Global timing of hepatitis C virus elimination: estimating the year countries will achieve the World Health Organization elimination targets

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Background

- The introduction of highly efficacious pan-genotypic therapies for hepatitis C virus (HCV) infection has made the elimination of HCV an attainable goal
- This study assessed the progress made in 45 high-income countries and territories towards meeting the 2030 HCV elimination targets by the World Health Organization (WHO) for incidence, mortality, diagnosis, and treatment

Methods

- A previously published Markov disease progression model of HCV infection was populated with demographic and epidemiological inputs for 45 high-income countries and territories from the United Nations World Population Prospects and the Polaris Observatory, respectively
- Primary modification to the published model was the calculation of incidence:
  - Incident cases of HCV were separated into vertically and horizontally acquired infections
  - Future incidence was assumed to change at the same annual rate as prevalence
    - F0 (on METAVIR scale) prevalence was used where treatment was restricted by fibrosis score, and overall prevalence was used where treatment was not restricted to simulate the impact of treatment as prevention
- Maintaining the standard of care in 2017 (number of new diagnoses and antiviral treatments, treatment eligibility, and average sustained virologic response) was defined as the status quo
- Modeled outcomes for prevalence, incidence, liver-related deaths due to HCV infection, as well as reported data on diagnosis and antiviral treatment were analyzed to determine the year in which a country or territory would meet the WHO's 2030 targets to eliminate HCV:
  - 80% reduction in incidence of chronic HCV infections between 2015 and 2030
  - 65% reduction in liver-related deaths due to chronic HCV infection between 2015 and 2030
  - 90% diagnosis coverage of HCV-infected population in 2015
  - 80% treatment coverage of eligible HCV-infected population in 2015

Results

- Of 45 high-income countries and territories, 30 were projected to not eliminate HCV before 2050
  - Nine (Australia, France, Iceland, Italy, Japan, South Korea, Spain, Switzerland, and the United Kingdom) were on track towards eliminating HCV by 2030,
  - three (Austria, Germany, and Malta) were projected to eliminate HCV by 2040, and three more (Ireland, the Netherlands, and Saudi Arabia) by 2050
- The number of high-income countries and territories that failed to meet each WHO target were: 34 (incidence), 30 (mortality), 29 (treatment) and 22 (diagnosis)

Conclusions

Despite the introduction of curative therapies, 80% of high-income countries and territories are not on track to meet the WHO's targets that would eliminate HCV as a public health threat by 2030, while 67% are off-track by at least 20 years. Immediate action to improve HCV diagnosis and treatment is needed to make the global elimination of HCV by 2030 an attainable goal.

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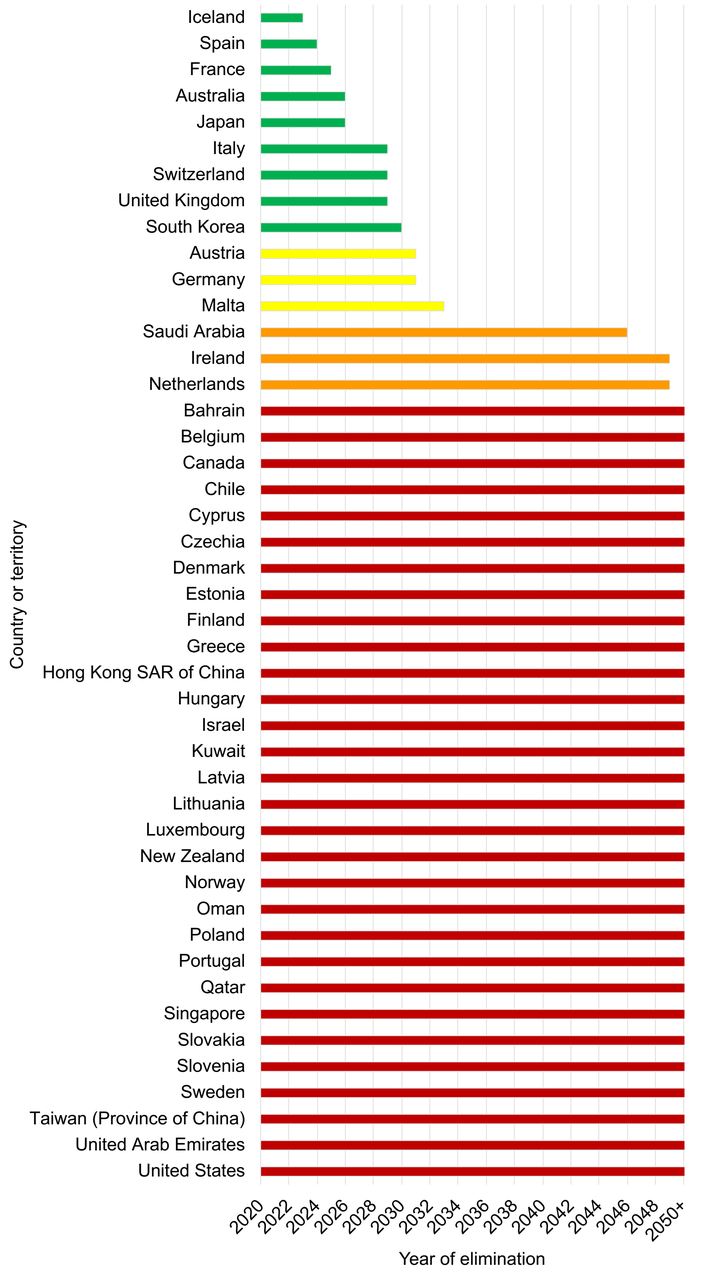
Table 1. Year of elimination of HCV by country or territory

Country or territory	Year in which the WHO's 2030 target was met				Restrictions on treatment by fibrosis score in 2017	Year of elimination
	Incidence	Mortality	Diagnosis	Treatment		
Australia	2026	2024	2016	2021	No	2026
Austria	2031	2021	2026	2022	No	2031
Bahrain	–	–	–	–	Yes	–
Belgium	2042	2039	2029	2042	Yes	–
Canada	2043	2029	2022	2029	Yes	–
Chile	2050	–	–	–	Yes	–
Cyprus	2042	–	–	–	Yes	–
Czechia	–	–	2046	–	Yes	–
Denmark	–	–	2030	–	Yes	–
Estonia	2041	–	–	2048	Yes	–
Finland	–	–	2017	2046	Yes	–
France	2025	2023	2016	2021	No	2025
Germany	2027	2029	2031	2030	No	2031
Greece	–	2046	2028	–	Yes	–
Hong Kong SAR of China	–	–	2045	–	Yes	–
Hungary	–	–	2042	2044	Yes	–
Iceland	2023	2019	2016	2017	No	2023
Ireland	2046	2049	2028	2035	No	2049
Israel	2035	–	–	–	Yes	–
Italy[a]	2028	2023	–	2029	No	2029
Japan[b]	2026	2023	–	–	No	2026
Kuwait	–	–	2040	–	No	–
Latvia	–	2019	2023	2042	Yes	–
Lithuania	–	–	2040	2048	Yes	–
Luxembourg	2040	–	2032	2033	No	–
Malta	2028	2033	2015	2023	No	2033
Netherlands	2045	2049	2033	2028	No	2049
New Zealand	2041	2037	2033	2027	No	–
Norway	–	–	2020	2033	Yes	–
Oman	–	2042	2037	2041	Yes	–
Poland	–	–	2047	2041	No	–
Portugal	–	–	–	2048	No	–
Qatar	2041	–	2026	–	Yes	–
Saudi Arabia	2042	2046	2034	2030	No	2046
Singapore	2049	–	2030	–	Yes	–
Slovakia	–	–	–	–	Yes	–
Slovenia	–	–	2029	2040	Yes	–
South Korea	2025	2029	2029	2030	No	2030
Spain	2024	2020	2021	2020	No	2024
Sweden	–	2022	2016	2031	Yes	–
Switzerland	2029	2026	2024	2024	No	2029
Taiwan (Province of China)	–	2031	2041	–	Yes	–
United Arab Emirates	–	–	2030	–	No	–
United Kingdom	2029	2028	2025	2023	No	2029
United States	–	2022	2025	2026	Yes	–

HCV — hepatitis C virus; WHO — World Health Organization; "–" — elimination target was not met by 2050; Hong Kong SAR of China — Hong Kong Special Administrative Region of China.
[a] Due to high all-cause and liver-related mortality among the HCV-infected population, caused by an older prevalent population, the diagnosis target was excluded while assessing the year of elimination
[b] Due to high all-cause and liver-related mortality among the HCV-infected population, caused by an older prevalent population, the diagnosis and treatment targets were excluded while assessing the year of elimination

Figure 1. Year of elimination of HCV by country or territory



HCV — hepatitis C virus; Hong Kong SAR of China — Hong Kong Special Administrative Region of China.