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Screening strategies for Hepatitis C Virus elimination in Italy

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Introduction and aim: Cost-effective screening strategies are needed to make HCV elimination a reality. HCV is more prevalent in the older Italian population, so we aimed to determine if birth cohort-based screening is cost-effective in Italy.

Method: A Markov model was populated with Italian data to quantify the annual HCV-infected population by liver disease stage, sex, and age. The economic impact was evaluated quantifying HCV infection medical costs (screening, antiviral treatment, liver-related complications) and health effects denominated as quality-adjusted-life years (QALYs). Prevalence of undiagnosed, HCV infection was used to calculate the number of HCV antibody screens needed annually. The cost-effectiveness threshold was set at €25,000. Modeled HCV infection outcomes (disease burden, medical costs, health effects) were assessed under the status quo and a scenario to achieve the WHO elimination targets. The screening strategies included universal or targeted screening by birth cohort: the 1948–78 cohort, the 1958–78 cohort, and graduated birth cohort screening (birth years 1958–78 over 2021–23, 1948–78 over 2024–27, and 1948–84 over 2028–30).

Results: All screening scenarios were found to be highly cost-effective (< €3,000/QALY gained) vs. the status quo. The 1948–78 birth cohort screening scenario was the least costly, with €5.5 billion in total medical costs by 2031. This was €24.7 million less than screening in the 1958–78 birth cohort, €37.6 million less than universal screening, and €55.3 million less than graduated screening. Screening the 1948–78 birth cohort would gain approximately 140,000 QALYs by 2031, vs. 134,000, 127,000, and 123,000 QALYs for the universal, 1958–78 birth cohort, and graduated birth cohort, respectively.

Conclusion: Implementing screening in the 1948–78 birth cohort was the most cost-effective option with the greatest reductions in overall disease burden by 2030. This strategy should be considered to sustain Italy's momentum towards achieving HCV elimination goals.

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Changes in ^{13}C-aminopyrine breath test predict liver-related events and death in patients with HCV-related previous decompensated child A5 or child A6 to B cirrhosis who achieve SVR after DAA therapy

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Background and aims: The effects of SVR by DAA on decompensation and liver deaths in patients with advanced cirrhosis is less clearcut. We used ^{13}C-aminopyrine breath test(ABT), a non-invasive method evaluating microsomal hepatocellular function, at baseline and after SVR, to assess whether its changes can predict liver-related outcomes after DAA treatment in patients with advanced HCV-cirrhosis.

Methods:50 consecutive patients with HCV cirrhosis were enrolled. Twenty-one patients (42%) were in Child Pugh stage B7-9, 22 (44%) C-P A6, and 5 (14%) C-P A5. All C-P A5 patients had a recent history of decompensation. ABT was performed at baseline and 12 weeks after the end of antiviral therapy. Patients received sofosbuvir-based regimens.

Results: ABT was available for all 50 patients at baseline. The 120'%cumulative dose was directly associated at regression analysis only with albumin levels ($p = 0.001$). ABT was available at follow-up week 12 for 41 patients (FUW12), all with SVR, and followed for a median of 25.2 months (range 12.2–32.1 months). Three patients did not start therapy, 3 could not be tested at FUW12 and 2 died during the observation period. At univariate analysis, changes from FUW12 to baseline 120'%cumulative dose ABT(HR 0.97, 95%C.I. 0.95–0.99; $p = 0.02$) -but not baseline and FUW12 120'%cumulative dose ABT-, baseline MELD (HR 1.16, 95%C.I. 0.97–1.38; $p = 0.09$), and hepatic encephalopathy at FUW12 (HR 8.70, 95%C.I. 0.88–85.6; $p = 0.06$) were the only variables associated with occurrence of liver-related events/death (7 cases), while delta 120'%cumulative dose ABT (HR 0.67, 95%C.I. 0.47–0.95; $p = 0.02$) and FUW12 hepatic encephalopathy (HR 17.2, 95%C.I. 1.32–224.3; $p = 0.02$) remained the only independent predictors at multivariate Cox regression analysis. The AUC of delta 120'%cumulative dose ABT for predicting liver-related events/death was good (0.87, 95%C.I. 0.75–0.97), with a delta $\geq$0% well discriminating patients at lower versus patients at higher risk of liver-related events-death ($p < 0.001$).

Conclusions: In patients with advanced HCV cirrhosis who achieve SVR with DAA, changes in 120'%cumulative dose ABT assists in assessing the residual likelihood of liver-related events and deaths after viral cure.

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