

Elimination of Hepatitis C in Brazil is Cost-Saving

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Background and Aims

It is estimated that around 700,000 people are chronically infected with hepatitis C virus (HCV) in Brazil. Genotype 1 accounts for 71.3% of all cases, followed by genotype 3, which accounts for 24.4% of cases. In Brazil, 319,000 antibody positive cases have been reported from 1999-2016. It is estimated that 97,000 viremic diagnosed cases (not cured and alive) remained in 2016. Regarding hepatitis C treatment around 67,000 hepatitis C chronic patients have received hepatitis C treatment with DAAs from 2015 until 2017. These new medications cure 95% of HCV cases in Brazil on average, according to reported data. Around \$ 300 million have been invested annually for the treatment of HCV in Brazil. The aim of this study was to evaluate the costs of two different strategies to control HCV disease burden in Brazil: 1- If no further changes are made to the HCV treatment program in Brazil; 2- If the World Health Organization (WHO) targets for 2030 elimination are met by 2030.

Method

The infected population and associated disease progression were previously modeled to track HCV incidence, prevalence, hepatic complications and mortality. A modeling approach was used to evaluate the relative costs of two different strategies to control the HCV disease burden in Brazil:

1. If no further changes are made to the HCV treatment program in Brazil;
2. Where the World Health Organization (WHO) targets for 2030 elimination are met by 2030.

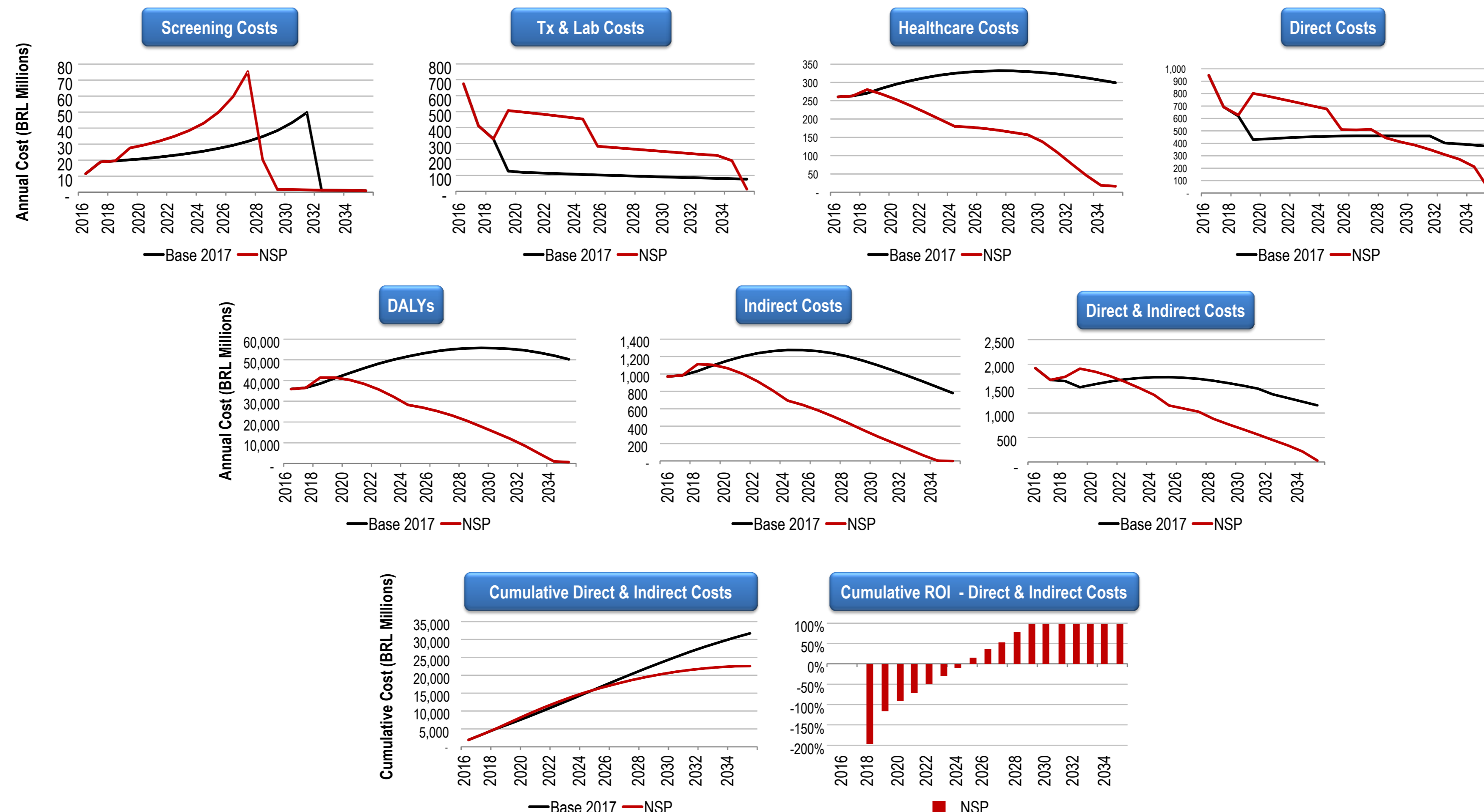
In the second scenario, treatment access must be expanded to all fibrosis stages beginning in 2018 in order to achieve the targeted reduction in new infections by 90%. Data regarding direct costs were obtained from the Brazilian Unified Health System and a Delphi process was applied in order to gain expert consensus and validate inputs. We conducted an economic analysis that factored in: direct costs of screening, diagnosing and treating HCV; healthcare costs associated with HCV and advanced liver disease; and economic losses to society from years of life lost (YLL) and years lived with disability due to HCV related morbidity and mortality. Costing data were provided by the expert panel. **Direct costs** associated with screening, diagnosing and managing chronic HCV infection, cirrhosis and liver cancer (in the absence of antiviral therapy), and treating HCV.

Treatment cost assumptions: Average cost of DAAs (across genotypes) for a 12 week course of treatment was estimated at 17 000 BRL in 2017 and is estimated to decreased to 10 000 BRL by 2019 per expert input.

Indirect costs were taken as economic productivity losses to Brazilian society caused by HCV and related liver disease and mortality.

Results

- Direct costs (diagnostic, treatment and healthcare costs) are projected to increase significantly with the scale-up of treatment and diagnosis in the initial years of the intervention scenario, but then drop below the base case on an annual basis by 2025-2036, once HCV is eliminated.
- Economic losses drop in the intervention scenario when compared to the status quo case.
- As more patients receive treatment and are cured, reduced mortality and disability will result in fewer YLLs and YLDs.
- As a result, DALYs are avoided in the intervention scenario, creating savings.
- Annual total cost (direct + economic losses) will result in a lower cost, and cost saving, to Brazil, relative to the base scenario, starting between 2024 and 2030.



Conclusions

Achieving the WHO Targets is feasible in Brazil with a scale-up of treatment and diagnosis over time, beginning in 2019. Brazil has already gained ground in this respect by expanding the number of patients treated annually to 37,000 in 2016 (expert input) and the number newly diagnosed to an estimated 30,000 in 2017. Adding to the effectiveness of the treatment scale-up on the disease burden is the introduction of DAAs with an estimated average cure rate of 95%. These measures alone have significantly accelerated a downward trajectory in HCV morbidity and mortality between now and 2030 as shown in the base scenario. However, a major challenge will be to maintain these treatment levels into the future. In order to maintain a high treatment rate in Brazil, efforts will need to be made to increase the number of diagnosed patients in order to maintain a pool of patients eligible for treatment and to link patients to care once diagnosed. Without these actions, advanced liver disease and liver-related mortality will begin to increase as the infected population continues to age and advance.

Achieving the WHO Targets would require significant up-front investments in treatment and diagnostics; however, savings from health care costs and indirect costs as the disease burden is reduced would offset these, resulting in lower total annual costs by 2022 and a positive ROI by 2025 when compared against the base case.

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