

Anticipated timing of elimination of hepatitis C virus in Canada's four most populous provinces

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INTRODUCTION

- Direct-acting antiviral therapy for hepatitis C virus (HCV) infection has made the elimination of HCV an attainable goal
- Current diagnosis and treatment levels in many high-income countries are insufficient¹ to reach the World Health Organization's (WHO) 2030 HCV elimination targets²

OBJECTIVE

- This study examines the timing of HCV elimination in Canada's four most populous provinces, which account for 86% of the country's total population³

METHODS

- A previously published disease burden model of HCV infection⁴ was populated with reported demographic^{3,5} and epidemiological^{6–10} data for the Canadian provinces of Alberta, British Columbia, Ontario, and Quebec
- For British Columbia, HCV prevalence and diagnosis data from 2018,⁶ and average annual treatments over 2015–2018⁶ were used
 - A viremia rate of 46.8% among HCV antibody-positive individuals⁶ was applied
- For Alberta, Ontario, and Quebec, chronic HCV prevalence⁷ and diagnosis⁸ data from 2007 and 2011, respectively, and peak number of treatments in Canada,⁹ prorated for each province, were used
- As the base case, diagnosis (from 2017)¹⁰ and treatment levels were assumed constant, optimistically
- The year of achieving the WHO's 2030 HCV elimination targets for the reduction in incidence (80%) and mortality (65%), and diagnosis (90%) and treatment (80%) coverage was determined for each province
- The impact of 5% and 10% annual reductions in diagnosis and treatment levels were explored as less optimistic scenarios
- The minimum annual reduction in diagnosis and treatment levels for delaying HCV elimination beyond 2050 was calculated

Table 1. Key epidemiological inputs for HCV infection in Canada's four most populous provinces

Province	Prevalence			Diagnosis						Treatment		
	Prevalent cases	Year	Source	Diagnosis coverage, total	Year	Source	Newly diagnosed, annual	Year	Source	Treated, annual	Year	Source
Alberta	13,485	2007	7	†	2011	8	1,478	2007	10	‡	2019	9
British Columbia	28,607	2018	6	87%	2018	6	2,291	2007	10	3,918	2018	6
Ontario	102,858	2007	7	†	2011	8	4,697	2007	10	‡	2019	9
Quebec	21,003	2007	7	†	2011	8	1,021	2007	10	‡	2019	9

HCV: hepatitis C virus

† National-level diagnosis coverage of 56% was assumed

‡ National-level peak number of treatments of 12,000, prorated for each province, was assumed

RESULTS

- Under the base case, British Columbia would reach the WHO's HCV elimination targets in 2025, Ontario in 2030, Alberta in 2031, and Quebec in 2035
- At a 5% annual reduction in diagnosis and treatment levels, British Columbia would be on track to eliminate HCV by 2030, Alberta and Ontario by 2040, and Quebec by 2050
- At a 10% annual reduction in diagnosis and treatment levels, only British Columbia and Ontario would eliminate HCV by 2050
 - At the 10% annual reduction rate, British Columbia would see an 82% reduction in incident cases of HCV infection over 2015–2026, while at 5%, incident cases would fall by 88% over this period, making 2026 the year of HCV elimination in the province under both scenarios
- At a 24% annual reduction in diagnosis and treatment levels, no province considered in the analysis would eliminate HCV by 2050

Table 2. Progress towards the WHO's 2030 HCV elimination targets in Canada's four most populous provinces

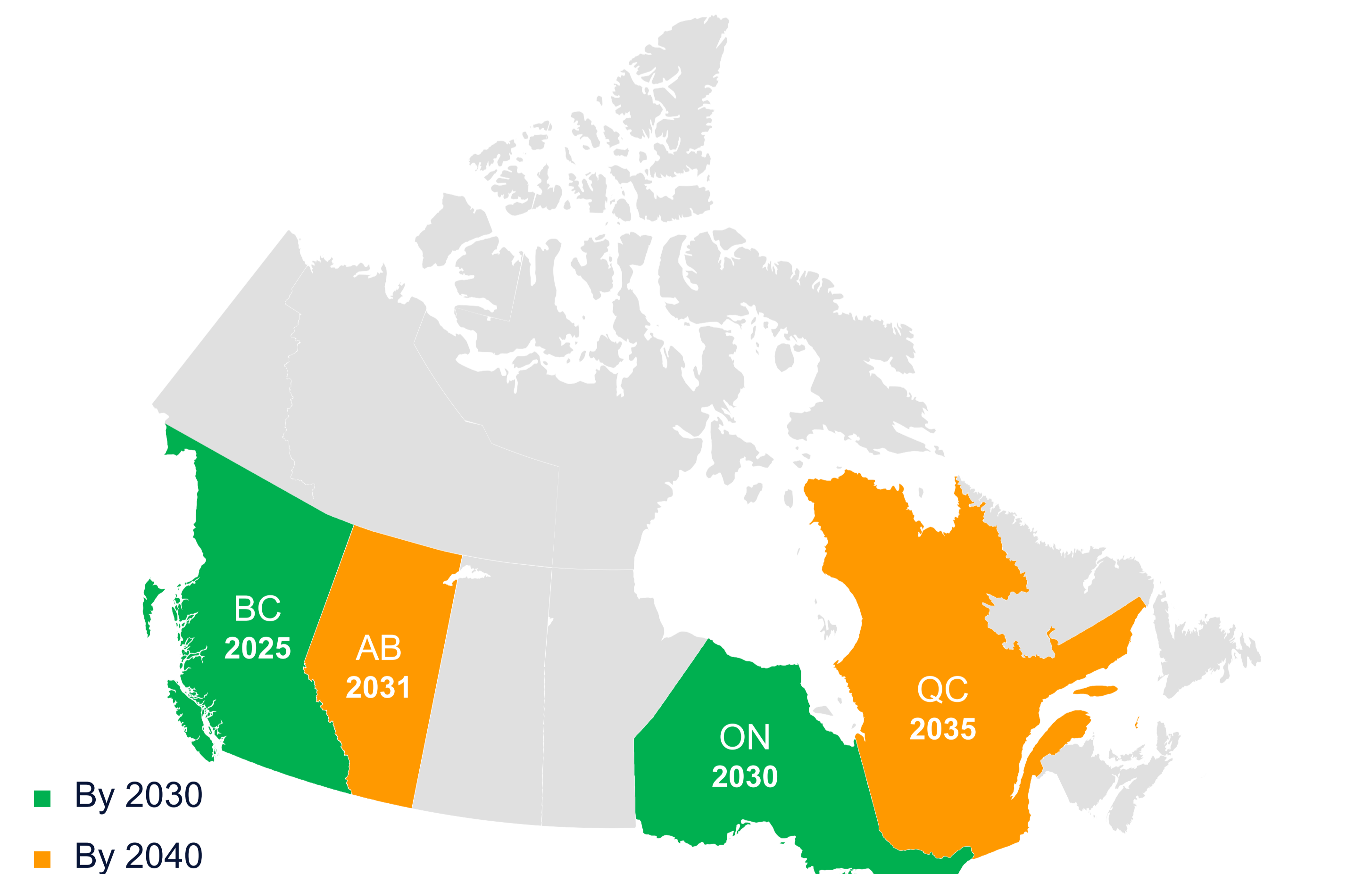
Province	Anticipated year of HCV elimination			Annual treatments needed over 2020–2030 for HCV elimination by 2030
	Base case (0% reduction)†	5% reduction†	10% reduction†	
Alberta	2031	2035	‡	1,300
British Columbia	2025	2026	2026	3,900
Ontario	2030	2033	2044	5,300
Quebec	2035	2043	‡	2,100

WHO: World Health Organization; HCV: hepatitis C virus

† Annual rate of reduction in HCV diagnosis and treatment levels

‡ No HCV elimination before 2050

Figure 1. Year of HCV elimination in Canada's four most populous provinces under the base-case scenario



HCV: hepatitis C virus; BC: British Columbia; AB: Alberta; ON: Ontario; QC: Quebec

LIMITATIONS AND DISCUSSION

- The analysis assumed constant annual levels of diagnosis and antiviral treatments under the base case in the future
- In most high-income countries, annual antiviral treatment levels are decreasing from peak levels, suggesting that the base-case projections for the year of HCV elimination in this study may be optimistic
- At an annual rate of reduction of 1.73% in diagnosis and treatment levels, based on recent monthly data, all provinces considered, except British Columbia, would see HCV elimination delayed by one year

CONCLUSIONS

- Assuming that the current levels of diagnosis and treatment are maintained, only British Columbia and Ontario are on track towards the WHO's 2030 HCV elimination targets among Canada's four most populous provinces
- As patients already diagnosed are being treated, it will be critical to increase and maintain diagnosis levels to achieve the treatment levels necessary to make timely HCV elimination a reality in Canada

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Yasmine Rahal and **Catherine Robert** are employees of AbbVie Corporation, Canada, and may own AbbVie stock or stock options.

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