed
		80% eligible treated	
2. Impact	A. Incidence reduction	90%	
	B. Mortality reduction	65%	

PMTCT: Prevention of mother to child transmission **PWID:** Person who injects drugs

- WHO 2016

Why Elimination of HCV is Feasible

HCV Meets All Established Criteria For Elimination

- No non-human reservoir
- Virus cannot amplify in the environment
- Simple and accurate diagnostic tools
- Practical interventions to interrupt transmission
- Infection is curable

Edlin BR, Winkelstein ER. Antivir Res 2014;110:79–93

Discussion

- Implications for health policy-makers and health service delivery with evidence of some doctors not following national HCV treatment guidelines .
- A shift is required from individual management of HCV to population management:
 - –Improve screening, especially among those at high risk of HCV infection, through healthcare access points
 - –Scale-up treatment including by broadening the HCV prescriber base
 - Expand models of care to include screening, assessments, treatment, harm reduction and re-screening for those with continued high-risk behaviors
 - •To achieve global HCV elimination, partnership is required between HCPs, policy-makers, patient organizations, and industry to develop and implement local strategies

Central elements for HCV elimination



Increase screening and diagnosis



Increase uptake of effective treatment



Expanded models of HCV management



Political leadership



National HCV strategies



Policy change

- Generic DAA is a major step forward but there are still more requirements to ensure achieving WHO HCV elimination targets:
 - Affordable HCV diagnosis and treatment with access for all
 - Expanding prescribers
 - Integration of substance use care and HCV care
 - HCV awareness campaigns targeting the main population at risk
 - Peer-workers can facilitates linkage to care
 - Simplified diagnostics

Alavian SM, Sharafi H. Elimination of Hepatitis C Virus Infection in Iran; strategies, and opportunities and limitations. *Hepat Mon* 2017. In press

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Iranian plan for hepatitis C elimination

At risk populations

- People who inject drugs (PWID)
- Prisoners
- Thalassemia and Hemophilia patients
- Hemodialysis
- Transfusion history before 1375
- People with war and motor vehicle injuries
- Sex workers
- HIV infected people
- Sanitation workers
- First degree relatives of HCV infected people
- Medical and healthcare workers
- Organ transplant receivers
- Newborns of HCV infected mothers

WHO OBJECTIVES AND IRAN

• 1. Prevention

- A. Increasing information in general and priority populations
- B. Improving blood safety
- C. Harm reduction

2. Diagnosis

- A. Strengthening the national laboratory system
- B. Screening priority populations
- C. Improving point of care diagnosis

3. Treatment

- A. Expanding treatment
- B. Implement appropriate models of care
- C. Providing chronic care

4. Delivering for equity

- A. Strengthening human resources
- B. Ensuring access to good quality and affordable hepatitis medicines and diagnostics
- C. Promoting an enabling environment

HCV ELIMINATION PROGRAMS IN IRAN

- Prison-based programs
 - 10% HCV-seropositive
 - 35%-50% HCV-seropositive in inmates of addiction
- Community-based programs in high-risk groups
 - Including PWIDs, FSW and non-IV drug users
 - 10%-50% HCV-seropositive

HCV ELIMINATION PROGRAMS IN IRAN

- Thalassemia and hemophilia
 - Less than 500 case need treatment
- Chronic kidney disease
 - Around 5% HCV-seropositive
- Other groups
 - People with history of blood transfusion before 1996
 - People with war injury
 - People with history of leprosy

Access or not access to DAAS

- In many countries, people don't have access to a course of brand-name direct-acting antiviral drugs due to their high cost -- as much as between \$30,000 -\$94,000 a patient.

Expensive treatments for common conditions are unaffordable for most health system, even if they are cost effective.

They are also very expensive.

Barcelona, EASL 2016



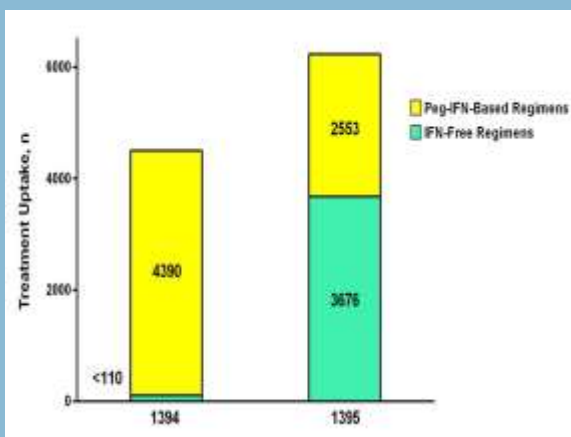
GENERIC MEDICATIONS MAY BE A SIGNIFICANT ROLE IN ELIMINATION

- Generic medications do **not** require the background research and development studies to support registration.
- There is a higher motivation to use the generic drugs in therapy of HCV infected patients in developing and developed countries.
- India, Egypt and Iran are pioneer in developing generic brands for therapy of HCV infection.

GENERIC DAAS IS AVAILABLE IN IRAN



HOW MANY CASES HAVE TREATED WITH DAAS IN IRAN



- During two years from 2013-2014 : 230 cases have received the Harvoni, Brand of Sof-Led in Iran
- It was not affordable for all patients in Iran.
- Most of cases were treated with support of Disabled Organization
- The insurance companies did not accept to cover

But in one year (2015-2016): More cases with insurance coverage with generic type