



# Estimating the impact of hepatitis C virus therapy on future liver-related morbidity, mortality and costs related to chronic hepatitis in Europe

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# The presentation summarizes the results of a global HCV disease burden and elimination project – European Countries



## Countries Studied

Belgium

Czech Republic

Denmark

England

France

Germany

Greece

Italy

Netherlands

Spain

Sweden

Switzerland

Turkey

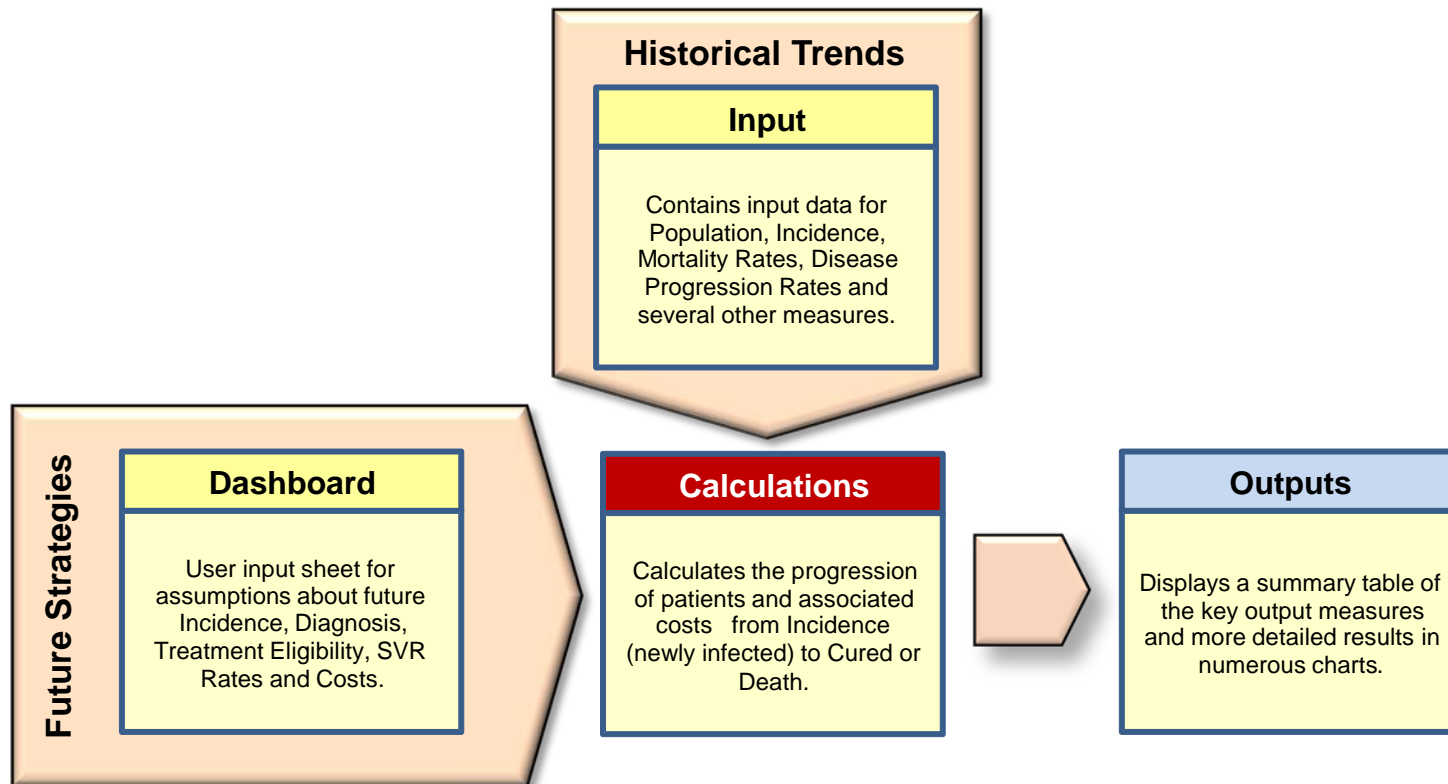
*Disclosure: This project has been funded through a grant by Gilead.*

A more detailed summary of this analysis will be published in the March issue of the Journal of Viral Hepatitis as a supplement.

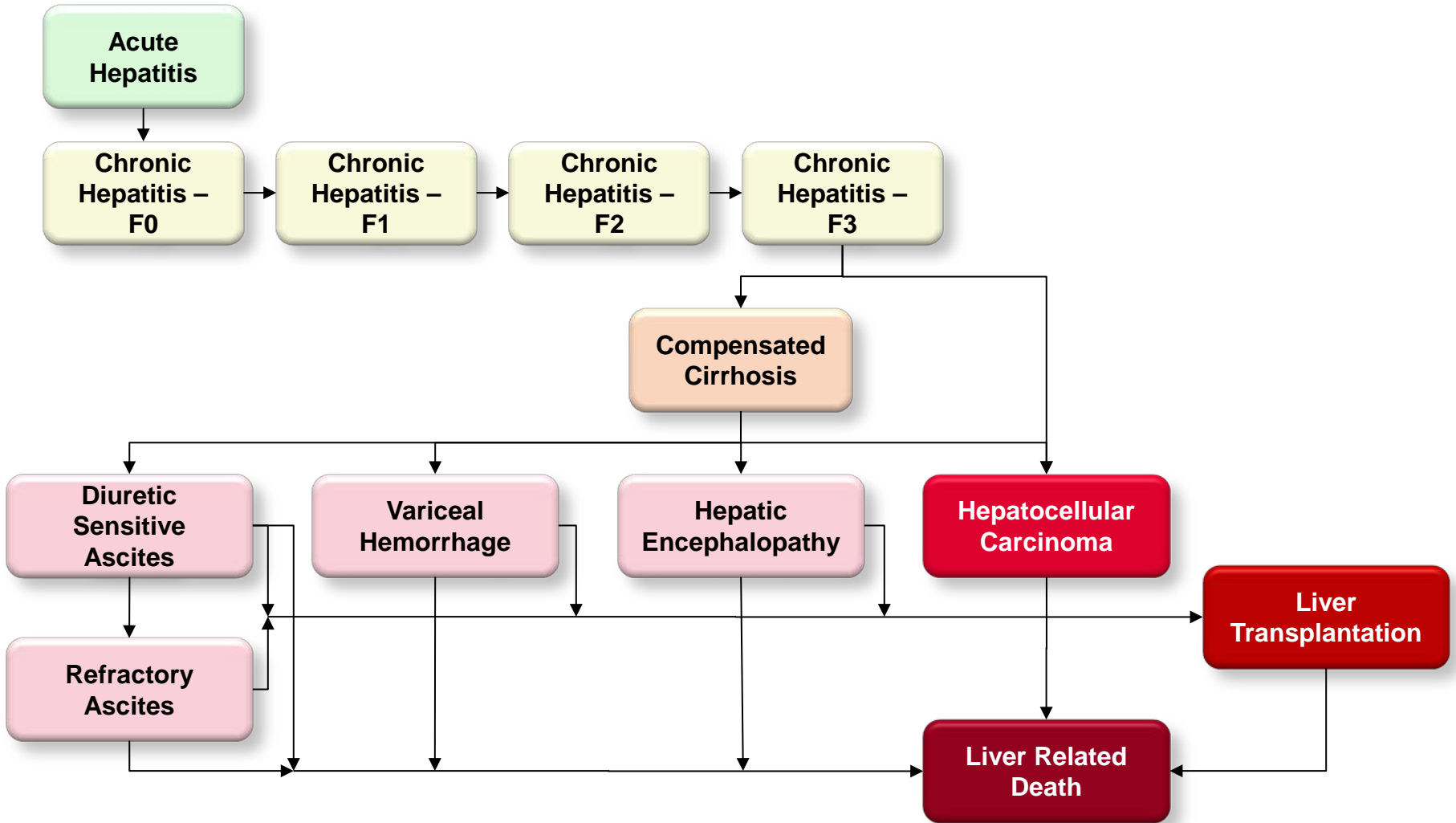
# Modeling the Disease Progression of Hepatitis C Virus (HCV) infection



- Developed a system dynamics model in Excel
- Calibrated with published data in each country up to 2013
- Project the impact of key decisions after 2013 on the disease burden
- Estimates the total healthcare cost, in the absence of treatment.



# Hepatitis C Virus (HCV) Infection – Disease Progression



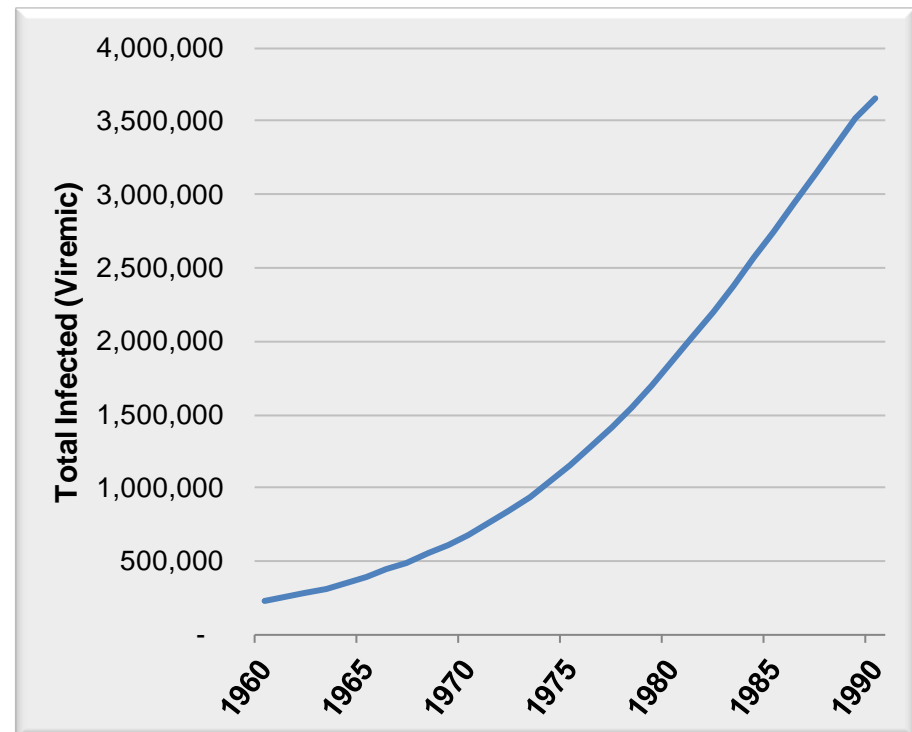
# The Leaky Bucket – explaining the current and future HCV disease burden



In the 1960's through the 1990s, the rate of new infections outpaced mortality leading to an increase in the total number of HCV infected cases.



Total HCV Infected Cases



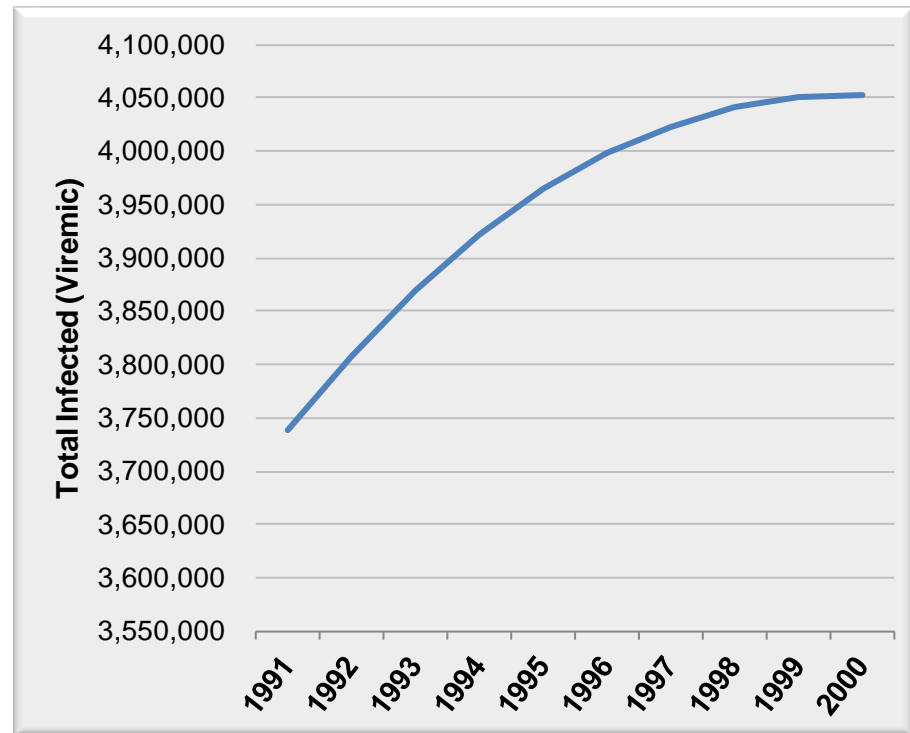
# Blood screening, the HIV scare, and start of needle exchange programs in the 1990s lead to a drop in new case



The total number of infections started to level off in the late 1990s.



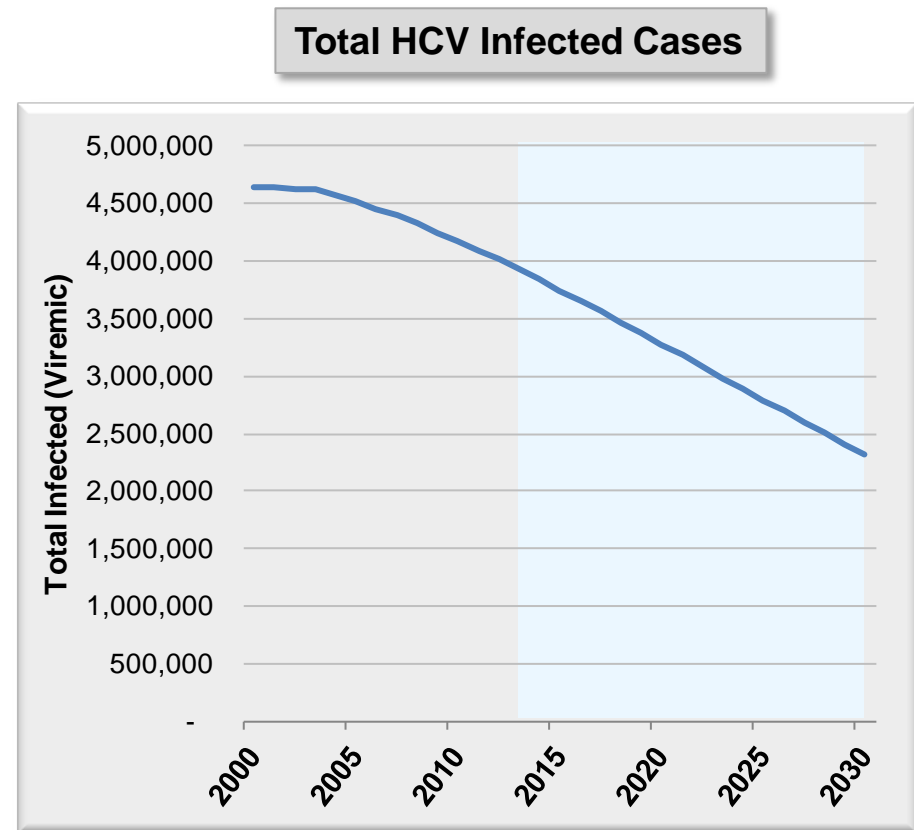
Total HCV Infected Cases



# Aging of the population, increased mortality, and increased treatment are expected to result in a drop in HCV infections



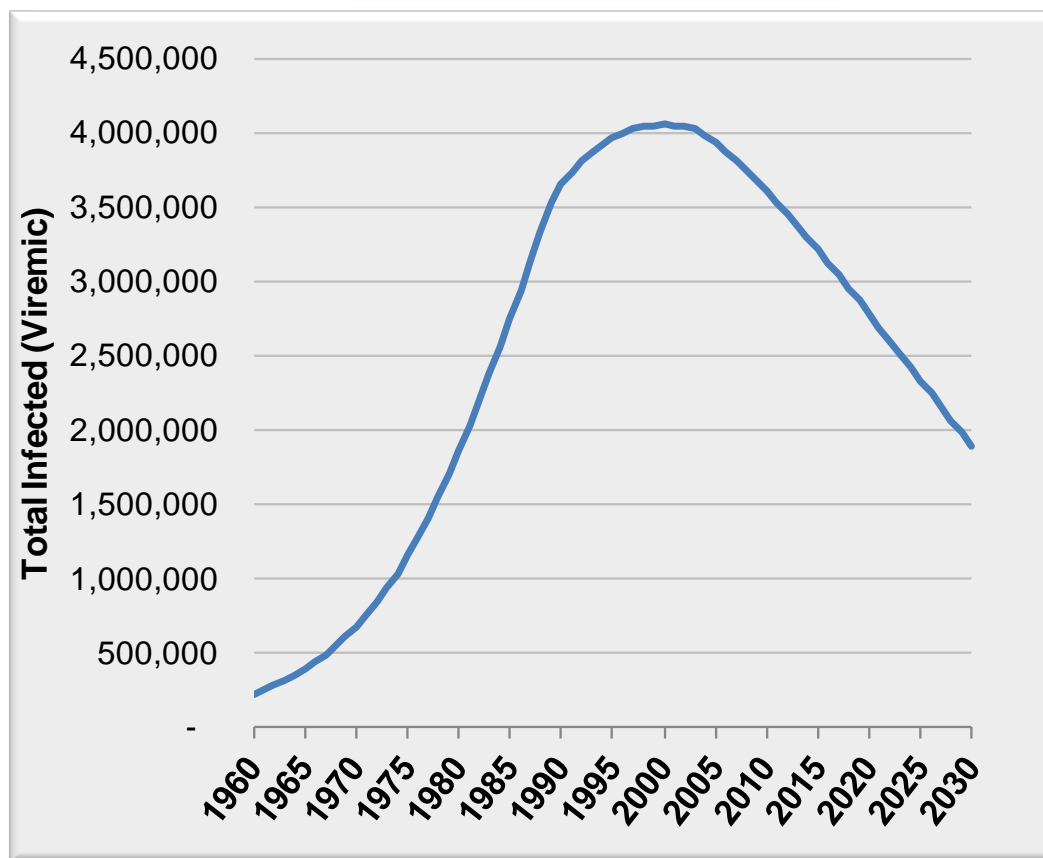
After 2013, assumed the same treatment and cure rate as today.



# Total viremic HCV infected cases in thirteen European countries



Total HCV Infected Cases



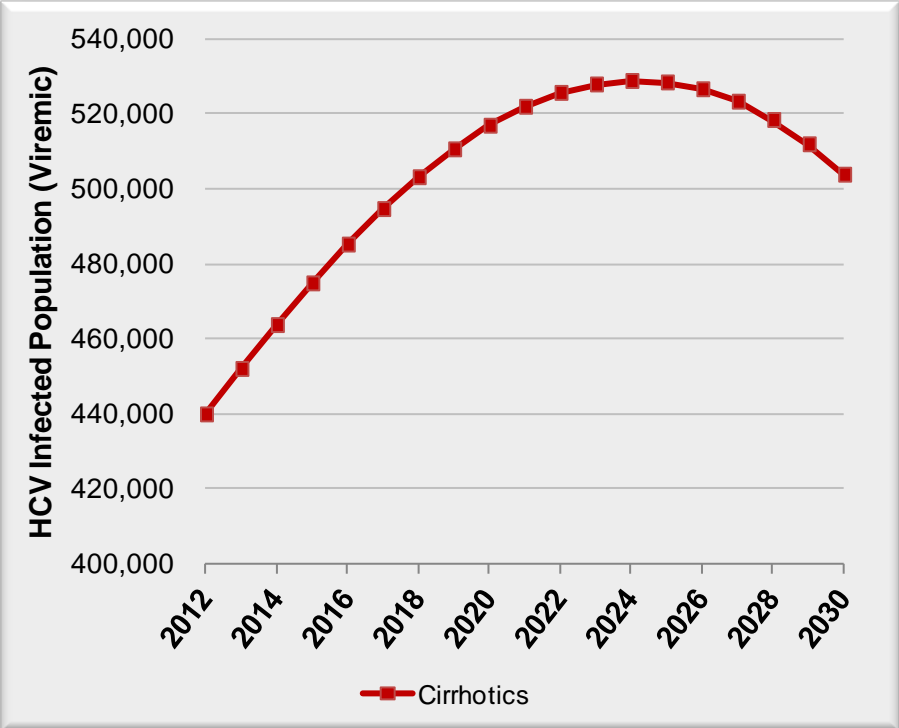


# Total number of infections will decline, but the remaining population will progress to more advanced liver diseases

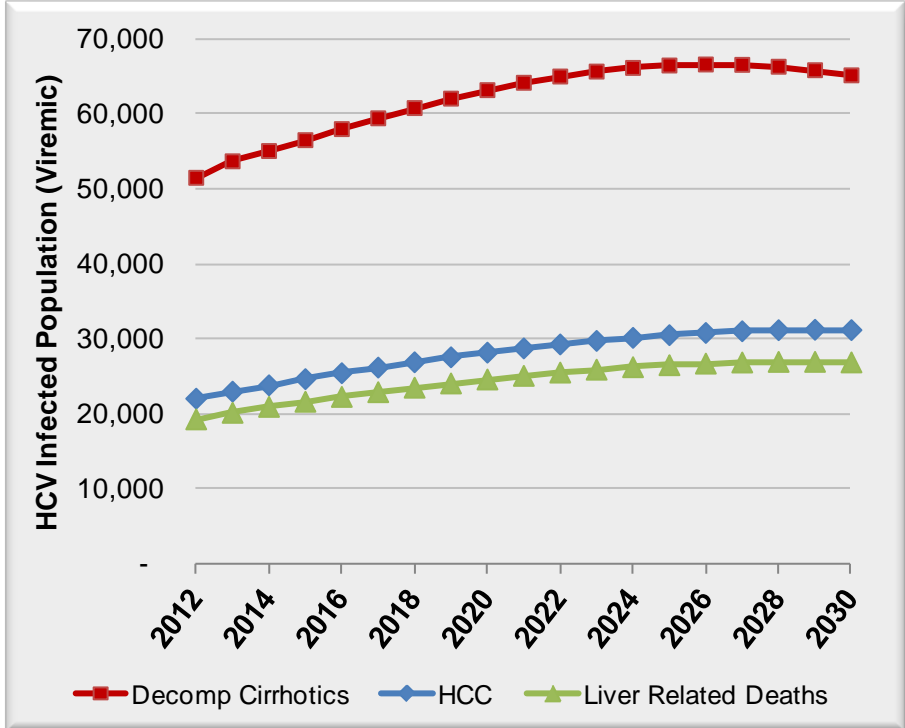


The number of HCV related cirrhotic cases will increase by 20%, decompensated cirrhosis by 30%, HCC by 40%, and liver related deaths by 40%.

### HCV Related Cirrhotic Cases



### HCV Related Decomp Cirrhosis, HCC, & Liver Related Deaths

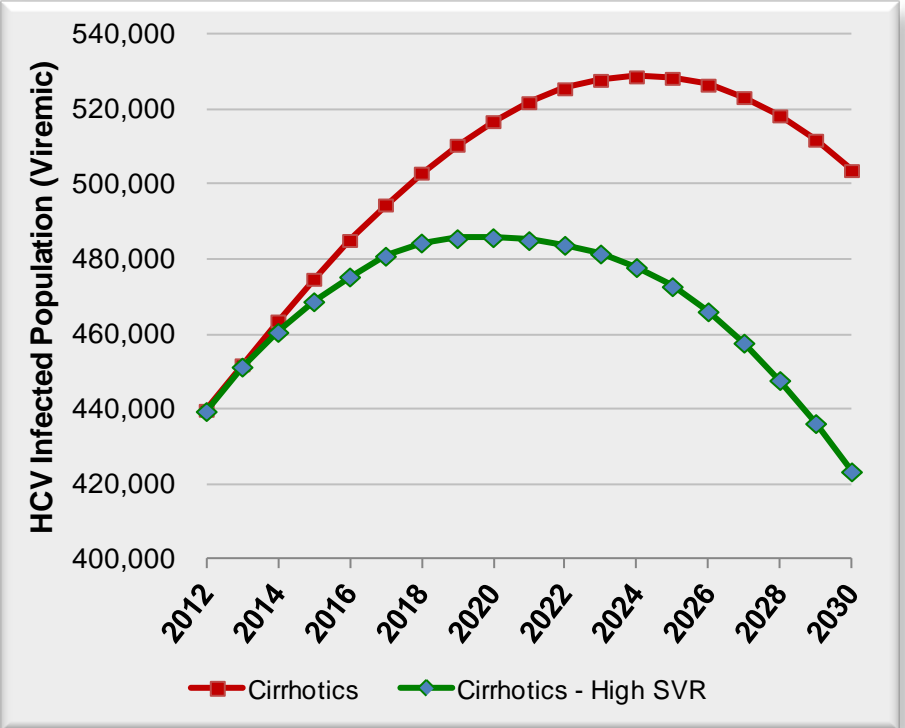


# The new therapies are expected to have a higher cure rate, shorter duration of treatment, and fewer side effects

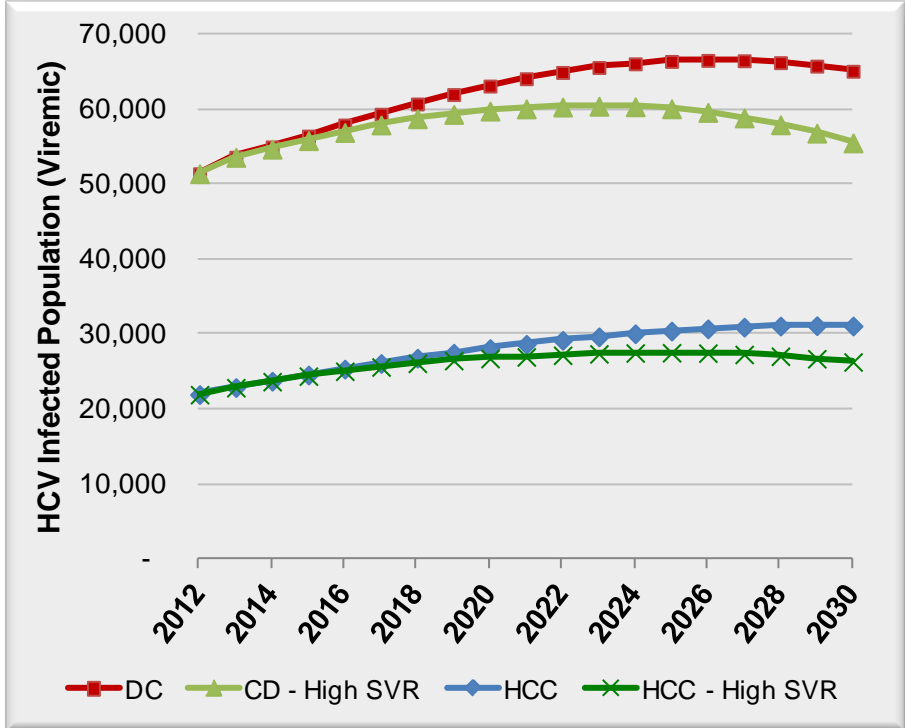


**If the same number of patients (as today) are treated with high SVR therapies, a significant reduction in disease burden increase can be achieved.**

**HCV Related Cirrhotic Cases**



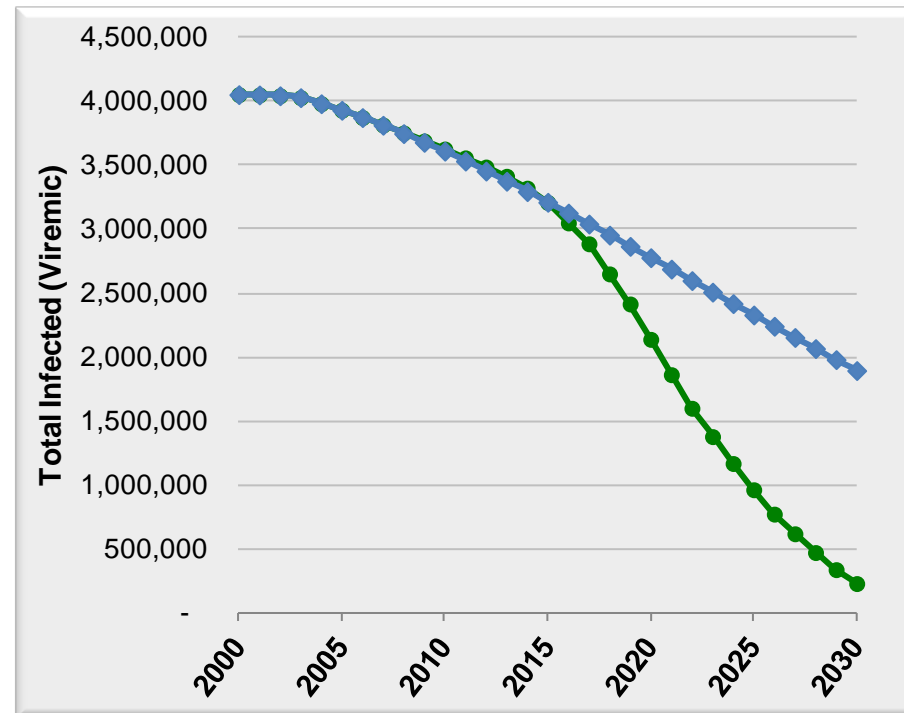
**HCV Related Decomp Cirrhosis, HCC, & Liver Related Deaths**



# If higher treatment rate is combined with higher cure rate, HCV can be eliminated before 2030



Total HCV Infected Cases

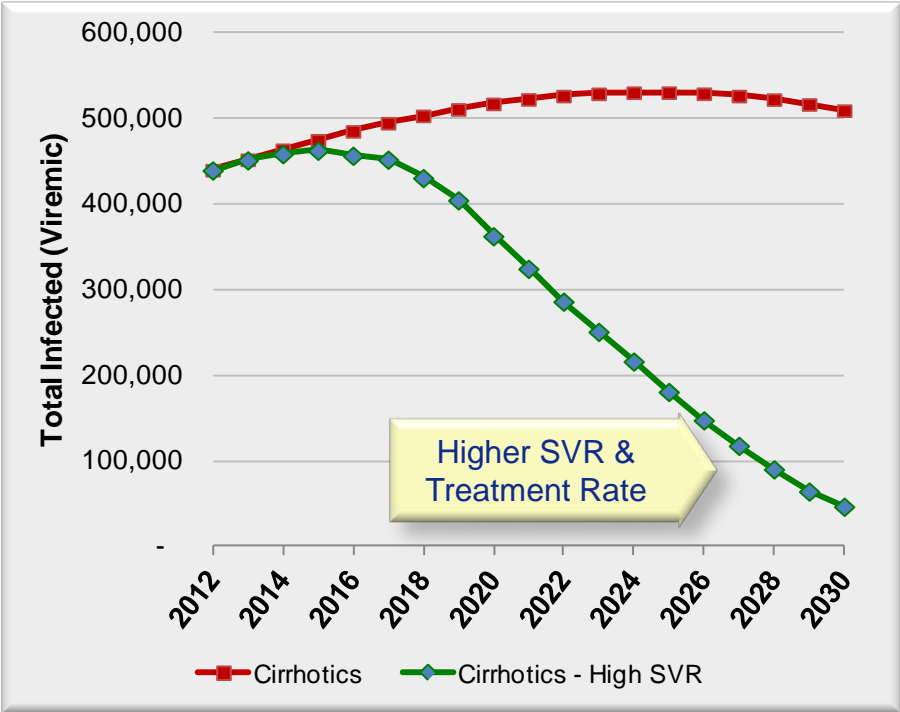


# In addition, the corresponding advance liver sequelae can be avoided

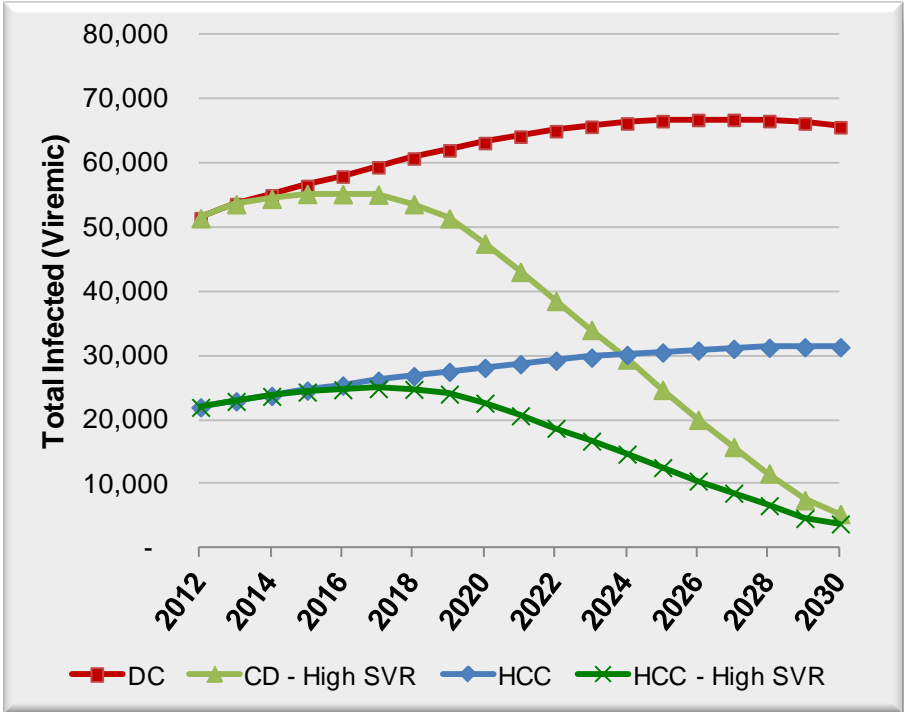


The avoided healthcare costs associated with the HCV sequelae can offset the upfront cost of treatment.

HCV Related Cirrhotic Cases



HCV Related Decomp Cirrhosis, HCC, & Liver Related Deaths



## Key insights from this study

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- Total number of HCV infections are declining in most countries
- Mortality will accelerate the decline in total infections due the aging population
- However, the remaining infected population will progress to more advance liver diseases
- HCV can be eliminated before 2030 by using higher SVR therapies, increased treatment, and prevention
- Active screening will be required to find cases to treat – age cohort screening
- In a resource limited setting, treating patients  $\geq$ F2 is a reasonable option if it is followed by treating F1 and F0 patients