POSTER REFERENCE NUMBER: 137

Cost-Effectiveness Analysis of New HCV Treatments in Egyptian cirrhotic and non-cirrhotic patients: A societal perspective

Gihan Elsisi*, Asmaa Abu Rawash, Imam Waked

BACKGROUND

Hepatitis C is a major public health challenge in Egypt, where the prevalence of Hepatitis C virus (HCV) infection is the highest in the world. Numerous studies have confirmed that Egypt's viral hepatitis epidemic, particularly with regards to HCV, originated in the 1960s and 1970s during a mass campaign of parenteral anti-schistosomal therapy using improperly sterilized glass syringes [1].Nosocomial transmission has been, and probably still is the most common route for new infections of Hepatitis C. The genotype distribution in Egypt is mainly genotype 4 (HCV- G4) and this genotype is responsible for more than 90% of all infections [2]. HCV infection is silent for many years, and thus is difficult to diagnose, and each year there are more than 120,000 new infections in Egypt [3]. The aims of treatment are to clear the virus from the blood to prevent progression of liver disease, and to prevent the transmission of the HCV.

The problem is made worse because the potential side-effects of current treatments, such as interferon, needs to be given for a long period of time. The adverse effects associated with interferon based anti-viral treatment (e.g., flu-like symptoms, nausea, vomiting, and depression) and ribavirin (e.g., anemia) can be significant, and some patients describe it as a very unpleasant experience, disrupting their social and family life, and in some cases impairing their ability to work. This means that many people with the disease either do not complete the full course, or are reluctant to seek treatment in the first place [4].

It is therefore becoming increasingly important to evaluate the cost-effectiveness of emerging treatments across the general HCV infected population and across various subpopulations.

Figure 1

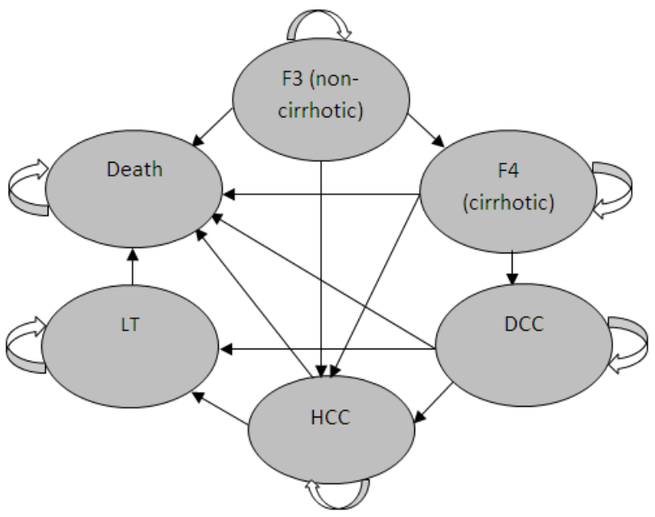
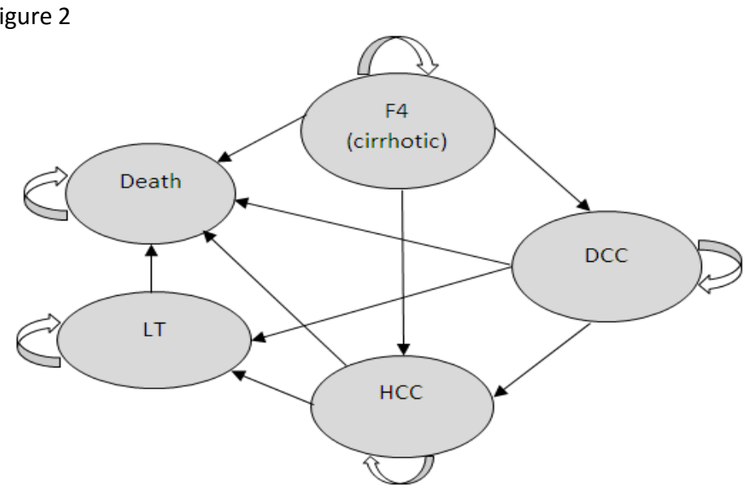


Figure 2



CONCLUSIONS

In Egypt, health care decision makers are challenged to set priorities in an environment in which the demand for health care services outweighs the allocated resources for HCV disease. SOF+DCV and SOF+LDV+RBV yield the most favorable future health economic outcomes compared with other currently available regimens across a broad spectrum of patients, including those with cirrhosis in response to averted liver-disease costs, reducing liver-disease complications and the downstream costs associated with the disease. Further research is needed to incorporate real-world data, genotype 4 and future comparators.

METHODS

Two decision-analytic models consisted of an initial decision tree, in which patients were eligible to receive treatment, and 2 Markov process models to project patients' outcomes. Patients entered the model at treatment initiation and moved through the treatment and post-treatment phases sequentially. Figure 1 shows a half-cycle corrected Markov model for non-cirrhotic patients with six mutually exclusive health states (fibrosis score "F3",fibrosis score "F4",decompensated cirrhosis (DCC), hepatocellular carcinoma (HCC), liver transplant, and death). Figure 2 shows a half-cycle corrected Markov model for cirrhotic patients with five mutually exclusive health states (fibrosis score "F4",decompensated cirrhosis (DCC), hepatocellular carcinoma (HCC), liver transplant, and death).In the decision tree, both cirrhotic and non-cirrhotic patients received SOF+ RBV or SOF+ DCV or SOF+LDV+RBV or SOF+pegIFN+RBV. The structure of the 2 models reflects the natural history of the disease, the current treatment practices and the published studies in this disease area. This type of decision model is used for analyzing clinical problems involving risks that change or occur repeatedly over time. The identified health states of the 2 models structures correspond to the real practice of patient management in Egypt and remain as simple as possible. The health states (i.e., model contents) were validated by clinical experts and the data that were available from the authors' institutions. The 2 models were built to reflect patients who began therapy at the age of 50 years, both cirrhotic and non-cirrhotic patients. A time horizon of twenty years was selected to reflect the long-term consequences the decisions. The combined use of SOF+ RBV, SOF+ DCV, or SOF+LDV+RBV was compared with the use of SOF+pegIFN+RBV, which was the recommended practice in the Ministry of Health hospitals. The transition probabilities from the fibrosis score health state to the HCC, DCC, liver transplant, and death states were derived from previously published sources.

Table 1

Treatment strategy	Total costs	Total QALYs	ICER	Interpretation
SOF+DCV	US$ 4943	6.60	-7793 $/QALY	Dominant therapy
SOF+LDV+RBV	US$ 5217	6.66	-4225 $/QALY	Dominant therapy
SOF+RBV	US$ 7946	5.78	-2737 $/QALY	Dominated therapy
SOF+pegIFN+RBV	US$ 6117	6.45		Base line comparator

REFERENCES

1.Strickland G. Liver disease in Egypt: hepatitis C superseded schistosomiasis as a result of iatrogenic and biological factors. Hepatology 2006;43:915–22.

2.Waked I et al. The current and future disease burden of chronic hepatitis C virus infection in Egypt. Arab J Gastroenterol (2014), http://dx.doi.org/10.1016/j.ajg.2014.04.003.

3.Deuffic-Burban S, Mohamed M, Larouze B, Carrat F, Valleron A. Expected increase in hepatitis C-related mortality in Egypt due to pre- 2000 infections. J Hepatol 2006;44:455–61.

4.HartwellD.Shortenedpeginterferon and ribavirin treatment for chronic hepatitis c. International Journal of Technology Assessment in Health Care, 28:4 (2012), 398–406.

CONFLICTS OF INTEREST

Nothing to declare

RESULTS

In non-cirrhotic patients, the total QALYs for SOF+LDV+RBV regimen were 6.66 compared to 6.60 for the SOF+DCV, 6.45 for the SOF+pegIFN+RBV and 5.78 for SOF+RBV. The total costs for SOF+LDV+RBV, SOF+DCV, SOF+pegIFN+RBV and SOF+RBV were US$ 5217, US$ 4943, US$ 6117 and US$ 7946 respectively. These costs yielded an incremental cost-effectiveness ratio (ICER) of -4225 for the SOF+LDV+RBV, -7793 for the SOF+DCV and -2737 for the SOF+RBV regimen. In cirrhotic patients, the total QALYs of SOF+LDV+RBV were 6.05 compared to 5.92 for the SOF+DCV, 5.35 for the SOF+pegIFN+RBV and 2.27 for the SOF+RBV. The total costs for SOF+LDV+RBV, SOF+DCV, SOF+pegIFN+RBV and SOF+RBV were US$ 6035, US$ 5157, US$ 10357 and US$ 18393 respectively. These costs yielded an ICER of -6169 for the SOF+LDV+RBV, -9192 for the SOF+DCV and -2604 for the SOF+RBV. SOF+DCV regimen was the most cost saving option for cirrhotic and non-cirrhotic patients than the other treatment regimens. Deterministic sensitivity analyses remain robust.

Table 2

Treatment strategy	Total costs	Total QALYs	ICER	Interpretation
SOF+DCV	US$ 5157	5.92	-9192 $/QALY	Dominant therapy
SOF+LDV+RBV	US$ 6035	6.05	-6169 $/QALY	Dominant therapy
SOF+RBV	US$ 18393	2.27	-2604 $/QALY	Dominated therapy
SOF+pegIFN+RBV	US$ 10,357	5.35		Base line comparator

Figure 3

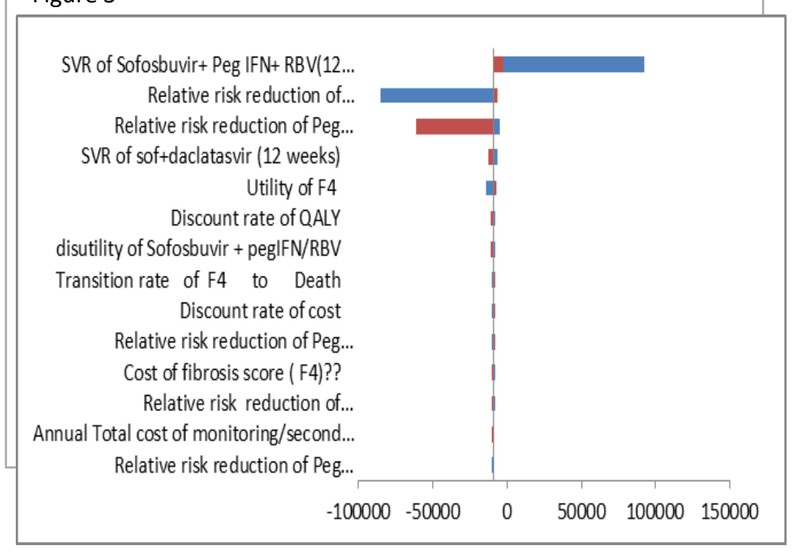
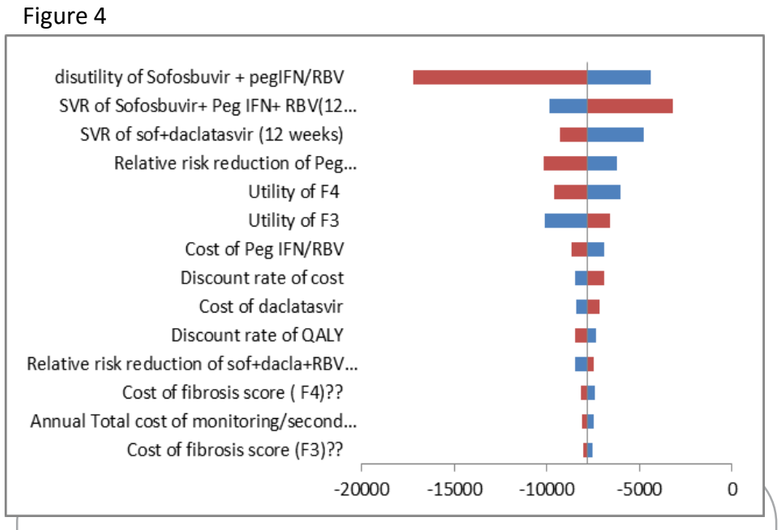


Figure 4



Contact Information

NAME: Gihan Elsisi

TEL NO +201227366018

EMAIL gihanhamdyelsisi@hotmail.com

World Hepatitis Summit 2017
SÃO PAULO, BRAZIL 1-3 NOVEMBER