A Markov model was created to simulate the natural history of chronic HCV infection. The aim of this analysis was to translate short-term findings from the study into long-term predictions of the impact of EBR/GZR compared to SOF+PR on the incidence of liver-related morbidity and mortality in Italy.

### Methods

- A Markov model was created to simulate the natural history of chronic HCV infection and estimate the lifetime cumulative incidence of advanced liver-related diseases. 
- The model is based on published HCV economic models and consists of 18 health states (see Figure 1). Patients move in and out of the health states based on the severity of fibrosis described by the degree of fibrosis using the METAVIR scoring system. F0 to F2 and F3 to F4 are considered noncirrhotic, and F4 is defined as cirrhotic. The model assumes that a person with a given fibrosis score may progress to more severe stages of liver disease or may remain in that health state. In the absence of successful treatment, progression to less severe health states is not permitted. However, after a successful treatment, a patient can achieve sustained virologic response (SVR) which is considered a cure for HCV in patients who are noncirrhotic. 

### Objectives

- The C-EDGE Head-to-Head study was a phase III, open-label clinical trial that assessed the efficacy and safety of elbasvir/grazoprevir (EBR/GZR) versus sofosbuvir plus pegylated interferon (SOF+PR) in 257 treatment-naive and 532 treatment-experienced patients with chronic HCV genotype 1 infection. 

### Results

- EBR/GZR was projected to reduce lifetime (30 years) cumulative incidence of DC by 18.93%, 17.64%, and 52.32% for overall patients and in G1 and G4, respectively, compared to SOF+PR. 
- The incidence of HCC was also projected to reduce by 29.42%, 27.06%, and 66.57% for overall patients and in G1 and G4, respectively, when comparing EBR/GZR against SOF+PR. As a result, EBR/GZR was projected to reduce liver-related mortality by 25.83% in the overall population and 24.15% and 62.32% for G1 and G4 populations, respectively, compared with SOF+PR. 

### Conclusions

- Based on the efficacy data from the C-EDGE Head-to-Head study and a natural history model for HCV, EBR/GZR was projected to substantially reduce the cumulative incidence of liver-related complications and liver-related mortality in patients with HCV G1 and G4 infection when compared with SOF+PR. In Italy, EBR/GZR was shown to increase life expectancy for HCV G1 and G4 patients when compared with SOF+PR.

### References