Research Article
Viral Hepatitis

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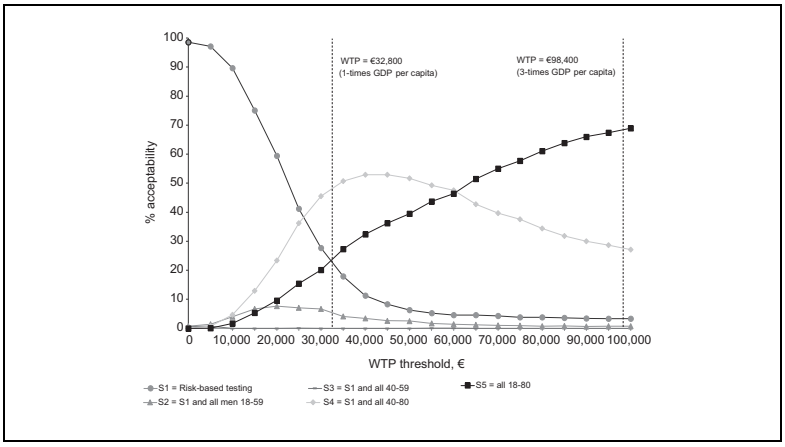
Assessing the cost-effectiveness of hepatitis C screening strategies in France

Graphical abstract



Highlights

- In France, universal screening is the most effective strategy for HCV.
- Universal screening is cost-effective at the threshold of 1–3 times GDP per capita.
- Cost-effectiveness mainly depends on utility values and time to treatment initiation.

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Lay summary

In the context of highly effective and well tolerated therapies for hepatitis C virus that are now recommended for all patients, a reassessment of hepatitis C screening strategies is needed. An effectiveness and cost-effectiveness study of different strategies targeting either the at-risk population, specific ages or all individuals was performed. In France, universal screening is the most effective strategy and is cost-effective when treatment is initiated regardless of fibrosis stage. From an individual and especially from a societal perspective of hepatitis C virus eradication, this strategy should be implemented.

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Assessing the cost-effectiveness of hepatitis C screening strategies in France

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Background & Aims: In Europe, hepatitis C virus (HCV) screening still targets people at high risk of infection. We aim to determine the cost-effectiveness of expanded HCV screening in France.

Methods: A Markov model simulated chronic hepatitis C (CHC) prevalence, incidence of events, quality-adjusted life years (QALYs), costs and incremental cost-effectiveness ratio (ICER) in the French general population, aged 18 to 80 years, undiagnosed for CHC for different strategies: S1 = current strategy targeting the at risk population; S2 = S1 and all men between 18 and 59 years; S3 = S1 and all individuals between 40 and 59 years; S4 = S1 and all individuals between 40 and 80 years; S5 = all individuals between 18 and 80 years (universal screening). Once CHC was diagnosed, treatment was initiated either to patients with fibrosis stage ≥F2 or regardless of fibrosis. Data were extracted from published literature, a national prevalence survey, and a previously published mathematical model. ICER were interpreted based on one or three times French GDP per capita (€32,800).

Results: Universal screening led to the lowest prevalence of CHC and incidence of events, regardless of treatment initiation. When considering treatment initiation to patients with fibrosis ≥F2, targeting all people aged 40–80 was the only cost-effective strategy at both thresholds (€26,100/QALY). When we considered treatment for all, although universal screening of all individuals aged 18–80 is associated with the highest costs, it is more effective than targeting all people aged 40–80, and cost-effective at both thresholds (€31,100/QALY).

Conclusions: In France, universal screening is the most effective screening strategy for HCV. Universal screening is cost-effective when treatment is initiated regardless of fibrosis stage. From an individual and especially from a societal perspective of HCV eradication, this strategy should be implemented.

Lay summary: In the context of highly effective and well tolerated therapies for hepatitis C virus that are now recommended for all patients, a reassessment of hepatitis C screening strategies is needed. An effectiveness and cost-effectiveness study of different strategies targeting either the at-risk population, specific ages or all individuals was performed. In France, universal screening is the most effective strategy and is cost-effective when treatment is initiated regardless of fibrosis stage. From an individual and especially from a societal perspective of hepatitis C virus eradication, this strategy should be implemented.

Introduction

In Europe, recommendations for hepatitis C virus (HCV) screening still target only people at high risk of infection.[1] With this screening strategy, around 40% of infections are still not detected in France,[2] equating to 75,000 individuals in 2014.[3]

The current situation supports a reassessment of the screening strategy for several reasons: (i) hepatitis C is diagnosed at an advanced stage of the disease in more than one patient out of 10, corresponding to a delay in diagnosis;[4,5] (ii) recent availability of highly efficacious and well tolerated treatments (*i.e.*; direct-acting antiviral (DAA)-based regimens);[6] (iii) in addition to standard serological tests, rapid screening tests now exist for viral hepatitis C, that can help to expand the availability of screening outside health facilities, providing new options for those who have no access to interventions implemented in healthcare facilities.[7] Since 2012, the US and Canada have advocated one-time testing in specific birth cohorts, corresponding to those with the highest prevalence of hepatitis C.[8–10] It is however not clear that these strategies are applicable to other countries with a different HCV epidemiological profile. In addition, the cost-effectiveness analyses underlying these strategies were conducted with past treatments that were much less effective than present DAA.

Although France is one of the countries with the highest HCV screening level, the impact of treatment may be increased with improvement in HCV detection and therapeutic management.[11] Early detection can allow earlier introduction of antiviral treatment leading to a reduction in morbidity and mortality.[12] It can also allow a reduction in the cost of care, because an effective and early treatment may prevent progression to the costly complications, such as cirrhosis and/or hepatocellular carcinoma (HCC).[13] Finally, it can have a societal benefit because testing

Keywords: Chronic hepatitis C; Cohort Markov model; Effectiveness analysis; Cost-effectiveness analysis; Interferon-free direct-acting antiviral agents; Screening.
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