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Model-based Projection of Health and Economic Effect of Screening Hepatitis C in Canada 2016 update Final Report

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EXECUTIVE SUMMARY

The growing burden of chronic hepatitis C (CHC) infection poses a significant public health concern. Since majority of CHC infections are asymptomatic many infected individuals remain undiagnosed until late stage disease. Early diagnosis and treatment may reduce complications associated with late stage disease. Therefore, targeted HCV screening seems to be a plausible strategy. In order to assist the Canadian Task Force on Preventive Health Care (CTFPHC) in making up-to-date recommendations regarding hepatitis C screening. We updated a previously developed state-transition model with new parameters and ran new scenario analyses to re-examine the cost-effectiveness of a selective one-time hepatitis C screening program for specific populations.

We evaluated the cost-effectiveness of two general screening strategies: (1) "No screening"; and (2) "Screen-and-treat with direct-acting antiviral agents (DAA). We examined these strategies under six different scenarios as recommended by CTFPHC: 1) Average-risk (i.e. adult general population); 2) Immigrant populations with high prevalence; 3) Specific birth cohort (25 to 64 years of age); 4) Specific birth cohort (45-64 years of age); 5) Injection Drug Users (current); and 6) Injection Drug Users (past).

Our analyses suggest that a one-time hepatitis C screening and treatment program in Canada is likely to be cost-effective for scenarios 2 to 4. The screening programs we have evaluated will identify the asymptomatic yet chronically infected individuals and offer medical treatment if needed before advanced liver disease is present. Early recognition and linkage of infected individuals to treatment, can reduce the large pool of undiagnosed hepatitis C infections, save and prolong the lives of CHC-infected patients, and avert lengthy hospital stay and costs associated with hepatitis C related end-stage liver disease. The following table summarises the results of all scenarios (comparing "*Screen and Treat* with Holkira Pak" versus "No Screening, treat with Holkira Pak if diagnosed").

Summary of Results for All Scenarios

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
ICER (compare with no screening)	$50,489.62	$31,468.07	$32,712.41	$34,614.40	$33,957.69	$29,795.08
Number of HCV-related deaths prevented per 100,000 screened over LT	40.2	419.7	152.3	168.1	5070	6500
Number of DC prevented per 100,000 screened over LT	26.0	291.1	107.2	116.9	3342	2815
Number of HCC prevented per 100,000 screened over LT	19.8	174.0	63.0	72.3	2167	4403

Abbreviations: ICER: incremental cost-effectiveness ratio; DC decompensated cirrhosis; HCC: Hepatocellular carcinoma; LT: Life time of the cohort

BACKGROUND

The growing burden of chronic hepatitis C (CHC) infection poses a significant public health concern. A recent disease burden study from Ontario, ranked hepatitis C first among all infectious diseases [1]. Since majority of CHC infections are asymptomatic many infections remain undiagnosed until late stage disease. Early diagnosis and treatment may reduce complications associated with late stage disease [2]. Therefore, targeted HCV screening seems to be a plausible strategy [3].

In 2014, in collaboration with Public Health Agency of Canada (PHAC), a state transition model was developed to examine the cost-effectiveness of various screening strategies [3]. The analyses suggested that a selective one-time hepatitis C screening program for 25–64 year-old, and 45–64 year-old individuals in Canada would likely be cost-effective.

In order to assist the Canadian Task Force on Preventive Health Care (CTFPHC) in making up-to-date recommendations regarding hepatitis C screening. We updated the state transition model with new parameters and ran new scenario analyses to re-examine the cost-effectiveness of a selective one-time hepatitis C screening program for specific populations (i.e., general population, birth cohorts, injection drug users (IDU) and high-prevalence immigrant populations).

METHODS

We used the previously developed state-transition model and followed the same approach [3] to examine the cost-effectiveness of two general screening strategies: (1) "No screening"; and (2) "Screen-and-treat with direct-acting antiviral agents (DAA).

Scenarios

We examined six different scenarios (Table 1) as recommended by CTFPHC: 1) Average-risk (i.e. adult general population); 2) Immigrant populations with high prevalence; 3) Specific birth cohort (25 to 64 years of age); 4) Specific birth cohort (45-64 years of age); 5) Injection Drug Users (current); and 6) Injection Drug Users (past). Note that the results generated for scenarios 5 and 6 (IDU populations) are for referencing proposes, as the model was original developed for general-risk population. The IDU population may differ from the general population in terms of co-morbidities and prognosis; these were not captured by the model. The model also did not consider transmission and reinfection possibility for active IDUs.

Table 1 Scenario Definitions

	Scenario	Definition* (as defined by PHAC)
1	Average-risk (i.e. adult general population)	Canadian born, non-aboriginal persons aged 14-79 years, who do not inject drugs.
2	Immigrant populations with high prevalence	Immigrants and refugees originating from intermediate and high HCV endemic countries, living in low HCV prevalence countries, such as Canada.

3	Specific birth cohort (25 to 64 years of age)	Canadian adults aged 25-64 living in the general household population.
4	Specific birth cohort (45-64 years of age)	Canadian adults aged 45-64 living in the general household population.
5	Injection Drug Users (current)	Individuals reported to have used injection drugs one or more times in the last six months
6	Injection Drug Users (past)	Individuals aged 14-79 reported to have used injection drugs one or more times prior to the last six months

Treatment Considered

Antiviral therapies considered included pegylated interferon plus ribavirin, sofosbuvir, and Holkira Pak (dasabuvir + ombitasvir/paritaprevir/ritonavir).   In addition, we updated the existing model by adding Harvoni (ledipasvir + sofosbuvir) as one of the antiviral therapy options for the genotype 1 population. The efficacy data for all treatment alternatives were obtained from a recent therapeutic review report that was conducted by THETA and the Canadian Agency for Drugs and Technologies in Health (CADTH) [4]. Restriction of treatment was also implemented to represent the common reimbursement practice in Canada (i.e. F0 and F1 patients diagnosed with CHC initially are not eligible for treatment but will be followed up, and may be treated with DAA once they progress to F2 or above).

Strategies

In our baseline cost-effectiveness analysis, we consider six different screening strategies:
  (1) "No Screening, treat with PR" if diagnosed: Depending on different scenarios, we assume that certain proportion of HCV-infected patients are initially unaware of their infection and do not receive antiviral treatment. Each year, we assume that 0.68% of the unaware infected individuals will discover that they are infected with CHC [5], and may undergo treatment with PR). If HCV infection remains undetected, we assume that liver disease is detected when they develop cirrhosis with liver failure and/or hepatocellular carcinoma (HCC).
  (2) "No Screening, treat with Holkira Pak" if diagnosed: Same assumptions as in strategy (1). However, in this strategy, we assume that the patients with genotype 1 infection will be offered Holkira Pak; patients with genotype 2 or 3 will be offered sofosbuvir; and patients with remaining genotypes will be offered PR.
  (3) "No Screening, treat with Harvoni" if diagnosed: Same assumptions as in strategy (2). In this strategy, we assume that the patients with genotype 1 infection will be offered Harvoni.
  (4) "*Screen and Treat* with PR*"*: Individuals are offered one-time screening for HCV infection through their primary care physician at a visit scheduled for another purpose. This represents a "case finding" strategy. Screening involves a blood test for HCV antibody. All positive antibody tests will be followed by an HCV RNA test to confirm infection. Our analysis assumes that all individuals who are tested positive for both tests will be referred to a hepatologist /gastroenterologist/ infectious disease specialist and may be offered treatment with PR according to the Canadian guidelines.

(5) "*Screen and Treat* with Holkira Pak": We used the assumptions as in strategy (4). However, in this strategy, we assume that the patients with genotype 1 infection will be offered Holkira Pak; patients with genotype 2 or 3 will be offered sofosbuvir; and patients with remaining genotypes will be offered PR.

(6) "Screen and treat with Harvoni": Same assumptions as in strategy (5). In this strategy, we assume that the patients with genotype 1 infection will be offered Harvoni.

Note that strategy (1), "No Screening, treat with PR" if diagnosed and (4), "*Screen and Treat* with PR*"* may already be obsolete. However, the analysis of this strategy will also be included in the appendix for completeness.

Decision Model

In our analysis, we developed a cohort-based, state transition model using TreeAge Pro 2016 software [6]. In our simulations, cohort members move between predefined health states in weekly cycles until all members die. Health states and allowed transitions among health states are shown in Figure 1.

Figure 1: State-Transition Model of HCV Infection and Progression

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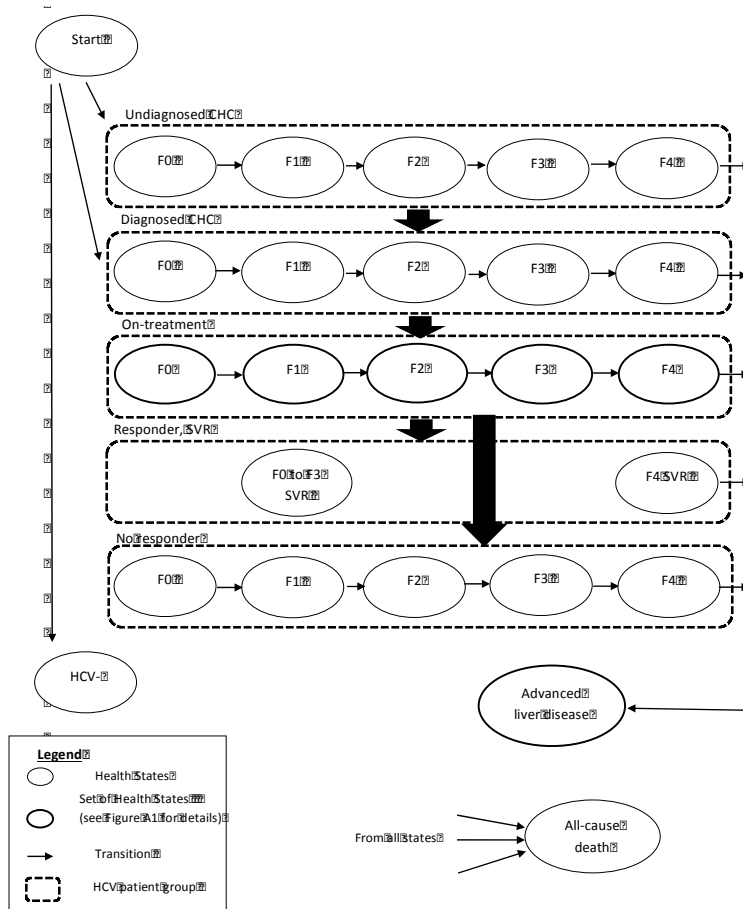
Model Parameters

We parameterized the existing model with new values as supplied by PHAC. Specifically, new parameter values included: 1) Prevalence; 2) Uptake of screening; 3) Distribution of the disease stages at diagnosis (fibrosis stages); and 4) Uptake of treatment. Table 2 represents the new parameter values for each scenario. All efficacy and adverse effect data updated to current CADTH therapeutic review[7]. All other parameters remain the same as in CMAJ paper[8].

Table 2 New Parameter Values Provided by PHAC

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
Cost of Holkira Pak[7]	$55,860	$55,860	$55,860	$55,860	$55,860	$55,860
Cost of Harvoni[7]	$67,000	$67,000	$67,000	$67,000	$67,000	$67,000
Prevalence	0.20 (0.10-0.30)[9]	1.90 (1.30-2.60)[9]	14-49:0.4 (0.2-0.7) 50-79:0.8 (0.4-1.5)[10]	14-49:0.4 (0.2-0.7) 50-79:0.8 (0.4-1.5)[10]	66.00 (63.00-69.00)[9]	28.50 (10.80-46.30)[9]
Uptake of screening	89.5 (70-100)	76.6 (60 – 100)	89.5 (60 – 100)	90 (76-100)	82.9 (82 – 100)	98.25 (80– 100)
Uptake of treatment	80 (85-100)	95 (80-100)	95 (80-100)	80(80-100)	70 (50-100)	95 (90-100)
Known CHC[10]	0.305	0.305	0.305	0.305	0.71[11]	0.44
Age Distribution	15-24: 0.17 25-34:0.17 35-44:0.17 45-54:0.20 55-64:0.16 65-74:010 75-79:0.03	15-24: 0.10 25-34:0.15 35-44:0.21 45-54:0.22 55-64:0.19 65-74:0.10 75-79:0.03	25-34:0.20 35-44:0.27 45-54:0.29 55-64:0.24	45-54:0.54 55-64:0.46	15-24: 0.17 25-34:0.17 35-44:0.17 45-54:0.20 55-64:0.16 65-74:010 75-79:0.03	15-24: 0.17 25-34:0.17 35-44:0.17 45-54:0.20 55-64:0.16 65-74:010 75-79:0.03
Fibrosis Distribution	**Age 15-34**	**Age 35-44**	**Age 45-54**	**Age 55-79**		
F0	45 (30-35)	10 (5-15)	5(0-10)	5(0-10)		
F1	45 (30-55)	43 (30-60)	25(15-30)	10(5-15)		
F2	8 (5-20)	13 (13-60)	35(25-45)	15(10-20)		
F3	1(0-5)	19 (5-15)	25(20-30)	45(40-60)		
F4	1 (0-5)	9(0-10)	28 (5-35)	34(15-40)		

Economics Assumptions and Outputs

All the new analyses were carried out from the payer perspective were structured as a cost-utility analysis, with primary outcomes expressed in quality-adjusted-life-years (QALYs) and costs. Health events such as the number of decompensated cirrhosis, number of hepatocellular carcinoma (HCC), number of HCV-related liver deaths, number of HCV-deaths prevented were reported. Future costs and health benefits were discounted at 5% annually. All cost data were

inflated to 2015 using the Statistics Canada Consumer Price Index for health care and personal items.

RESULTS

Due to the complexity of the analysis, in this section, we present the simplified results that are most relevant to the current treatment patterns. We present the results generated by the following strategies (2) "No Screening, treat with Holkira Pak" if diagnosed, (5) "*Screen and Treat* with Holkira Pak", and (6) "Screen and treat with Harvoni". Readers can refer to Appendix for full results of all strategies assessed.

Scenario 1: Base Case

In our baseline estimate for 15-79 year-old individuals (Table 3.1), the "Screen and Treat" strategy is more costly but also more effective than "No screening". For every 100,000 people screened, around 199 HCV cases will be identified. Identifying these HCV cases by screening will prevent 40 HCV-related deaths if we used DAAs for treatment over the lifetime of the cohort. Thus, 2,500 individuals would need to be screened to prevent one HCV-related death if DAAs were used for treatment. The corresponding 5 year, 10 year and 20 year health outcomes are displayed in Table 3.2. Figure 2 summarizes the trends of the liver-related health events per 100,000 screened accumulated overtime. Note that even in the screening scenario, there will still be liver-related events happening over time. These events are mainly associated with people who are undiagnosed (i.e. those not participate in screening program), people diagnosed but not going on treatment, or people who failed treatment. Refer to Appendix Table A and Appendix B for full results of all strategies assessed.

Figure 2: Population Outcomes Accumulated Overtime - Health Events per 100,000 Screened for Scenario 1

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Number of Liver Death overtime

Legend:
- No Screening (Holkira)
- universal screening (G1 IFN-Free) Holkira
- universal screening (G1 IFN-Free) Harvoni
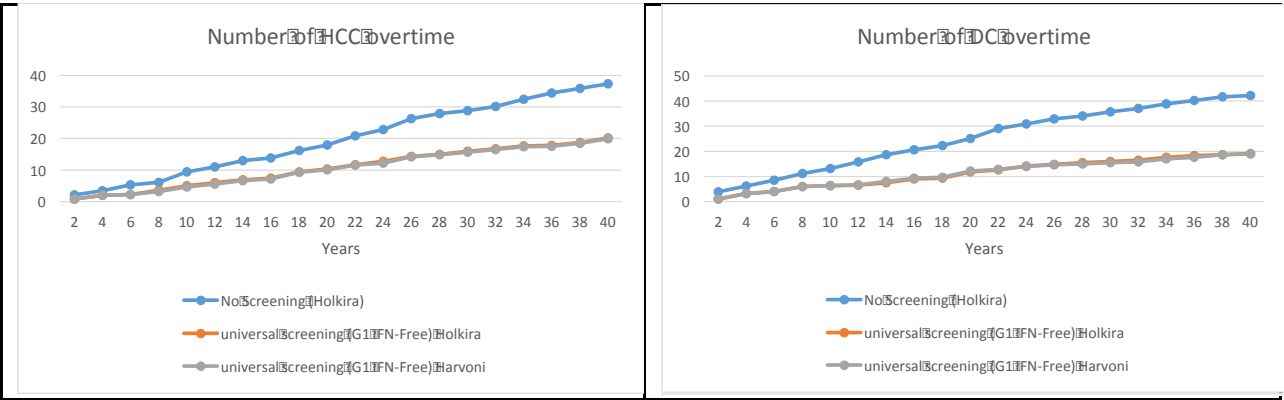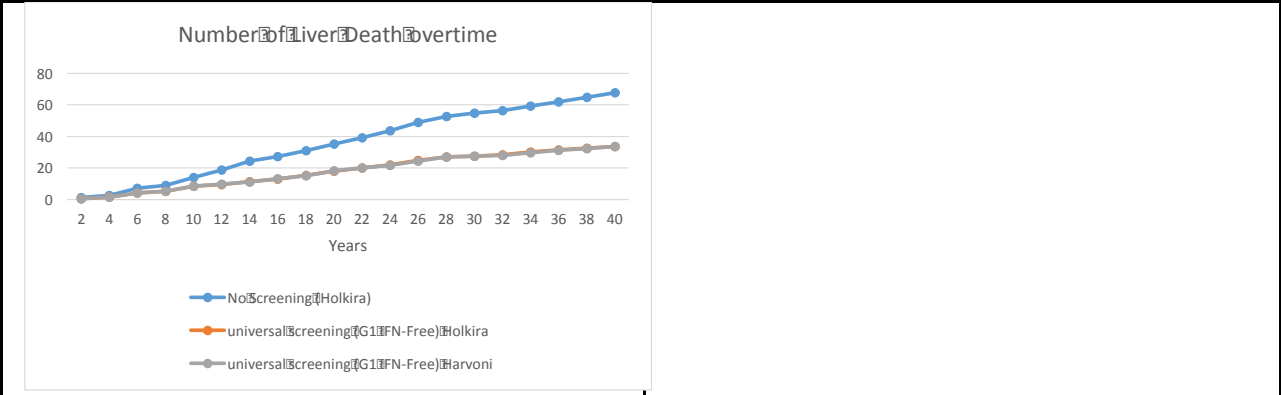
Abbreviations: DC decompensated cirrhosis; HCC: Hepatocellular carcinoma

Table 3.1 Simplified Population Outcomes- Health Events per 100,000 Screened for Scenario 1

Strategy	Time	Estimate* Number of Undiagnosed	Number of Diagnosed	Estimate* Number of diagnosed but not on treatment	Number of Treatment	Estimate* Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr		71.8		34.6					
		146.2		37.2		3.9	7.1	4.8	6.0	
	10 yr		75.1		43.4					
		142.9		31.6		4.9	13.1	9.5	13.9	
	20 yr		82.0		55.7					
		136.0		26.4		6.3	25.1	17.9	35.1	
	LT		90.8		70.2					
		127.2		20.6		7.9	49.1	42.2	80.9	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr		198.5		100.6					
		19.5		97.8		11.3	3.8	2.0	2.6	3.4
	10 yr		199.1		115.3					
		18.9		83.8		13.0	6.3	5.1	8.4	5.5
	20 yr		199.3		137.7					
		18.7		61.6		15.5	11.9	10.3	18.0	17.1
	LT		199.5		154.8					
		18.5		44.7		17.4	23.1	22.4	40.8	40.2
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr		198.5		100.6					
		19.5		97.8		12.7	3.8	2.0	2.6	3.4
	10 yr		199.1		115.3					
		18.9		83.8		14.5	6.3	4.7	8.4	5.5
	20 yr		199.3		137.7					
		18.7		61.6		17.3	12.1	10.1	18.1	17.0
	LT		199.5		154.8					
		18.5		44.7		19.5	22.9	21.9	40.8	40.1

Abbreviations: LT: Lifetime; DC decompensated cirrhosis; HCC: Hepatocellular carcinoma

*Estimate number calculated based on simulation results

Table 3.2 Accumulated Probability of Health Events (Simplified) for Scenario 1

Strategy	Time	Probability of Diagnosed	Probability of Treatment	Probability of DC	Probability of HCC	Probability of liver death	Probability of no advanced liver disease experienced
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	0.329	0.159	0.033	0.022	0.028	0.945
	10 yr	0.344	0.199	0.060	0.043	0.064	0.897
	20 yr	0.376	0.255	0.115	0.082	0.161	0.803
	LT	0.416	0.322	0.225	0.194	0.371	0.581
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr	0.910	0.461	0.017	0.009	0.012	0.974
	10 yr	0.913	0.529	0.029	0.023	0.039	0.948
	20 yr	0.914	0.632	0.054	0.047	0.083	0.898
	LT	0.915	0.710	0.106	0.103	0.187	0.791
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr	0.910	0.461	0.017	0.009	0.012	0.974
	10 yr	0.913	0.529	0.029	0.022	0.039	0.949
	20 yr	0.914	0.632	0.056	0.047	0.083	0.898
	LT	0.915	0.710	0.105	0.101	0.187	0.795

In terms of cost-effectiveness, if we use IFN-Free DAA for treatment (e.g. Holkira Pak), the "Screen and Treat" would results in a net cost increment of approximately $101.55 and 0.0020 QALYs gained per person (or 0.0087 undiscounted life year), translating to an ICER of $50,490/QALY gained compared with "No screening with Holkira Pak". Table 4.1 summarizes the simplified cost-effectiveness results with the most appropriate comparator. Table 4.2 summarizes the simplified cost-effectiveness results by different age ranges. Note that for the older age population (Age 75 – 79), the ICER of the screening program is $154,750. Refer to Appendix Table C for full cost-effectiveness results, and Appendix D for undiscounted life year results.

Table 4.1: Simplified Cost-Effectiveness Results for Scenario 1 (Base Case)

Age range	Strategy	Cost	QALYs	ΔCost	ΔQALYs	ICER
			Compared to Common baseline (No Screening with Holkira Pak)			
15-79	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$69,769.20	14.0644			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$69,870.76	14.0664	$101.55	0.0020	$50,489.62
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$69,876.77	14.0664	$107.56	0.0020	$53,938.25

Table 4.2: Simplified Cost-Effectiveness Results by Age Range for Scenario 1

Age range	Strategy	Cost	QALYs	ΔCost	ΔQALYs	ICER
			Compared to Common baseline (No Screening with Holkira Pak)			
15-24	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$45,201	17.2472			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$45,301	17.2492	$99.88	0.002	$49,940
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$45,307	17.2492	$105.78	0.002	$52,890
25-34	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$52,258	16.5925			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$52,357	16.5943	$98.31	0.0018	$54,617
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$52,362	16.5942	$104.17	0.0017	$61,276
35-44	No screening, treat	$63,461	15.4026			

	with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed					
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$63,566	15.4052	$104.42	0.0026	$40,162
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$63,573	15.4052	$111.27	0.0026	$42,796
45-54	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$78,165	13.7847			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$78,269	13.787	$104.17	0.0023	$45,291
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$78,276	13.787	$111.01	0.0023	$48,265
55-64	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$91,959	11.6698			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$92,063	11.6718	$103.93	0.002	$51,965
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$92,068	11.6718	$109.12	0.002	$54,560
65-74	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$95,278	9.0869			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$95,377	9.0882	$98.93	0.0013	$76,100

	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$95,382	9.0882	$104.00	0.0013	$80,000

75-79	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$83,714	6.1236			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$83,807	6.1242	$92.85	0.0006	$154,750
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$83,812	6.1242	$97.73	0.0006	$162,883

Scenario 2: Base Case

In our baseline estimate for 15-79 year-old immigrants (Table 5.1), the "Screen and Treat" strategy is more costly but also more effective than "No screening". For every 100,000 people screened, around 1661 HCV cases will be identified. Identifying these HCV cases by screening will prevent at least 414 HCV-related deaths if we used DAAs for treatment over the lifetime of the cohort. Thus, 242 individuals would need to be screened to prevent one HCV-related death if DAAs were used for treatment. The corresponding 5 year, 10 year and 20 year health outcomes are displayed in Table 5.2. Figure 3 summarizes the trends of the liver-related health events per 100,000 screened accumulated overtime. Note that even in the screening scenario, there will still be liver-related events happening over time. These events are mainly associated with people who are undiagnosed (i.e. those not participating in the screening program), people diagnosed but not going on treatment, or people who have failed treatment. Refer to Appendix Table A and Appendix B for full results of all strategies assessed.

Figure 3: Population Outcomes Accumulated Overtime - Health Events per 100,000 Screened for Scenario 2

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Number of LD overtime

Years

- No Screening (Holkira)
- universal screening (G1 IFN-Free) Holkira
- universal screening (G1 IFN-Free) Harvoni
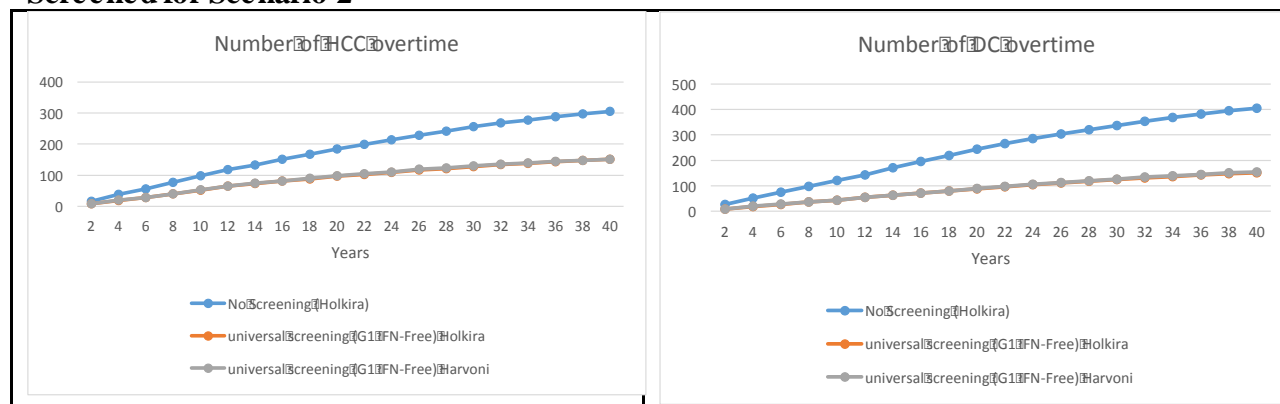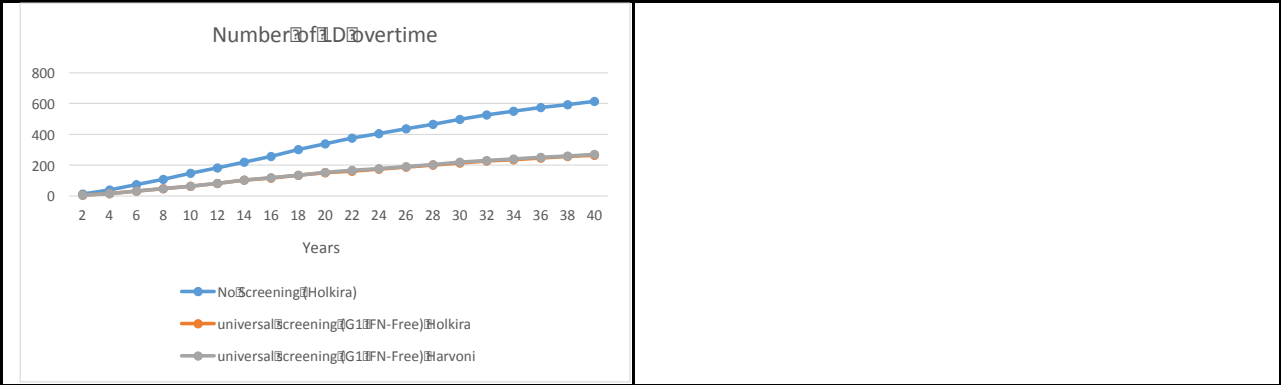
Abbreviations: DC decompensated cirrhosis; HCC: Hepatocellular carcinoma; LD Liver-related death

Table 5.1 Simplified Population Outcomes- Health Events per 100,000 Screened for Scenario 2

Strategy	Time	Estimate* Number of Undiagnosed	Number of Diagnosed	Estimate* Number of diagnosed but not on treatment	Number of Treatment	Estimate* Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr		631.2		395.8					
		1268.8		235.5		44.5	64.5	47.4	55.1	
	10 yr		665.2		470.2					
		1234.8		195.0		52.8	120.8	98.1	147.4	
	20 yr		724.3		594.5					
		1175.7		129.7		66.8	245.6	186.0	339.8	
	LT		795.0		724.3					
		1105.0		70.7		81.4	465.9	343.9	731.7	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr		1625.7		1026.1					
		274.3		599.7		115.3	25.1	23.7	22.2	32.9
	10 yr		1633.2		1169.4					
		266.8		463.8		131.4	44.2	52.5	63.3	84.1
	20 yr		1646.9		1359.5					
		253.1		287.4		152.8	88.4	96.9	150.5	189.3
	LT		1661.3		1518.7					
		238.7		142.6		170.7	174.8	169.9	312.0	419.7
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr		1625.7		1026.1					
		274.3		599.7		129.1	25.7	24.3	22.8	32.3
	10 yr		1633.2		1169.4					
		266.8		463.8		147.1	44.2	53.0	63.9	83.5
	20 yr		1646.9		1359.5					
		253.1		287.4		171.0	90.2	98.9	152.6	187.3
	LT		1661.3		1518.7					
		238.7		142.6		191.1	179.1	169.8	317.3	414.4

Abbreviations: LT: Lifetime; DC decompensated cirrhosis; HCC: Hepatocellular carcinoma
*Estimate number calculated based on simulation results

Table 5.2 Accumulated Probability of Health Events (Simplified) for Scenario 2

Strategy	Time	Probability of Diagnosed	Probability of Treatment	Probability of DC	Probability of HCC	Probability of liver death	Probability of no advanced liver disease experienced
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	0.332	0.208	0.034	0.025	0.029	0.941
	10 yr	0.350	0.247	0.064	0.052	0.078	0.885
	20 yr	0.381	0.313	0.129	0.098	0.179	0.773
	LT	0.418	0.381	0.245	0.181	0.385	0.574
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr	0.856	0.540	0.013	0.012	0.012	0.974
	10 yr	0.860	0.615	0.023	0.028	0.033	0.949
	20 yr	0.867	0.716	0.047	0.051	0.079	0.902
	LT	0.874	0.799	0.092	0.089	0.164	0.819
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr	0.856	0.540	0.014	0.013	0.012	0.974
	10 yr	0.860	0.615	0.023	0.028	0.034	0.949
	20 yr	0.867	0.716	0.047	0.052	0.080	0.900
	LT	0.874	0.799	0.094	0.089	0.167	0.816

In terms of cost-effectiveness, if we use IFN-Free DAA for treatment (e.g. Holkira Pak), the "Screen and Treat" would results in a net cost increment of approximately $618.50 and 0.0197 QALYs gained per person (or 0.0792 undiscounted life year), translating in an ICER of $31,468/QALY gained compared with "No screening with Holkira Pak". Table 6.1 summarizes the simplified cost-effectiveness results with the most appropriate comparator.   Table 6.2 summarizes the simplified cost-effectiveness results by different age ranges.   Note that for the older age population (Age 75 – 79), the ICER of the screening program is $111,307. Refer to Appendix Table C for full cost-effectiveness results, and Appendix D for undiscounted life year results.

Table 6.1: Simplified Cost-Effectiveness Results for Scenario 2 (Base Case)

Age range	Strategy	Compared to Common baseline (No Screening with Holkira Pak)				
		Cost	QALYs	ΔCost	ΔQALYs	ICER
15-79	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$72,765.07	13.7281			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$73,383.57	13.7478	$618.50	0.0197	$31,468.07
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$73,445.89	13.7478	$680.82	0.0197	$34,599.64

Table 6.2: Simplified Cost-Effectiveness Results by Age Range for Scenario 2

Age range	Strategy	Compared to Common baseline (No Screening with Holkira Pak)				
		Cost	QALYs	ΔCost	ΔQALYs	ICER
15-24	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$45,640	17.1903			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$46,204	17.2095	$563.72	0.0192	$29,360
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$46,265	17.2095	$624.56	0.0192	$32,529
25-34	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV	$52,672	16.5401			

	G4/5/6: PR if diagnosed					
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$53,226	16.5567	$554.41	0.0166	$33,398
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$53,286	16.5567	$614.86	0.0166	$37,040
35-44	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$63,924	15.3412			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$64,551	15.3661	$626.83	0.0249	$25,174
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$64,622	15.3661	$697.31	0.0249	$28,004
45-54	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$78,588	13.7336			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$79,220	13.7556	$632.11	0.022	$28,732
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$79,291	13.7556	$702.41	0.022	$31,928
55-64	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$92,340	11.6245			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$92,994	11.6445	$653.48	0.02	$32,674
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$93,047	11.6446	$706.91	0.0201	$35,170

65-74	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$95,597	9.0567			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$96,249	9.069	$651.10	0.0123	$52,935
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$96,301	9.069	$703.22	0.0123	$57,172

75-79	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$83,991	6.1069			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$84,626	6.1126	$634.45	0.0057	$111,307
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$84,676	6.1127	$684.53	0.0058	$118,022

Scenario 3: Base Case

In our baseline estimate for 25-64 year-old individuals (Table 7.1), the "Screen and Treat" strategy is more costly but also more effective than "No screening". For every 100,000 people screened, around 582 HCV cases will be identified. Identifying these HCV cases by screening will prevent at least 148 HCV-related deaths if we used DAAs for treatment over the lifetime of the cohort. Thus, 676 individuals would need to be screened to prevent one HCV-related death if DAAs were used for treatment. The corresponding 5 year, 10 year and 20 year health outcomes are displayed in Table 7.2. Figure 4 summarizes the trends of the liver-related health events per 100,000 screened accumulated overtime. Note that even in the screening scenario, there will still be liver-related events happening over time. These events are mainly associated with people who are undiagnosed (i.e. those not participating in screening), people diagnosed but not going on treatment, or people who have failed treatment. Refer to Appendix Table A and Appendix B for full results of all strategies assessed.

Figure 4: Population Outcomes Accumulated Overtime - Health Events per 100,000 Screened for Scenario 3
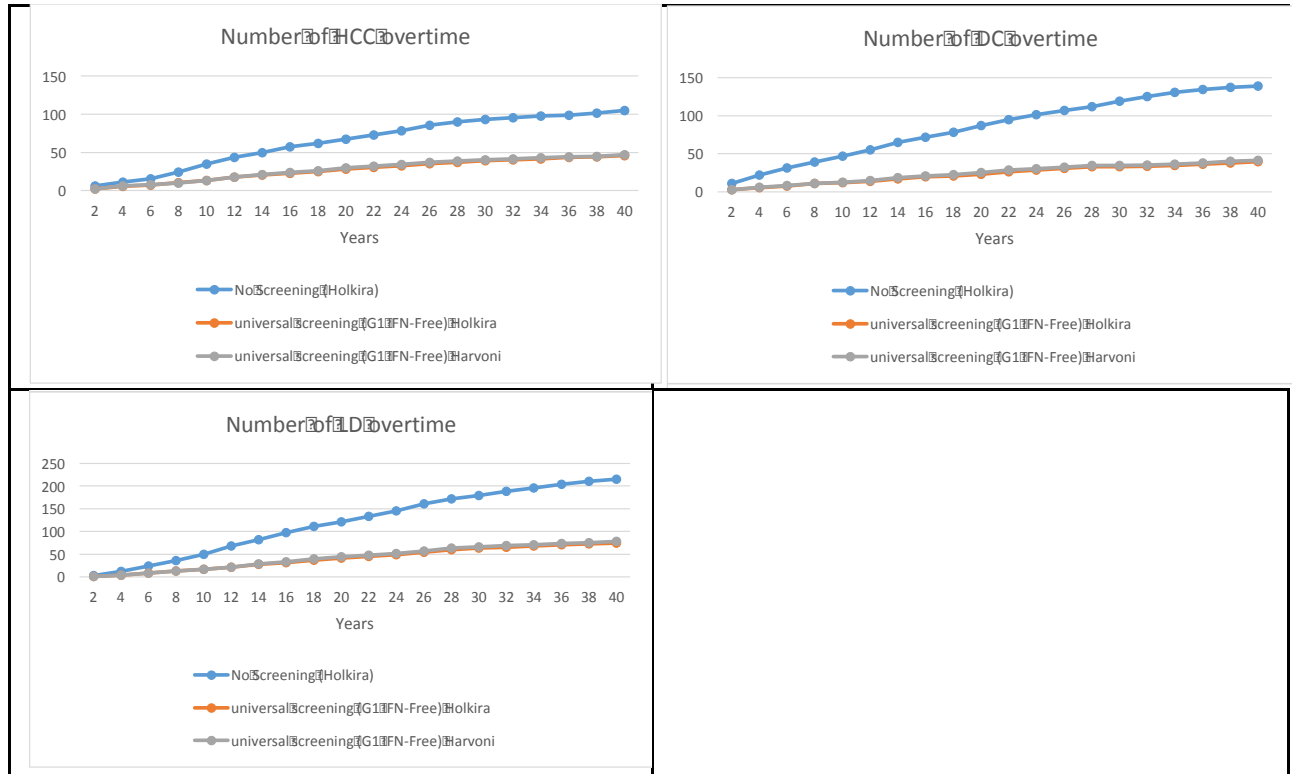
Abbreviations: DC decompensated cirrhosis; HCC: Hepatocellular carcinoma; LD Liver-related death

Table 7.1 Simplified Population Outcomes - Health Events per 100,000 Screened for Scenario 3

Strategy	Time	Estimate* Number of Undiagnosed	Number of Diagnosed	Estimate* Number of diagnosed but not on treatment	Number of Treatment	Estimate* Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr		219.5		146.1					
		392.5		73.4		16.4	25.9	12.3	17.6	
	10 yr		229.7		171.4					
		382.3		58.4		19.3	46.9	34.7	49.9	
	20 yr		245.5		210.1					
		366.5		35.4		23.6	87.6	67.7	121.5	
	LT		266.2		247.4					
		345.8		18.8		27.8	150.9	112.2	237.7	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr		578.5		399.8					
		33.5		178.7		44.9	7.6	6.5	5.4	12.2
	10 yr		579.3		440.8					
		32.7		138.5		49.5	12.2	13.6	16.2	33.7
	20 yr		579.9		497.0					
		32.1		82.9		55.9	23.7	28.8	41.2	80.3
	LT		582.0		535.9					
		30.0		46.1		60.2	43.7	49.2	85.4	152.3
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr		578.5		399.8					
		33.5		178.7		50.3	8.1	6.7	5.7	12.0
	10 yr		579.3		440.8					
		32.7		138.5		55.5	12.5	13.6	16.5	33.5
	20 yr		579.9		497.0					
		32.1		82.9		62.5	25.9	30.4	44.4	77.1
	LT		582.0		535.9					
		30.0		46.1		67.4	45.8	50.4	88.9	148.7

Abbreviations: LT: Lifetime; DC decompensated cirrhosis; HCC: Hepatocellular carcinoma

*Estimate number calculated based on simulation results

Table 7.2 Accumulated Probability of Health Events (Simplified) for Scenario 3

Strategy	Time	Probability of Diagnosed	Probability of Treatment	Probability of DC	Probability of HCC	Probability of liver death	Probability of no advanced liver disease experienced
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	0.359	0.239	0.042	0.020	0.029	0.938
	10 yr	0.375	0.280	0.077	0.057	0.082	0.867
	20 yr	0.401	0.343	0.143	0.111	0.199	0.746
	LT	0.435	0.404	0.247	0.183	0.388	0.570
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr	0.945	0.653	0.012	0.011	0.009	0.977
	10 yr	0.947	0.720	0.020	0.022	0.027	0.958
	20 yr	0.947	0.812	0.039	0.047	0.067	0.914
	LT	0.951	0.876	0.071	0.080	0.140	0.848
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr	0.945	0.653	0.013	0.011	0.009	0.976
	10 yr	0.947	0.720	0.020	0.022	0.027	0.957
	20 yr	0.947	0.812	0.042	0.050	0.073	0.908
	LT	0.951	0.876	0.075	0.082	0.145	0.843

In terms of cost-effectiveness, if we use IFN-Free DAA for treatment (e.g. Holkira Pak), the "Screen and Treat" would results in a net cost increment of approximately $261.02 and 0.0080 QALYs gained per person (or 0.02534 undiscounted life year), translating in an ICER of $32,712/QALY gained compared with "No screening with Holkira Pak". Table 8.1 summarizes the simplified cost-effectiveness results with most appropriate comparator. Table 8.2 summarizes the simplified cost-effectiveness results by different age ranges. Refer to Appendix Table C for full cost-effectiveness results, and Appendix D for undiscounted life year results.

Table 8.1: Simplified Cost-Effectiveness Results for Scenario 3 (Base Case)

Age range	Strategy	Compared to Common baseline (No Screening with Holkira Pak)				
		Cost	QALYs	ΔCost	ΔQALYs	ICER
25-64	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$72,505.60	14.2536			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$72,766.62	14.2616	$261.02	0.0080	$32,712.41
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$72,789.12	14.2615	$283.51	0.0080	$35,619.05

Table 8.2: Simplified Cost-Effectiveness Results by Age Range for Scenario 3

Age range	Strategy	Compared to Common baseline (No Screening with Holkira Pak)				
		Cost	QALYs	ΔCost	ΔQALYs	ICER
25-34	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$52,310	16.5866			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$52,476	16.5907	$166.42	0.0041	$40,590
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$52,490	16.5906	$180.33	0.004	$45,083
35-44	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$63,520	15.3957			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$63,704	15.4018	$184.23	0.0061	$30,202
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$63,720	15.4018	$200.49	0.0061	$32,867

45-54	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$78,317	13.7668			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$78,650	13.7776	$333.03	0.0108	$30,836
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$78,683	13.7776	$365.51	0.0108	$33,844
55-64	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$92,100	11.6539			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$92,439	11.6638	$339.09	0.0099	$34,252
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$92,464	11.6638	$363.76	0.0099	$36,743

Scenario 4: Base Case

In our baseline estimate for 45-64 year-old individuals (Table 9.1), the "Screen and Treat" strategy is more costly but also more effective than "No screening". For every 100,000 people screened, around 769 HCV cases will be identified. Identifying these HCV cases by screening will prevent at least 163 HCV-related deaths if we used DAAs for treatment over the lifetime of the cohort. Thus, 613 individuals would need to be screened to prevent one HCV-related death if DAAs were used for treatment. The corresponding 5 year, 10 year and 20 year health outcomes are displayed in Table 9.2. Figure 5 summarizes the trends of the liver-related health events per 100,000 screened accumulated overtime. Note that even in the screening scenario, there will still be liver-related events happening over time. These events are mainly associated with people who are undiagnosed (i.e. those not participating in screening), people diagnosed but not going on treatment, or people who have failed treatment. Refer to Appendix Table A and Appendix B for full results of all strategies assessed.

Figure 5: Population Outcomes Accumulated Overtime - Health Events per 100,000 Screened for Scenario 4
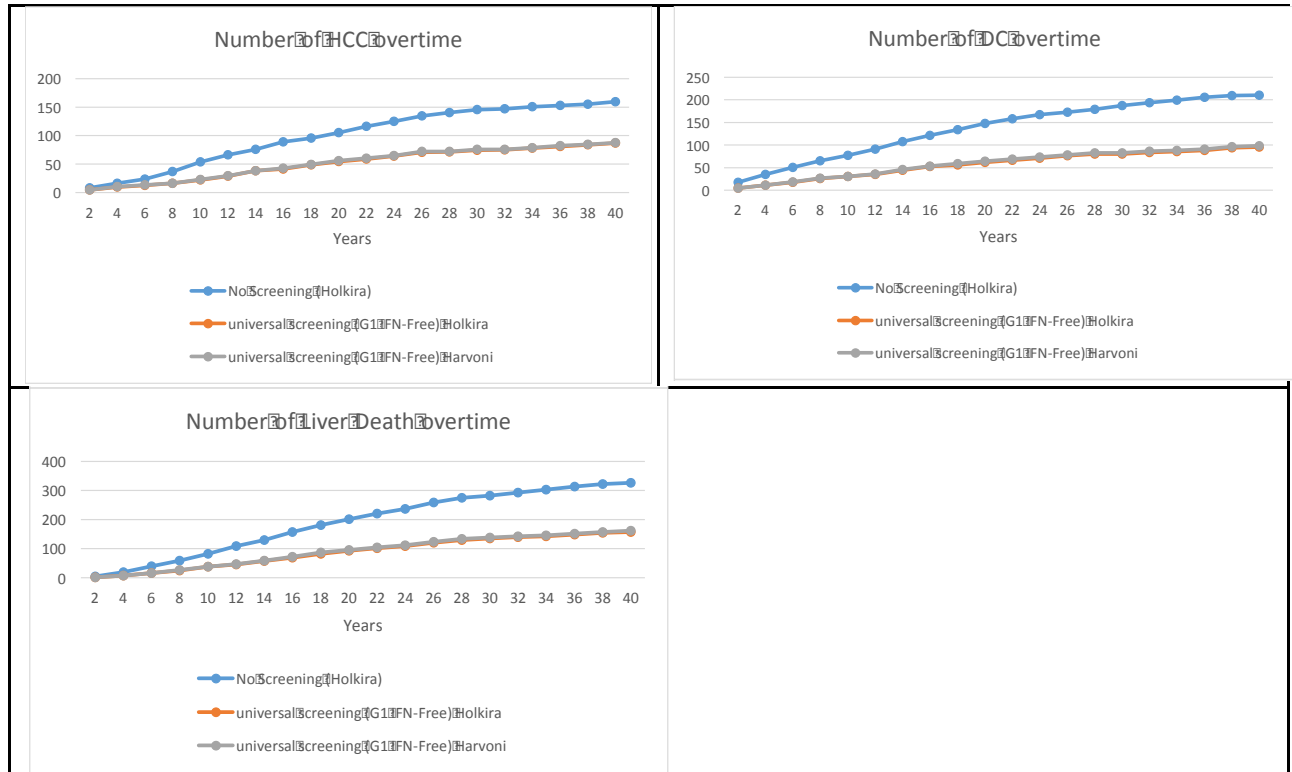
Abbreviations: DC decompensated cirrhosis; HCC: Hepatocellular carcinoma; LD Liver-related death

Table 9.1 Simplified Population Outcomes - Health Events per 100,000 Screened for Scenario 4

Strategy	Time	Estimate* Number of Undiagnosed	Number of Diagnosed	Estimate* Number of diagnosed but not on treatment	Number of Treatment	Estimate* Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr		277.7		175.5					
		522.3		102.3		19.7	40.9	18.0	27.6	
	10 yr		290.4		193.3					
		509.6		97.1		21.7	77.5	53.2	82.9	
	20 yr		311.3		223.7					
		488.7		87.6		25.1	148.7	105.1	200.8	
	LT		330.1		249.6					
		469.9		80.5		28.1	214.8	160.9	338.6	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr		765.2		500.9					
		34.8		264.3		56.3	14.7	10.7	9.8	17.7
	10 yr		765.7		526.7					
		34.3		239.1		59.2	30.1	22.3	38.2	44.7
	20 yr		766.8		563.5					
		33.2		203.3		63.3	63.0	54.8	92.4	108.5
	LT		769.8		585.9					
		30.2		183.9		65.9	97.9	88.6	170.5	168.1
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr		765.2		500.9					
		34.8		264.3		63.0	15.6	11.2	10.3	17.3
	10 yr		765.7		526.7					
		34.3		239.1		66.3	30.5	22.9	38.7	44.2
	20 yr		766.8		563.5					
		33.2		203.3		70.9	65.5	56.3	96.4	104.5
	LT		769.8		585.9					
		30.2		183.9		73.7	101.5	89.7	175.1	163.5

Abbreviations: LT: Lifetime; DC decompensated cirrhosis; HCC: Hepatocellular carcinoma

*Estimate number calculated based on simulation results

Table 9.2 Accumulated Probability of Health Events (Simplified) for Scenario 4

Strategy	Time	Probability of Diagnosed	Probability of Treatment	Probability of DC	Probability of HCC	Probability of liver death	Probability of no advanced liver disease experienced
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	0.347	0.219	0.051	0.023	0.034	0.926
	10 yr	0.363	0.242	0.097	0.067	0.104	0.837
	20 yr	0.389	0.280	0.186	0.131	0.251	0.683
	LT	0.413	0.312	0.268	0.201	0.423	0.530
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr	0.957	0.626	0.018	0.013	0.012	0.968
	10 yr	0.957	0.658	0.038	0.028	0.048	0.934
	20 yr	0.959	0.704	0.079	0.069	0.115	0.853
	LT	0.962	0.732	0.122	0.111	0.213	0.767
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr	0.957	0.626	0.019	0.014	0.013	0.967
	10 yr	0.957	0.658	0.038	0.029	0.048	0.933
	20 yr	0.959	0.704	0.082	0.070	0.120	0.848
	LT	0.962	0.732	0.127	0.112	0.219	0.761

In terms of cost-effectiveness, if we use IFN-Free DAA for treatment (e.g. Holkira Pak), the "Screen and Treat" would results in a net cost increment of approximately $303.89 and 0.0088 QALYs gained per person (or 0.02561 undiscounted life year), translating to an ICER of $34,614/QALY gained compared with "No screening with Holkira Pak". Table 10.1 summarizes the simplified cost-effectiveness results with most appropriate comparator. Table 10.2 summarizes the simplified cost-effectiveness results by different age range. Refer to Appendix Table C for full cost-effectiveness results, and to Appendix D for undiscounted life year results.

Table 10.1: Simplified Cost-Effectiveness Results for Scenario 4 (Base Case)

Age range	Strategy	Cost	QALYs	ΔCost	ΔQALYs	ICER
		Compared to Common baseline (No Screening with Holkira Pak)				
45-64	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$84,609.96	12.7979			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$84,913.85	12.8067	$303.89	0.0088	$34,614.40
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$84,938.27	12.8067	$328.31	0.0088	$37,166.75

Table 10.2: Simplified Cost-Effectiveness Results by Age Range for Scenario 4

Age range	Strategy	Cost	QALYs	ΔCost	ΔQALYs	ICER
		Compared to Common baseline (No Screening with Holkira Pak)				
45-54	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$78,297	13.7658			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$78,602	13.7749	$304.34	0.0091	$33,444
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$78,629	13.775	$331.79	0.0092	$36,064
55-64	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$92,077	11.653			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$92,380	11.6614	$303.36	0.0084	$36,114
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$92,401	11.6614	$324.20	0.0084	$38,595

Scenario 5: Base Case

Note that the results generated for this scenario are for referencing proposes, as the model was original developed for general-risk population. Compared to the general population, the IDU population may have different co-morbidity and prognosis, which were not captured by the model.

In our baseline estimate for 15-79 year-old current IDUs (Table 11.1), the "Screen and Treat" strategy is more costly but also more effective than "No screening". For every 10,000 people screened, around 6351 HCV cases will be identified. Identifying these HCV cases by screening will prevent at least 502 HCV-related deaths if we used DAAs for treatment over the lifetime of the cohort. Thus, 20 individuals would need to be screened to prevent one HCV-related death if DAAs were used for treatment. The corresponding 5 year, 10 year and 20 year health outcomes are displayed in Table 11.2. Refer to Appendix Table A and Appendix B for full results of all strategies assessed.

Table 11.1 Simplified Population Outcomes- Health Events per 10,000 Screened for Scenario 5

Strategy	Time	Number of Diagnosed	Number of Treatment	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	4808.9	2117.5	142.9	92.3	115.9	
	10 yr	4858.6	2480.2	291.0	196.8	321.8	
	20 yr	4940.4	2951.1	597.0	418.9	800.3	
	LT	5053.1	3407.2	1327.2	946.6	2061.1	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr	6311.7	2795.5	108.3	74.3	93.4	22.5
	10 yr	6318.8	3243.9	217.6	157.4	245.0	76.8
	20 yr	6331.2	3821.2	445.8	326.5	605.8	194.5
	LT	6351.1	4314.6	993.0	729.9	1554.1	507.0
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr	6311.7	2795.5	106.8	73.0	91.4	24.5
	10 yr	6318.8	3243.9	216.6	154.9	242.3	79.4
	20 yr	6331.2	3821.2	445.4	325.0	601.8	198.5
	LT	6351.1	4314.6	998.1	729.4	1558.8	502.3

Abbreviations: LT: Lifetime; DC decompensated cirrhosis; HCC: Hepatocellular carcinoma

Table 11.2 Accumulated Probability of Health Events for the CHC population (Simplified) for Scenario 5

Strategy	Time	Probability of Diagnosed	Probability of Treatment	Probability of DC	Probability of HCC	Probability of liver death	Probability of no advanced liver disease experienced
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	0.729	0.321	0.022	0.014	0.018	0.964
	10 yr	0.736	0.376	0.044	0.030	0.049	0.926
	20 yr	0.749	0.447	0.090	0.063	0.121	0.846
	LT	0.766	0.516	0.201	0.143	0.312	0.655
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr	0.956	0.424	0.016	0.011	0.014	0.972
	10 yr	0.957	0.491	0.033	0.024	0.037	0.943
	20 yr	0.959	0.579	0.068	0.049	0.092	0.883
	LT	0.962	0.654	0.150	0.111	0.235	0.739
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr	0.956	0.424	0.016	0.011	0.014	0.973
	10 yr	0.957	0.491	0.033	0.023	0.037	0.944
	20 yr	0.959	0.579	0.067	0.049	0.091	0.883
	LT	0.962	0.654	0.151	0.111	0.236	0.738

In terms of cost-effectiveness, if we use IFN-Free DAA for treatment (e.g. Holkira Pak), the "Screen and Treat" would results in a net cost increment of approximately $7,400 and 0.2179 QALYs gained per person, translating in an ICER of $33,958/QALY gained compared with "No screening with Holkira Pak". Table 12 summarizes the simplified cost-effectiveness results with most appropriate comparator. Refer to Appendix Table C for full cost-effectiveness results.

Table 12: Simplified Cost-Effectiveness Results for Scenario 5 (Base Case)

Age range	Strategy	Cost	QALYs	ΔCost	ΔQALYs	ICER
		Compared to Common baseline (No Screening with Holkira Pak)				
15-79	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$96,192.83	12.3741			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$103,593.74	12.5920	$7,400.92	0.2179	$33,957.69
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$105,370.47	12.5924	$9,177.65	0.2184	$42,030.41

Scenario 6: Base Case

As with scenario 5, the results for scenario 6 are also for referencing proposes, as the model was original developed for general-risk population. Compared to the general population the IDU population may have different co-morbidities and prognoses, which were not captured by the current model.

In our baseline estimate for 15-79 year-old past IDUs (Table 13.1), the "Screen and Treat" strategy is more costly but also more effective than "No screening". For every 10,000 people screened, around 2834 HCV cases will be identified. Identifying these HCV cases by screening will prevent at least 650 HCV-related deaths if we used DAAs for treatment over the lifetime of the cohort. Thus, 16 individuals would need to be screened to prevent one HCV-related death if DAAs were used for treatment. The corresponding 5 year, 10 year and 20 year health outcomes are displayed in Table 13.2. Refer to Appendix Table A and to Appendix B for full results of all strategies assessed.

Table 13.1 Simplified Population Outcomes- Health Events per 10,000 Screened for Scenario 6

Strategy	Time	Number of Diagnosed	Number of Treatment	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	1301.0	795.3	72.4	50.1	56.7	
	10 yr	1345.4	945.6	147.3	98.4	158.5	
	20 yr	1415.6	1172.2	296.5	209.2	388.8	

Strategy	Time						
	LT	1506.5	1394.3	598.7	436.3	932.9	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr	2830.2	1707.4	19.7	17.9	18.2	38.5
	10 yr	2831.1	1978.4	39.4	36.0	49.7	108.7
	20 yr	2833.1	2347.1	80.4	78.6	121.7	267.1
	LT	2834.4	2621.5	158.4	154.8	282.8	650.0
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr	2830.2	1707.4	19.9	17.2	17.5	39.2
	10 yr	2831.1	1978.4	38.5	34.7	47.3	111.2
	20 yr	2833.1	2347.1	79.4	76.2	119.1	269.7
	LT	2834.4	2621.5	160.2	152.4	281.7	651.1

Abbreviations: LT: Lifetime; DC decompensated cirrhosis; HCC: Hepatocellular carcinoma

Table 13.2 Accumulated Probability of Health Events (Simplified) for Scenario 6

Strategy	Time	Probability of Diagnosed	Probability of Treatment	Probability of DC	Probability of HCC	Probability of liver death	Probability of no advanced liver disease experienced
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	0.454	0.278	0.025	0.017	0.020	0.957
	10 yr	0.470	0.330	0.051	0.034	0.055	0.914
	20 yr	0.494	0.409	0.103	0.073	0.136	0.824
	LT	0.526	0.486	0.209	0.152	0.325	0.639
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr	0.989	0.596	0.007	0.006	0.006	0.987
	10 yr	0.989	0.691	0.014	0.013	0.017	0.974
	20 yr	0.989	0.819	0.028	0.027	0.042	0.945
	LT	0.989	0.915	0.055	0.054	0.099	0.891
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr	0.989	0.596	0.007	0.006	0.006	0.987
	10 yr	0.989	0.691	0.013	0.012	0.017	0.974
	20 yr	0.989	0.819	0.028	0.027	0.042	0.946
	LT	0.989	0.915	0.056	0.053	0.098	0.891

In terms of cost-effectiveness, if we use IFN-Free DAA for treatment (e.g. Holkira Pak), the "Screen and Treat" would results in a net cost increment of approximately $8,892.36 and 0.2985 QALYs gained per person, translating in an ICER of $29,795/QALY gained compared with "No screening with Holkira Pak". Table 14 summarizes the simplified cost-effectiveness results with most appropriate comparator. Refer to Appendix Table C for full cost-effectiveness results.

Table 14: Simplified Cost-Effectiveness Results for Scenario 6

Age range	Strategy	Compared to Common baseline (No Screening with Holkira Pak)				
		Cost	QALYs	ΔCost	ΔQALYs	ICER
15-79	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$78,820.26	13.3034			
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$87,712.62	13.6019	$8,892.36	0.2985	$29,795.08
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$88,792.28	13.6021	$9,972.02	0.2987	$33,386.18

Sensitivity Analyses

To explore the impact of parameter uncertainty on the results, we performed one-way sensitivity analyses around the following variables:
1) HCV Prevalence
2) Uptake of Screening
3) Uptake of Treatment
4) Distribution of fibrosis score
5) SVR progression assumption – in the base case analysis, we assumed no further progression in F0 – F3 patients who achieved SVR. In this sensitivity analysis, we assumed that the normal natural history progression rates would be reduced by 91.4% [12].
6) No restriction of IFN-Free treatment for F0/F1 patients – in the base case analysis, we assumed that F0 and F1 patients diagnosed with CHC were not initially eligible for IFN-Free treatment, but would followed up, and could be treated with DAAs once they progressed to F2 or above. In the sensitivity analysis, we assumed that no such treatment restriction existed for F0/F1 patients.

The task force recommended varying the range of the above listed parameters as described in Table 15.

Table 15: One-way Sensitivity Analyses Variation Range

	Scenario 1	Scenario 2	Scenario 3	Scenario 4
Prevalence	0.20 (0.10-0.30)[9]	1.90 (1.30-2.60)[9]	14-49:0.4 (0.2-0.7) 50-79:0.8 (0.4-1.5)[10]	14-49:0.4 (0.2-0.7) 50-79:0.8 (0.4-1.5)[10]
Uptake of screening	89.5 (70-100)	76.6 (60–100)	89.5 (60–100)	90 (76-100)
Uptake of treatment	80 (85-100)	95 (80-100)	95 (80-100)	80(80-100)
Fibrosis Distribution	**Age 15-34**	**Age 35-44**	**Age 45-54**	**Age 55-79**
F0	45 (30-35)	10 (5-15)	5(0-10)	5(0-10)
F1	45 (30-55)	43 (30-60)	25(15-30)	10(5-15)
F2	8 (5-20)	13 (13-60)	35(25-45)	15(10-20)
F3	1(0-5)	19 (5-19)	25(20-30)	45(40-60)
F4	1 (0-5)	9(0-10)	10 (5-35)	25(15-40)

Appendix Figure E1 – E4 summarizes the impact of varying parameters on the ICER using tornado diagrams for scenarios 1 – 4. With respect to the cost-effectiveness results, varying the fibrosis distribution had the largest impact on the ICER for scenarios 2 – 4. Whereas, varying the prevalence of HCV had the largest impact on the ICER for scenario 1. In general, given the cost-effectiveness threshold of $50,000/QALY, the cost-effectiveness results were robust to variation in all the model parameters evaluated for all scenarios except scenario 1. For scenario 1, lowering HCV prevalence estimate to 0.1%, resulted in an ICER over $75,000/QALY.

The impact of parameter uncertainty on the health outcomes are summarized in Appendix E. Table E1.1 to E1.6 display the possible range (lower and upper bound) of each health event if we varied the given parameter in the model for scenario 1. Table E2.1 to E2.6 demonstrates the possible range (lower and upper bound) of each health event if we varied the given parameter in the model for scenario 2. Table E3.1 to E3.6 demonstrate the possible range (lower and upper bound) of each health events if we varied the given parameter in the model for scenario 3. Table E4.1 to E4.6 demonstrate the possible range (lower and upper bound) of each health event if we varied the given parameter in the model for scenario 4.

CONCLUSION

Our analyses suggest that a one-time hepatitis C screening and treatment program in Canada is likely to be cost-effective for scenarios 2 to 4 in comparison with the current situation (i.e. "No screening, treat with IFN-Free if diagnosed with treatment restriction for F2 and above"). The screening programs we have evaluated will identify the asymptomatic yet chronically infected individuals and offer medical treatment if needed before advanced liver disease is present. Early recognition and linkage of infected individuals to care can reduce the large pool of undiagnosed hepatitis C infections, save and prolong the lives of CHC-infected patients, and avert lengthy hospital stay and costs associated with hepatitis C related end-stage liver disease. Table 16 summarizes the net life year (LY) gain and net QALY gain for the screening program versus no screening for scenario 1 to 4. Table 17 summarizes additional health outcomes for all scenarios.

Table 16: Net Life Year and QALY Life Year Gained for Scenarios 1 to 4

	Affected population size[13]	Per person LY gained (undiscounted)*	Per person QALY gained (5% discounted)*	Net LY gained (undiscounted)*	Net QALY gained (5% discounted)*
Scenario 1	27,370,909	0.008740551	0.002011377	239,237	55,053
Scenario 2	5,801,856+	0.079163108	0.019654945	459,293	114,035
Scenario 3	19,171,503	0.025339886	0.007979182	485,804	152,973
Scenario 4	9,814,702	0.025614459	0.008779324	251,398	86,166

*compare with base case (No screening, treat with G1: Holkira Pak, G2/3: SOF/RBV, G4/5/6: PR if diagnosed)
+ the number are based on all immigrant, actual number from immigrant with high prevalence may varied.

Table 17: Summary of Results of all Scenarios

	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5	Scenario 6
ICER (compare with no screening)	$50,489.62	$31,468.07	$32,712.41	$34,614.40	$33,957.69	$29,795.08
Number of HCV-related deaths prevented per 100,000 screened over LT	40.2	419.7	152.3	168.1	5070	6500
Number of DC prevented per 100,000 screened over LT	26.0	291.1	107.2	116.9	3342	2815
Number of HCC prevented per 100,000 screened over LT	19.8	174.0	63.0	72.3	2167	4403

Abbreviations: ICER: incremental cost-effectiveness ratio; DC decompensated cirrhosis; HCC: Hepatocellular carcinoma; LT: Life time of the cohort

APPENDIX A Population Health Outcomes -Full Results

Table A1 Full Population Outcomes- Health Events per 100,000 Screened for Scenario 1

Strategy	Time	Number of Diagnosed	Number of Treatment	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with PR if diagnosed	5 yr	71.8	57.3	7.6	5.7	5.6	
	10 yr	75.1	60.6	14.1	10.3	15.0	
	20 yr	82.0	66.5	27.9	19.7	38.6	
	LT	90.8	74.0	57.8	45.5	92.5	
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	71.8	34.6	7.1	4.8	6.0	-0.4
	10 yr	75.1	43.4	13.1	9.5	13.9	1.2
	20 yr	82.0	55.7	25.1	17.9	35.1	3.5
	LT	90.8	70.2	49.1	42.2	80.9	11.5
No screening, treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	71.8	34.6	7.1	4.8	6.0	-0.4
	10 yr	75.1	43.4	13.1	9.5	13.9	1.2
	20 yr	82.0	55.7	25.3	18.1	35.5	3.1
	LT	90.8	70.2	49.0	42.4	81.3	11.2
Screen & treat with PR	5 yr	198.5	157.9	4.5	2.8	2.4	3.2
	10 yr	199.1	158.6	8.9	7.1	11.4	3.6
	20 yr	199.3	158.8	19.6	15.6	27.9	10.7
	LT	199.5	158.8	45.5	34.8	73.2	19.3
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr	198.5	100.6	3.8	2.0	2.6	3.0
	10 yr	199.1	115.3	6.3	5.1	8.4	6.6
	20 yr	199.3	137.7	11.9	10.3	18.0	20.6
	LT	199.5	154.8	23.1	22.4	40.8	51.7

	Time	Number of Diagnosed	Number of Treatment	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr	198.5	100.6	3.8	2.0	2.6	3.0
	10 yr	199.1	115.3	6.3	4.7	8.4	6.6
	20 yr	199.3	137.7	12.1	10.1	18.1	20.5
	LT	199.5	154.8	22.9	21.9	40.8	51.7

Table A2 Full Population Outcomes- Health Events per 100,000 Screened for Scenario 2

Strategy	Time	Number of Diagnosed	Number of Treatment	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with PR if diagnosed	5 yr	631.2	596.8	69.2	49.8	57.2	
	10 yr	665.2	628.7	138.3	106.1	162.1	
	20 yr	724.3	683.8	286.1	204.5	384.7	
	LT	795.0	750.6	565.2	390.9	866.5	
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	631.2	395.8	64.5	47.4	55.1	2.1
	10 yr	665.2	470.2	120.8	98.1	147.4	14.7
	20 yr	724.3	594.5	245.6	186.0	339.8	44.9
	LT	795.0	724.3	465.9	343.9	731.7	134.8
No screening, treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	631.2	395.8	64.4	47.9	55.5	1.7
	10 yr	665.2	470.2	119.4	98.4	147.0	15.2
	20 yr	724.3	594.5	245.0	187.5	340.7	44.0
	LT	795.0	724.3	465.5	344.9	732.7	133.9
Screen & treat with PR	5 yr	1625.7	1537.3	42.3	34.0	38.5	18.8
	10 yr	1633.2	1544.0	83.9	76.6	108.3	53.8
	20 yr	1646.9	1556.8	181.0	154.3	265.2	119.6
	LT	1661.3	1571.3	383.2	294.6	609.6	256.9

Strategy	Time	Number of Diagnosed	Number of Treatment	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr	1625.7	1026.1	25.1	23.7	22.2	35.0
	10 yr	1633.2	1169.4	44.2	52.5	63.3	98.8
	20 yr	1646.9	1359.5	88.4	96.9	150.5	234.2
	LT	1661.3	1518.7	174.8	169.9	312.0	554.5
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr	1625.7	1026.1	25.7	24.3	22.8	34.4
	10 yr	1633.2	1169.4	44.2	53.0	63.9	98.2
	20 yr	1646.9	1359.5	90.2	98.9	152.6	232.2
	LT	1661.3	1518.7	179.1	169.8	317.3	549.2

Table A3 Full Population Outcomes- Health Events per 100,000 Screened for Scenario 3

Strategy	Time	Number of Diagnosed	Number of Treatment	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with PR if diagnosed	5 yr	219.5	208.4	27.6	12.9	17.1	
	10 yr	229.7	218.8	53.2	34.9	55.6	
	20 yr	245.5	233.9	102.0	71.0	135.0	
	LT	266.2	252.7	183.2	125.8	282.9	
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	219.5	146.1	25.9	12.3	17.6	-0.5
	10 yr	229.7	171.4	46.9	34.7	49.9	5.6
	20 yr	245.5	210.1	87.6	67.7	121.5	13.5
	LT	266.2	247.4	150.9	112.2	237.7	45.2
No screening, treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	219.5	146.1	25.9	12.3	17.6	-0.5
	10 yr	229.7	171.4	46.6	34.2	49.9	5.6
	20 yr	245.5	210.1	88.0	67.7	122.1	12.9
	LT	266.2	247.4	149.7	112.3	237.4	45.5

Strategy	Time	Number of Diagnosed	Number of Treatment	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
Screen & treat with PR	5 yr	578.5	549.6	10.6	11.1	10.3	6.8
	10 yr	579.3	550.4	24.6	24.2	32.0	23.6
	20 yr	579.9	550.7	59.8	51.0	86.1	48.9
	LT	582.0	552.8	119.0	91.2	189.8	93.1
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr	578.5	399.8	7.6	6.5	5.4	11.7
	10 yr	579.3	440.8	12.2	13.6	16.2	39.4
	20 yr	579.9	497.0	23.7	28.8	41.2	93.8
	LT	582.0	535.9	43.7	49.2	85.4	197.5
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr	578.5	399.8	8.1	6.7	5.7	11.5
	10 yr	579.3	440.8	12.5	13.6	16.5	39.1
	20 yr	579.9	497.0	25.9	30.4	44.4	90.6
	LT	582.0	535.9	45.8	50.4	88.9	194.0

Table A4 Full Population Outcomes- Health Events per 100,000 Screened for Scenario 4

Strategy	Time	Number of Diagnosed	Number of Treatment	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with PR if diagnosed	5 yr	277.7	212.1	41.9	18.6	27.1	
	10 yr	290.4	220.7	81.2	55.4	88.6	
	20 yr	311.3	236.3	159.6	112.5	213.8	
	LT	330.1	252.0	240.8	179.4	380.0	
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	277.7	175.5	40.9	18.0	27.6	-0.5
	10 yr	290.4	193.3	77.5	53.2	82.9	5.6
	20 yr	311.3	223.7	148.7	105.1	200.8	13.0
	LT	330.1	249.6	214.8	160.9	338.6	41.4

Strategy	Time	Number of Diagnosed	Number of Treatment	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	277.7	175.5	40.9	18.0	27.6	-0.5
	10 yr	290.4	193.3	77.1	52.8	82.9	5.6
	20 yr	311.3	223.7	148.8	104.6	201.0	12.8
	LT	330.1	249.6	213.4	160.9	338.3	41.8
Screen & treat with PR	5 yr	765.2	601.9	17.7	17.3	17.8	9.3
	10 yr	765.7	602.5	47.1	37.3	59.9	28.7
	20 yr	766.8	603.0	109.3	81.3	151.1	62.7
	LT	769.8	604.9	179.9	130.5	280.8	99.3
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr	765.2	500.9	14.7	10.7	9.8	17.3
	10 yr	765.7	526.7	30.1	22.3	38.2	50.3
	20 yr	766.8	563.5	63.0	54.8	92.4	121.5
	LT	769.8	585.9	97.9	88.6	170.5	209.5
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr	765.2	500.9	15.6	11.2	10.3	16.8
	10 yr	765.7	526.7	30.5	22.9	38.7	49.9
	20 yr	766.8	563.5	65.5	56.3	96.4	117.5
	LT	769.8	585.9	101.5	89.7	175.1	204.9

Table A5 Full Population Outcomes- Health Events per 10,000 Screened for Scenario 5

Strategy	Time	Number of Diagnosed	Number of Treatment	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with PR if diagnosed	5 yr	4808.9	3377.7	176.9	115.4	142.4	
	10 yr	4858.6	3412.5	379.3	254.4	415.7	
	20 yr	4940.4	3466.7	774.0	539.0	1029.0	
	LT	5053.1	3542.4	1771.3	1215.1	2712.2	

No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	4808.9	2117.5	142.9	92.3	115.9	26.6
	10 yr	4858.6	2480.2	291.0	196.8	321.8	94.0
	20 yr	4940.4	2951.1	597.0	418.9	800.3	228.7
	LT	5053.1	3407.2	1327.2	946.6	2061.1	651.1
No screening, treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	4808.9	2117.5	141.5	91.2	113.9	28.5
	10 yr	4858.6	2480.2	289.3	194.7	318.7	97.0
	20 yr	4940.4	2951.1	596.2	418.4	797.3	231.7
	LT	5053.1	3407.2	1329.1	945.1	2063.0	649.2
Screen & treat with PR	5 yr	6311.7	4427.6	159.6	99.8	122.2	20.2
	10 yr	6318.8	4432.6	334.8	230.6	368.4	47.4
	20 yr	6331.2	4441.3	681.7	481.9	910.6	118.4
	LT	6351.1	4454.4	1572.8	1086.0	2409.7	302.5
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr	6311.7	2795.5	108.3	74.3	93.4	49.0
	10 yr	6318.8	3243.9	217.6	157.4	245.0	170.8
	20 yr	6331.2	3821.2	445.8	326.5	605.8	423.1
	LT	6351.1	4314.6	993.0	729.9	1554.1	1158.1
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr	6311.7	2795.5	106.8	73.0	91.4	51.0
	10 yr	6318.8	3243.9	216.6	154.9	242.3	173.4
	20 yr	6331.2	3821.2	445.4	325.0	601.8	427.2
	LT	6351.1	4314.6	998.1	729.4	1558.8	1153.4

Table A6 Full Population Outcomes- Health Events per 10,000 Screened for Scenario 6

Strategy	Time	Number of Diagnosed	Number of Treatment	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with PR if diagnosed	5 yr	1301.0	1233.6	84.0	55.2	66.0	
	10 yr	1345.4	1276.8	175.9	122.2	187.1	
	20 yr	1415.6	1342.2	369.0	261.6	487.1	
	LT	1506.5	1428.9	789.6	563.6	1229.5	
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	1301.0	795.3	72.4	50.1	56.7	9.3
	10 yr	1345.4	945.6	147.3	98.4	158.5	28.6
	20 yr	1415.6	1172.2	296.5	209.2	388.8	98.3
	LT	1506.5	1394.3	598.7	436.3	932.9	296.6
No screening, treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	1301.0	795.3	73.2	49.5	56.4	9.7
	10 yr	1345.4	945.6	147.7	97.5	156.8	30.3
	20 yr	1415.6	1172.2	297.3	207.3	388.1	99.0
	LT	1506.5	1394.3	599.8	434.7	932.0	297.5
Screen & treat with PR	5 yr	2830.2	2689.5	54.7	30.8	37.2	28.8
	10 yr	2831.1	2690.4	116.0	76.4	121.1	66.0
	20 yr	2833.1	2692.4	246.5	161.9	314.6	172.5
	LT	2834.4	2693.7	545.3	364.8	826.2	403.3
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr	2830.2	1707.4	19.7	17.9	18.2	47.9
	10 yr	2831.1	1978.4	39.4	36.0	49.7	137.3
	20 yr	2833.1	2347.1	80.4	78.6	121.7	365.4
	LT	2834.4	2621.5	158.4	154.8	282.8	946.6
Screen & treat with G1: Harvoni	5 yr	2830.2	1707.4	19.9	17.2	17.5	48.5

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G2/3: SOF/RBV G4/5/6: PR	10 yr	2831.1	1978.4	38.5	34.7	47.3	139.8
	20 yr	2833.1	2347.1	79.4	76.2	119.1	368.0
	LT	2834.4	2621.5	160.2	152.4	281.7	947.7

APPENDIX B Population Accumulated Probability Full Results

Table B1: Accumulated Probability of Health Events for Scenario 1

Strategy	Time	Probability of Diagnosed	Probability of Treatment	Probability of DC	Probability of HCC	Probability of liver death	Probability of no advanced liver disease experienced
No screening, treat with PR if diagnosed	5 yr	0.329	0.263	0.035	0.026	0.026	0.939
	10 yr	0.344	0.278	0.065	0.047	0.069	0.888
	20 yr	0.376	0.305	0.128	0.091	0.177	0.781
	LT	0.416	0.340	0.265	0.209	0.424	0.526
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	0.329	0.159	0.033	0.022	0.028	0.945
	10 yr	0.344	0.199	0.060	0.043	0.064	0.897
	20 yr	0.376	0.255	0.115	0.082	0.161	0.803
	LT	0.416	0.322	0.225	0.194	0.371	0.581
No screening, treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	0.329	0.159	0.033	0.022	0.028	0.945
	10 yr	0.344	0.199	0.060	0.043	0.064	0.897
	20 yr	0.376	0.255	0.116	0.083	0.163	0.801
	LT	0.416	0.322	0.225	0.194	0.373	0.581
Screen & treat with PR	5 yr	0.910	0.724	0.021	0.013	0.011	0.967
	10 yr	0.913	0.728	0.041	0.033	0.052	0.926
	20 yr	0.914	0.729	0.090	0.072	0.128	0.838
	LT	0.915	0.729	0.209	0.160	0.336	0.632

Strategy	Time					
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr	0.910	0.461	0.017	0.009	0.012	0.974
	10 yr	0.913	0.529	0.029	0.023	0.039	0.948
	20 yr	0.914	0.632	0.054	0.047	0.083	0.898
	LT	0.915	0.710	0.106	0.103	0.187	0.791
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr	0.910	0.461	0.017	0.009	0.012	0.974
	10 yr	0.913	0.529	0.029	0.022	0.039	0.949
	20 yr	0.914	0.632	0.056	0.047	0.083	0.898
	LT	0.915	0.710	0.105	0.101	0.187	0.795

Note: the top table continues an earlier table; it has an extra leading value column so rows list seven numbers across six labelled positions.

Table B2: Accumulated Probability of Health Events for Scenario 2

Strategy	Time	Probability of Diagnosed	Probability of Treatment	Probability of DC	Probability of HCC	Probability of liver death	Probability of no advanced liver disease experienced
No screening, treat with PR if diagnosed	5 yr	0.332	0.314	0.036	0.026	0.030	0.937
	10 yr	0.350	0.331	0.073	0.056	0.085	0.871
	20 yr	0.381	0.360	0.151	0.108	0.202	0.742
	LT	0.418	0.395	0.297	0.206	0.456	0.497
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	0.332	0.208	0.034	0.025	0.029	0.941
	10 yr	0.350	0.247	0.064	0.052	0.078	0.885
	20 yr	0.381	0.313	0.129	0.098	0.179	0.773
	LT	0.418	0.381	0.245	0.181	0.385	0.574
No screening, treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	0.332	0.208	0.034	0.025	0.029	0.941
	10 yr	0.350	0.247	0.063	0.052	0.077	0.885
	20 yr	0.381	0.313	0.129	0.099	0.179	0.772
	LT	0.418	0.381	0.245	0.182	0.386	0.573

Strategy	Time						
Screen & treat with PR	5 yr	0.856	0.809	0.022	0.018	0.020	0.960
	10 yr	0.860	0.813	0.044	0.040	0.057	0.915
	20 yr	0.867	0.819	0.095	0.081	0.140	0.824
	LT	0.874	0.827	0.202	0.155	0.321	0.643
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr	0.856	0.540	0.013	0.012	0.012	0.974
	10 yr	0.860	0.615	0.023	0.028	0.033	0.949
	20 yr	0.867	0.716	0.047	0.051	0.079	0.902
	LT	0.874	0.799	0.092	0.089	0.164	0.819
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr	0.856	0.540	0.014	0.013	0.012	0.974
	10 yr	0.860	0.615	0.023	0.028	0.034	0.949
	20 yr	0.867	0.716	0.047	0.052	0.080	0.900
	LT	0.874	0.799	0.094	0.089	0.167	0.816

Table B3: Accumulated Probability of Health Events for Scenario 3

Strategy	Time	Probability of Diagnosed	Probability of Treatment	Probability of DC	Probability of HCC	Probability of liver death	Probability of no advanced liver disease experienced
No screening, treat with PR if diagnosed	5 yr	0.359	0.341	0.045	0.021	0.028	0.934
	10 yr	0.375	0.357	0.087	0.057	0.091	0.856
	20 yr	0.401	0.382	0.167	0.116	0.221	0.717
	LT	0.435	0.413	0.299	0.206	0.462	0.495
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	0.359	0.239	0.042	0.020	0.029	0.938
	10 yr	0.375	0.280	0.077	0.057	0.082	0.867
	20 yr	0.401	0.343	0.143	0.111	0.199	0.746
	LT	0.435	0.404	0.247	0.183	0.388	0.570

Strategy	Time	Probability of Diagnosed	Probability of Treatment	Probability of DC	Probability of HCC	Probability of liver death	Probability of no advanced liver disease experienced
No screening, treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	0.359	0.239	0.042	0.020	0.029	0.938
	10 yr	0.375	0.280	0.076	0.056	0.082	0.868
	20 yr	0.401	0.343	0.144	0.111	0.200	0.746
	LT	0.435	0.404	0.245	0.184	0.388	0.572
Screen & treat with PR	5 yr	0.945	0.898	0.017	0.018	0.017	0.965
	10 yr	0.947	0.899	0.040	0.040	0.052	0.920
	20 yr	0.947	0.900	0.098	0.083	0.141	0.819
	LT	0.951	0.903	0.194	0.149	0.310	0.657
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr	0.945	0.653	0.012	0.011	0.009	0.977
	10 yr	0.947	0.720	0.020	0.022	0.027	0.958
	20 yr	0.947	0.812	0.039	0.047	0.067	0.914
	LT	0.951	0.876	0.071	0.080	0.140	0.848
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr	0.945	0.653	0.013	0.011	0.009	0.976
	10 yr	0.947	0.720	0.020	0.022	0.027	0.957
	20 yr	0.947	0.812	0.042	0.050	0.073	0.908
	LT	0.951	0.876	0.075	0.082	0.145	0.843

Table B4: Accumulated Probability of Health Events for Scenario 4

Strategy	Time	Probability of Diagnosed	Probability of Treatment	Probability of DC	Probability of HCC	Probability of liver death	Probability of no advanced liver disease experienced
No screening, treat with PR if diagnosed	5 yr	0.347	0.265	0.052	0.023	0.034	0.924
	10 yr	0.363	0.276	0.101	0.069	0.111	0.829
	20 yr	0.389	0.295	0.199	0.141	0.267	0.660
	LT	0.413	0.315	0.301	0.224	0.475	0.475

No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	0.347	0.219	0.051	0.023	0.034	0.926
	10 yr	0.363	0.242	0.097	0.067	0.104	0.837
	20 yr	0.389	0.280	0.186	0.131	0.251	0.683
	LT	0.413	0.312	0.268	0.201	0.423	0.530
No screening, treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	0.347	0.219	0.051	0.023	0.034	0.926
	10 yr	0.363	0.242	0.096	0.066	0.104	0.838
	20 yr	0.389	0.280	0.186	0.131	0.251	0.683
	LT	0.413	0.312	0.267	0.201	0.423	0.532
Screen & treat with PR	5 yr	0.957	0.752	0.022	0.022	0.022	0.956
	10 yr	0.957	0.753	0.059	0.047	0.075	0.894
	20 yr	0.959	0.754	0.137	0.102	0.189	0.762
	LT	0.962	0.756	0.225	0.163	0.351	0.612
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr	0.957	0.626	0.018	0.013	0.012	0.968
	10 yr	0.957	0.658	0.038	0.028	0.048	0.934
	20 yr	0.959	0.704	0.079	0.069	0.115	0.853
	LT	0.962	0.732	0.122	0.111	0.213	0.767
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr	0.957	0.626	0.019	0.014	0.013	0.967
	10 yr	0.957	0.658	0.038	0.029	0.048	0.933
	20 yr	0.959	0.704	0.082	0.070	0.120	0.848
	LT	0.962	0.732	0.127	0.112	0.219	0.761

Table B5: Accumulated Probability of Health Events for Scenario 5

Strategy	Time	Probability of Diagnosed	Probability of Treatment	Probability of DC	Probability of HCC	Probability of liver death	Probability of no advanced liver disease experienced
No screening, treat with PR if diagnosed	5 yr	0.729	0.512	0.027	0.017	0.022	0.956
	10 yr	0.736	0.517	0.057	0.039	0.063	0.904
	20 yr	0.749	0.525	0.117	0.082	0.156	0.801
	LT	0.766	0.537	0.268	0.184	0.411	0.548
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	0.729	0.321	0.022	0.014	0.018	0.964
	10 yr	0.736	0.376	0.044	0.030	0.049	0.926
	20 yr	0.749	0.447	0.090	0.063	0.121	0.846
	LT	0.766	0.516	0.201	0.143	0.312	0.655
No screening, treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	0.729	0.321	0.021	0.014	0.017	0.965
	10 yr	0.736	0.376	0.044	0.030	0.048	0.927
	20 yr	0.749	0.447	0.090	0.063	0.121	0.846
	LT	0.766	0.516	0.201	0.143	0.313	0.655
Screen & treat with PR	5 yr	0.956	0.671	0.024	0.015	0.019	0.961
	10 yr	0.957	0.672	0.051	0.035	0.056	0.914
	20 yr	0.959	0.673	0.103	0.073	0.138	0.824
	LT	0.962	0.675	0.238	0.165	0.365	0.597
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	5 yr	0.956	0.424	0.016	0.011	0.014	0.972
	10 yr	0.957	0.491	0.033	0.024	0.037	0.943
	20 yr	0.959	0.579	0.068	0.049	0.092	0.883
	LT	0.962	0.654	0.150	0.111	0.235	0.739
Screen & treat with G1: Harvoni	5 yr	0.956	0.424	0.016	0.011	0.014	0.973

Strategy	Time						
G2/3: SOF/RBV G4/5/6: PR	10 yr	0.957	0.491	0.033	0.023	0.037	0.944
	20 yr	0.959	0.579	0.067	0.049	0.091	0.883
	LT	0.962	0.654	0.151	0.111	0.236	0.738

Table B6: Accumulated Probability of Health Events for Scenario 6

Strategy	Time	Probability of Diagnosed	Probability of Treatment	Probability of DC	Probability of HCC	Probability of liver death	Probability of no advanced liver disease experienced
No screening, treat with PR if diagnosed	5 yr	0.454	0.431	0.029	0.019	0.023	0.951
	10 yr	0.470	0.446	0.061	0.043	0.065	0.896
	20 yr	0.494	0.468	0.129	0.091	0.170	0.780
	LT	0.526	0.499	0.276	0.197	0.429	0.528
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	0.454	0.278	0.025	0.017	0.020	0.957
	10 yr	0.470	0.330	0.051	0.034	0.055	0.914
	20 yr	0.494	0.409	0.103	0.073	0.136	0.824
	LT	0.526	0.486	0.209	0.152	0.325	0.639
No screening, treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR if diagnosed	5 yr	0.454	0.278	0.026	0.017	0.020	0.957
	10 yr	0.470	0.330	0.052	0.034	0.055	0.914
	20 yr	0.494	0.409	0.104	0.072	0.135	0.824
	LT	0.526	0.486	0.209	0.152	0.325	0.639
Screen & treat with PR	5 yr	0.989	0.939	0.019	0.011	0.013	0.970
	10 yr	0.989	0.939	0.041	0.027	0.042	0.933
	20 yr	0.989	0.940	0.086	0.057	0.110	0.857
	LT	0.989	0.940	0.190	0.127	0.288	0.682
Screen & treat with	5 yr	0.989	0.596	0.007	0.006	0.006	0.987

G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	10 yr	0.989	0.691	0.014	0.013	0.017	0.974
	20 yr	0.989	0.819	0.028	0.027	0.042	0.945
	LT	0.989	0.915	0.055	0.054	0.099	0.891
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	5 yr	0.989	0.596	0.007	0.006	0.006	0.987
	10 yr	0.989	0.691	0.013	0.012	0.017	0.974
	20 yr	0.989	0.819	0.028	0.027	0.042	0.946
	LT	0.989	0.915	0.056	0.053	0.098	0.891

APPENDIX C Full Cost-Effectiveness Results

Table C1 Full Cost-Effectiveness Results for Scenario 1

Age range	Strategy	Compared to Common baseline (No Screening with PR)				
		Cost	QALYs	ΔCost	ΔQALYs	ICER
15-79	No screening, treat with PR if diagnosed	$69,748.20	14.0640			
	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$69,769.20	14.0644	$21.00	0.0004	$51,724.96
	No screening, treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR if diagnosed	$69,771.57	14.0644	$23.36	0.0004	$57,547.49
	Screen & treat with PR	$69,817.58	14.0654	$69.37	0.0014	$49,135.20
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$69,870.76	14.0664	$122.55	0.0024	$50,697.10
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$69,876.77	14.0664	$128.57	0.0024	$53,563.86

Table C2 Full Cost-Effectiveness Results for Scenario 2

Age range	Strategy	Compared to Common baseline (No Screening with PR)				
		Cost	QALYs	ΔCost	ΔQALYs	ICER
15-79	No screening, treat with PR if diagnosed	$72,531.37	13.7236			
	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$72,765.07	13.7281	$233.70	0.0045	$51,447.64
	No screening, treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR if diagnosed	$72,793.33	13.7281	$261.95	0.0046	$57,044.26
	Screen & treat with PR	$72,836.38	13.7370	$305.01	0.0135	$22,611.95
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$73,383.57	13.7478	$852.20	0.0242	$35,218.72
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$73,445.89	13.7478	$914.51	0.0242	$37,759.54

Table C3 Full Cost-Effectiveness Results for Scenario 3

Age range	Strategy	Compared to Common baseline (No Screening with PR)				
		Cost	QALYs	ΔCost	ΔQALYs	ICER
25-64	No screening, treat with PR if diagnosed	$72,424.62	14.2520			
	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$72,505.60	14.2536	$80.99	0.0016	$50,281.52
	No screening, treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR if diagnosed	$72,514.38	14.2536	$89.76	0.0016	$55,731.77
	Screen & treat with PR	$72,559.84	14.2573	$135.22	0.0053	$25,330.99

	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$72,766.62	14.2616	$342.00	0.0096	$35,663.19
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$72,789.12	14.2615	$364.50	0.0096	$38,086.70

Table C4 Full Cost-Effectiveness Results for Scenario 4

		Compared to Common baseline (No Screening with PR)				
Age range	**Strategy**	**Cost**	**QALYs**	**ΔCost**	**ΔQALYs**	**ICER**
45-64	No screening, treat with PR if diagnosed	$84,516.19	12.7961			
	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$84,609.96	12.7979	$93.77	0.0018	$51,851.01
	No screening, treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR if diagnosed	$84,619.37	12.7980	$103.18	0.0019	$55,649.06
	Screen & treat with PR	$84,670.55	12.8018	$154.36	0.0057	$26,961.99
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$84,913.85	12.8067	$397.66	0.0106	$37,558.41
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$84,938.27	12.8067	$422.08	0.0106	$39,662.05

Table C5 Full Cost-Effectiveness Results for Scenario 5

		Compared to Common baseline (No Screening with PR)				
Age range	**Strategy**	**Cost**	**QALYs**	**ΔCost**	**ΔQALYs**	**ICER**
15-79	No screening, treat with PR if diagnosed	$83,989.35	12.1461			
	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$96,192.83	12.3741	$12,203.48	0.2280	$53,529.73

	Cost	QALYs	ΔCost	ΔQALYs	ICER
No screening, treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR if diagnosed	$97,571.23	12.3744	$13,581.88	0.2283	$59,480.92
Screen & treat with PR	$87,872.99	12.2983	$3,883.64	0.1522	$25,509.28
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$103,593.74	12.5920	$19,604.39	0.4459	$43,963.84
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$105,370.47	12.5924	$21,381.12	0.4463	$47,903.98

Table C6 Full Cost-Effectiveness Results for Scenario 6

Age range	Strategy	Compared to Common baseline (No Screening with PR)				
		Cost	QALYs	ΔCost	ΔQALYs	ICER
15-79	No screening, treat with PR if diagnosed	$74,084.99	13.2150			
	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	$78,820.26	13.3034	$4,735.27	0.0884	$53,558.15
	No screening, treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR if diagnosed	$79,354.41	13.3035	$5,269.42	0.0886	$59,505.63
	Screen & treat with PR	$78,160.32	13.4235	$4,075.33	0.2085	$19,548.90
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	$87,712.62	13.6019	$13,627.63	0.3869	$35,225.87
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	$88,792.28	13.6021	$14,707.29	0.3871	$37,993.44

APPENDIX D – Undiscounted Life Years Results

Table D1: Undiscounted Life Years Results for Scenario 1

Age range	Strategy	LY*	Δ LY*
15-79	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	41.8691	
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	41.8778	0.0087
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	41.8778	0.0087

Table D2: Undiscounted Life Years Results for Scenario 2

Age range	Strategy	LY*	Δ LY*
15-79	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	39.5067	
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	39.5859	0.0792
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	39.5859	0.0791

Table D3: Undiscounted Life Years Results for Scenario 3

Age range	Strategy	LY*	Δ LY*
25-64	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	40.2555	

	Strategy		
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	40.2808	0.02534
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	40.2809	0.02539

Table D4: Undiscounted Life Years Results for Scenario 4

Age range	Strategy	LY*	Δ LY*
45-64	No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	31.9540	
	Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	31.9796	0.02561
	Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	31.9797	0.02566

APPENDIX E – One-way Sensitivity Analysis Results

Table E1.1 – One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for Scenario 1 - Prevalence

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	LT		53 - 140		42 - 108					
		66 - 166		11 - 32		5 - 12	27 - 71	23 - 58	45 - 115	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	LT		111 - 291		85 - 224					
		8 - 15		26 - 67		10 - 25	12 - 34	14 - 32	24 - 59	21 - 57
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT		111 - 291		85 - 224					
		8 - 15		26 - 67		11 - 28	12 - 33	14 - 32	24 - 59	21 - 57

Table E1.2 – One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for Scenario 1 – Screening Uptake

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	LT		91 - 91		70 - 70					
		109 - 109		21 - 21		8 - 8	49 - 49	42 - 42	81 - 81	

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	LT		179 - 210		141 - 162					
		16 - 21		38 - 48		16 - 18	20 - 27	21 - 25	37 - 47	34 - 44
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT		179 - 210		141 - 162					
		16 - 21		38 - 48		18 - 20	20 - 27	20 - 24	37 - 47	34 - 44

Table E1.3 – One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for Scenario 1 – Treatment Uptake

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	LT		85 - 85		70 - 81					
		124 - 124		3 - 15		8 - 9	39 - 44	36 - 38	67 - 72	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	LT		184 - 184		153 - 178					
		25 - 25		6 - 31		17 - 20	11 - 19	12 - 17	20 - 32	40 - 46
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT		184 - 184		153 - 178					
		25 - 25		6 - 31		19 - 22	10 - 19	12 - 17	20 - 32	40 - 47

Table E1.4 – One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for Scenario 1 – Distribution of Fibrosis Scores

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	LT		82 - 85		65 - 65					
		124 - 127		18 - 20		7 - 7	44 - 52	35 - 43	70 - 86	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	LT		183 - 183		139 - 144					
		26 - 26		39 - 45		16 - 16	22 - 26	17 - 22	35 - 44	35 - 42
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT		183 - 183		139 - 144					
		26 - 26		39 - 45		17 - 18	22 - 26	17 - 22	35 - 44	35 - 42

Table E1.5 One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for – SVR Progression

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	LT		91 - 91		70 - 70					
		127 - 127		21 - 21		8 - 8	49 - 50	42 - 43	81 - 82	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV	LT		199 - 200		155 - 155					
		19 - 19		45 - 45		17 - 17	23 - 24	22 - 23	41 - 42	40 - 40

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Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
G4/5/6: PR										
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT		199 - 200		155 - 155					
		19 - 19		45 - 45		19 - 20	23 - 23	22 - 23	41 - 42	40 - 40

Table E1.6 – One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for Scenario 1 – No Restriction on IFN Treatment for F0 and F1

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	LT		91 - 91		70 - 74					
		127 - 127		16 - 21		8 - 8	48 - 49	41 - 42	79 - 81	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	LT		199 - 200		155 - 157					
		19 - 19		42 - 45		17 - 18	23 - 23	22 - 22	40 - 41	39 - 40
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT		199 - 200		155 - 157					
		19 - 19		42 - 45		20 - 20	23 - 24	22 - 23	41 - 42	37 - 40

Table E2.1 – One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for Scenario 2 - Prevalence

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	LT		594 - 1088		545 - 988					
		706 - 1512		49 - 100		61 - 111	293 - 559	157 - 367	397 - 832	

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
if diagnosed										
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	LT		1089 - 2216		998 - 2035					
		211 - 384		91 - 182		112 - 229	111 - 205	97 - 196	180 - 365	217 - 466
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT		1089 - 2216		998 - 2035					
		211 - 384		91 - 182		126 - 256	113 - 211	96 - 192	181 - 369	216 - 463

Table E2.2 – One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for Scenario 2 – Screening Uptake

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	LT		877 - 877		796 - 796					
		1023 - 1263		81 - 81		90 - 90	467 - 467	270 - 270	654 - 654	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	LT		1537 - 2025		1398 - 1854					
		115 - 363		138 - 171		157 - 208	82 - 209	103 - 209	167 - 369	284 - 487
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT		1537 - 2025		1398 - 1854					
		115 - 363		138 - 171		176 - 233	90 - 214	102 - 206	174 - 372	282 - 480

Table E2.3 – One-way Sensitivity Analysis Results for Population Outcomes- Health Events per 100,000 Screened for Scenario 2 – Treatment Uptake

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	LT		877 - 878		633 - 803					
		1022 - 1023		74 - 244		71 - 90	467 - 520	271 - 315	654 - 733	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	LT		1763 - 1764		1314 - 1618					
		136 - 137		145 - 449		148 - 182	166 - 281	146 - 215	286 - 440	293 - 367
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT		1763 - 1764		1314 - 1618					
		136 - 137		145 - 449		165 - 204	171 - 288	141 - 212	287 - 444	289 - 367

Table E2.4 – One-way Sensitivity Analysis Results for Population Outcomes- Health Events per 100,000 Screened for Scenario 2 – Distribution of Fibrosis Score

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	LT		839 - 875		779 - 799					
		1025 - 1061		61 - 75		88 - 90	455 - 540	246 - 332	610 - 756	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV	LT		1736 - 1757		1595 - 1619					
		143 - 164		117 - 162		179 - 182	158 - 195	131 - 189	261 - 349	348 - 407

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
G4/5/6: PR										
Screen & treat with G1: Harvoni G2/3: SOF/RBV	LT		1736 - 1757		1595 - 1619					
G4/5/6: PR		143 - 164		117 - 162		201 - 204	160 - 200	132 - 189	261 - 353	349 - 402

Table E2.5 – One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for Scenario 2 – SVR Progression

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	LT		795 - 877		724 - 796					
		1023 - 1105		71 - 81		81 - 90	466 - 470	280 - 344	666 - 732	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	LT		1661 - 1762		1519 - 1614					
		138 - 239		143 - 148		171 - 181	168 - 175	165 - 170	310 - 312	356 - 420
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT		1661 - 1762		1519 - 1614					
		138 - 239		143 - 148		191 - 203	178 - 179	164 - 170	316 - 317	350 - 414

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Table E2.6 – One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for Scenario 2 – No Restriction on IFN Treatment for F0 and F1

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	LT		795 - 874		724 - 826					
		1026 - 1105		48 - 71		81 - 93	463 - 466	275 - 344	661 - 732	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	LT		1661 - 1754		1519 - 1665					
		146 - 239		89 - 143		171 - 187	163 - 175	157 - 170	300 - 312	360 - 420
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT		1661 - 1754		1519 - 1665					
		146 - 239		89 - 143		191 - 209	167 - 179	152 - 170	301 - 317	359 - 414

Table E3.1 – One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for Scenario 3 - Prevalence

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	LT		152 - 585		140 - 539					
		205 - 605		13 - 46		16 - 61	99 - 281	70 - 174	152 - 402	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	LT		339 - 1133		316 - 1035					
		18 - 57		23 - 98		36 - 116	14 - 66	37 - 118	46 - 162	106 - 240

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT		339 - 1133		316 - 1035					
		18 - 57		23 - 98		40 - 130	12 - 69	42 - 117	49 - 164	103 - 238

Table E3.2 – One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for Scenario 3 – Screening Uptake

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	LT		312 - 312		284 - 284					
		348 - 368		28 - 28		32 - 32	168 - 168	111 - 111	259 - 259	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	LT		543 - 676		507 - 618					
		4 - 117		36 - 58		57 - 69	28 - 87	62 - 66	85 - 146	113 - 173
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT		543 - 676		507 - 618					
		4 - 117		36 - 58		64 - 78	26 - 82	64 - 71	85 - 146	112 - 173

Table E3.3 – One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for Scenario 3 – Treatment Uptake

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak	LT		312 - 312		240 - 303					
		348 - 348		8 - 71		27 - 34	154 - 182	110 - 123	248 - 278	

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
G2/3: SOF/RBV G4/5/6: PR if diagnosed										
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	LT	29 - 29	631 - 631	14 - 160	472 - 617	53 - 69	36 - 86	49 - 86	79 - 152	127 - 169
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT	29 - 29	631 - 631	14 - 160	472 - 617	59 - 78	34 - 86	52 - 91	81 - 157	122 - 168

Table E3.4 – One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for Scenario 3 – Distribution of Fibrosis Scores

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	LT	331 - 368	292 - 329	23 - 43	270 - 286	30 - 32	155 - 188	98 - 135	236 - 306	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	LT	29 - 29	631 - 631	48 - 52	580 - 583	65 - 66	45 - 63	47 - 71	82 - 127	154 - 179
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT	29 - 29	631 - 631	48 - 52	580 - 583	73 - 73	41 - 55	52 - 71	83 - 120	152 - 186

Table E3.5 – One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for Scenario 3 – SVR Progression

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	LT		266 - 312		247 - 284					
		323 - 346		19 - 28		28 - 32	151 - 171	112 - 115	238 - 266	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	LT		582 - 605		536 - 560					
		30 - 30		45 - 46		60 - 63	44 - 68	49 - 68	85 - 131	134 - 152
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT		582 - 605		536 - 560					
		30 - 30		45 - 46		67 - 70	46 - 63	50 - 72	89 - 131	135 - 149

Table E3.6 – One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for Scenario 3 – No restriction on IFN treatment for F0 and F1

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	LT		266 - 312		247 - 291					
		346 - 348		19 - 21		28 - 33	151 - 164	112 - 113	238 - 261	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	LT		582 - 631		536 - 597					
		29 - 30		35 - 46		60 - 67	42 - 44	49 - 64	85 - 106	152 - 155

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT	29 - 30	582 - 631	35 - 46	536 - 597	67 - 75	42 - 46	50 - 63	89 - 105	149 - 155

Table E4.1 – One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for Scenario 4 - Prevalence

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	LT	281 - 819	179 - 781	51 - 233	128 - 549	14 - 62	156 - 429	93 - 264	220 - 611	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	LT	18 - 78	442 - 1522	131 - 392	311 - 1130	35 - 127	55 - 212	84 - 203	124 - 353	96 - 258
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT	18 - 78	442 - 1522	131 - 392	311 - 1130	39 - 142	55 - 216	88 - 202	128 - 356	92 - 255

Table E4.2 – One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for Scenario 4 – Screening Uptake

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak	LT	457 - 537	393 - 393	92 - 92	301 - 301	34 - 34	246 - 246	154 - 154	359 - 359	

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
G2/3: SOF/RBV G4/5/6: PR if diagnosed										
Screen & treat with G1: Holkira Pak	LT		777 - 884		568 - 633					
G2/3: SOF/RBV G4/5/6: PR		46 - 73		209 - 252		64 - 71	116 - 156	108 - 119	199 - 244	115 - 160
Screen & treat with G1: Harvoni	LT		777 - 884		568 - 633					
G2/3: SOF/RBV G4/5/6: PR		46 - 73		209 - 252		71 - 80	116 - 156	113 - 118	198 - 248	111 - 161

Table E4.3 – One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for Scenario 4 – Treatment Uptake

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	LT		393 - 393		301 - 382					
		497 - 497		11 - 92		34 - 43	211 - 246	129 - 154	315 - 359	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	LT		840 - 840		617 - 829					
		50 - 50		11 - 223		69 - 93	44 - 122	64 - 114	103 - 209	150 - 212
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT		840 - 840		617 - 829					
		50 - 50		11 - 223		78 - 104	44 - 122	68 - 118	107 - 214	145 - 207

Table E4.4 – One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for Scenario 4 – Distribution of Fibrosis Score

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	LT	483 - 508	372 - 407	61 - 101	306 - 311	34 - 35	232 - 273	135 - 172	326 - 420	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	LT	46 - 55	834 - 835	195 - 236	599 - 639	67 - 72	112 - 139	109 - 137	185 - 261	142 - 159
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT	46 - 55	834 - 835	195 - 236	599 - 639	75 - 80	112 - 129	114 - 137	189 - 251	137 - 169

Table E4.5 – One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for Scenario 4 – SVR Progression

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	LT	470 - 497	330 - 393	81 - 92	250 - 301	28 - 34	215 - 246	158 - 161	339 - 364	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV	LT	30 - 50	770 - 840	184 - 223	586 - 617	66 - 69	98 - 122	89 - 124	170 - 219	145 - 168

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
G4/5/6: PR										
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT		770 - 840		586 - 617					
		30 - 50		184 - 223		74 - 78	101 - 122	90 - 134	175 - 229	135 - 164

Table E4.6 – One-way Sensitivity Analysis Results for Population Outcomes - Health Events per 100,000 Screened for Scenario 4 – No Restriction on IFN Treatment for F0 and F1

Strategy	Time	Estimate Number of Undiagnosed	Number of Diagnosed	Estimate Number of diagnosed but not on treatment	Number of Treatment	Estimate Number of treatment failure	Number of DC	Number of HCC	Number of HCV-related liver death	Number of HCV-related deaths prevented
No screening, treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR if diagnosed	LT		330 - 393		250 - 327					
		470 - 497		65 - 81		28 - 37	215 - 236	148 - 161	339 - 354	
Screen & treat with G1: Holkira Pak G2/3: SOF/RBV G4/5/6: PR	LT		770 - 840		586 - 667					
		30 - 50		173 - 184		66 - 75	96 - 98	89 - 119	170 - 210	144 - 168
Screen & treat with G1: Harvoni G2/3: SOF/RBV G4/5/6: PR	LT		770 - 840		586 - 667					
		30 - 50		173 - 184		74 - 84	96 - 101	90 - 118	175 - 209	145 - 164

Figure E1 Tornado Diagram for Scenario 1 - Comparing Screen and Treat with Holkira Pak versus No Screening, Treat with Holkira Pak if Diagnosed
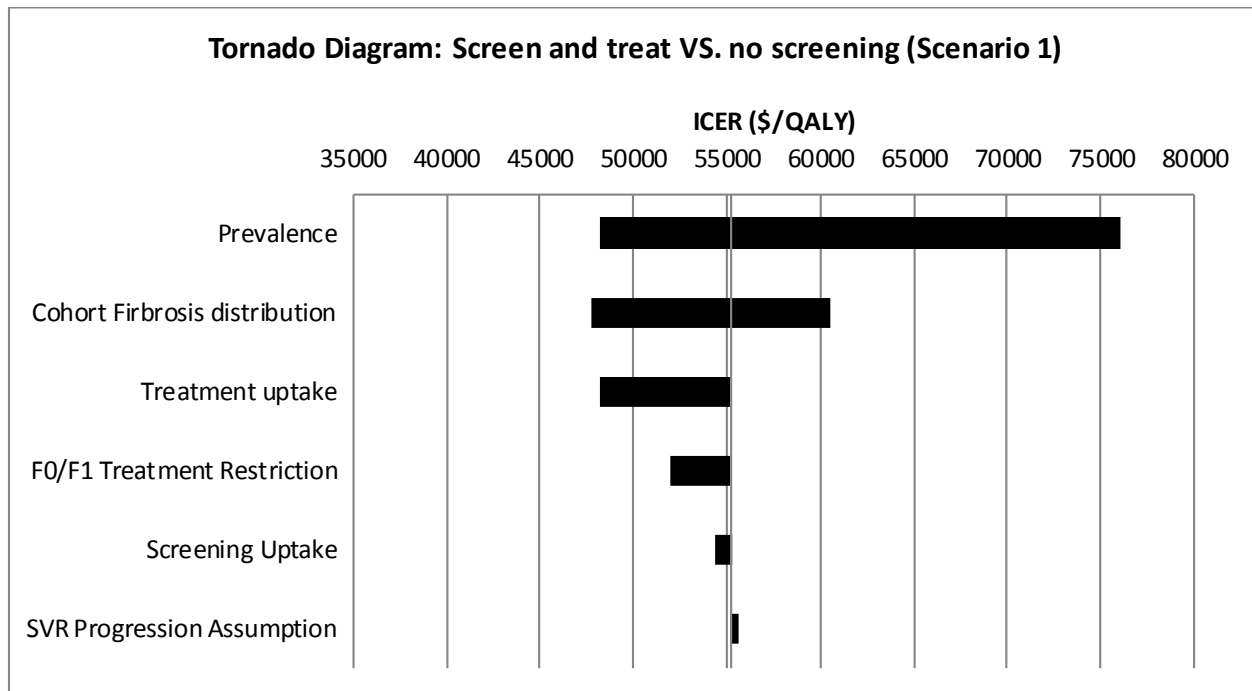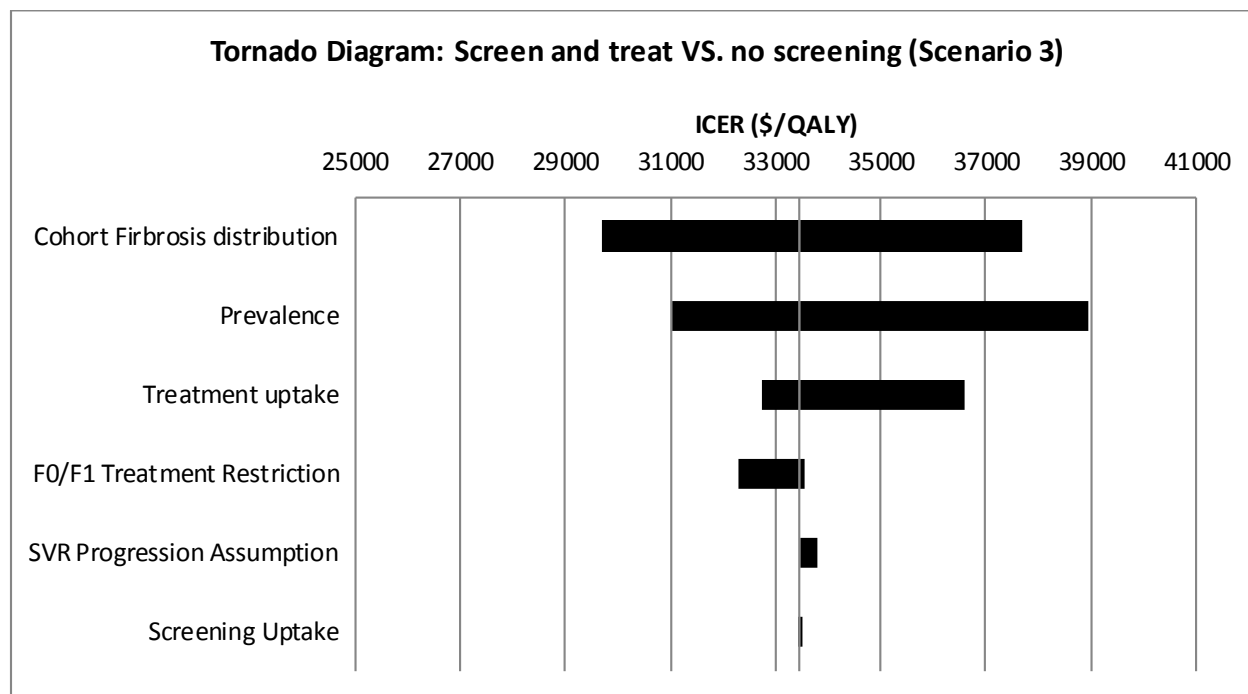

Figure E2 Tornado Diagram for Scenario 2 - Comparing Screen and Treat with Holkira Pak versus No Screening, Treat with Holkira Pak if Diagnosed
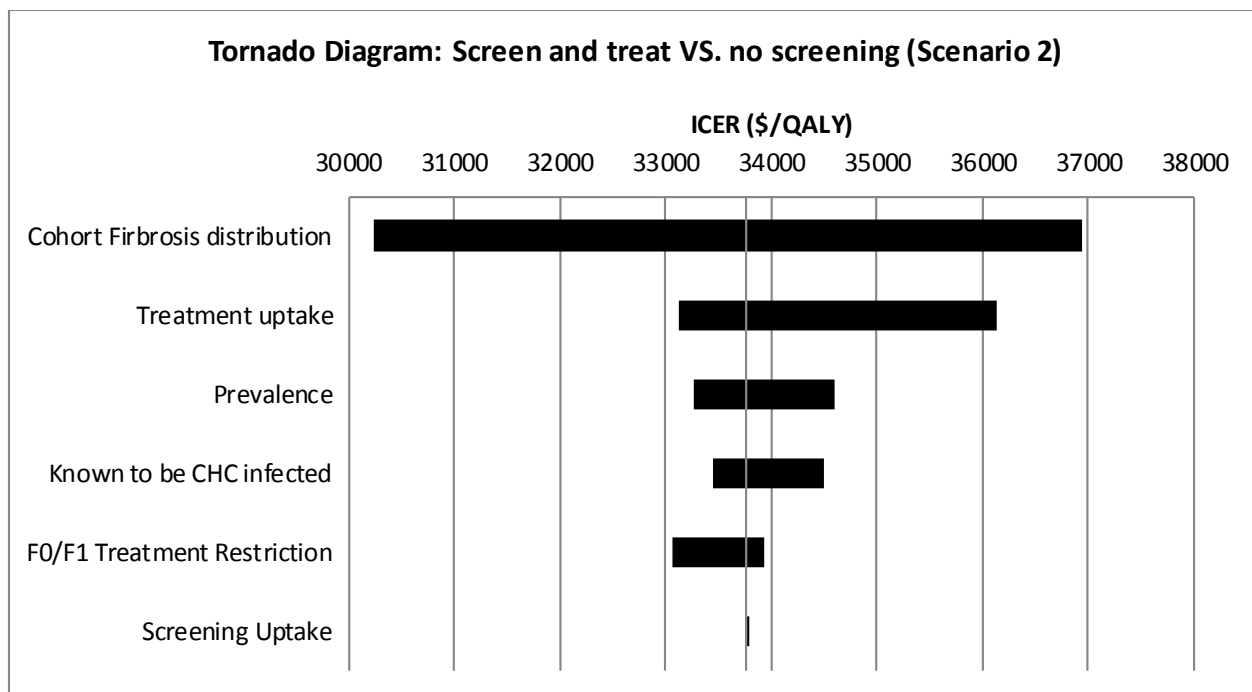
Figure E3 Tornado Diagram for Scenario 3 - Comparing Screen and Treat with Holkira Pak versus No Screening, Treat with Holkira Pak if Diagnosed

Tornado Diagram: Screen and treat VS. no screening (Scenario 3)

ICER ($/QALY)

Figure E4 Tornado Diagram for Scenario 4 - Comparing Screen and Treat with Holkira Pak versus No Screening, Treat with Holkira Pak if Diagnosed

Tornado Diagram: Screen and treat VS. no screening (Scenario 4)

ICER ($/QALY)
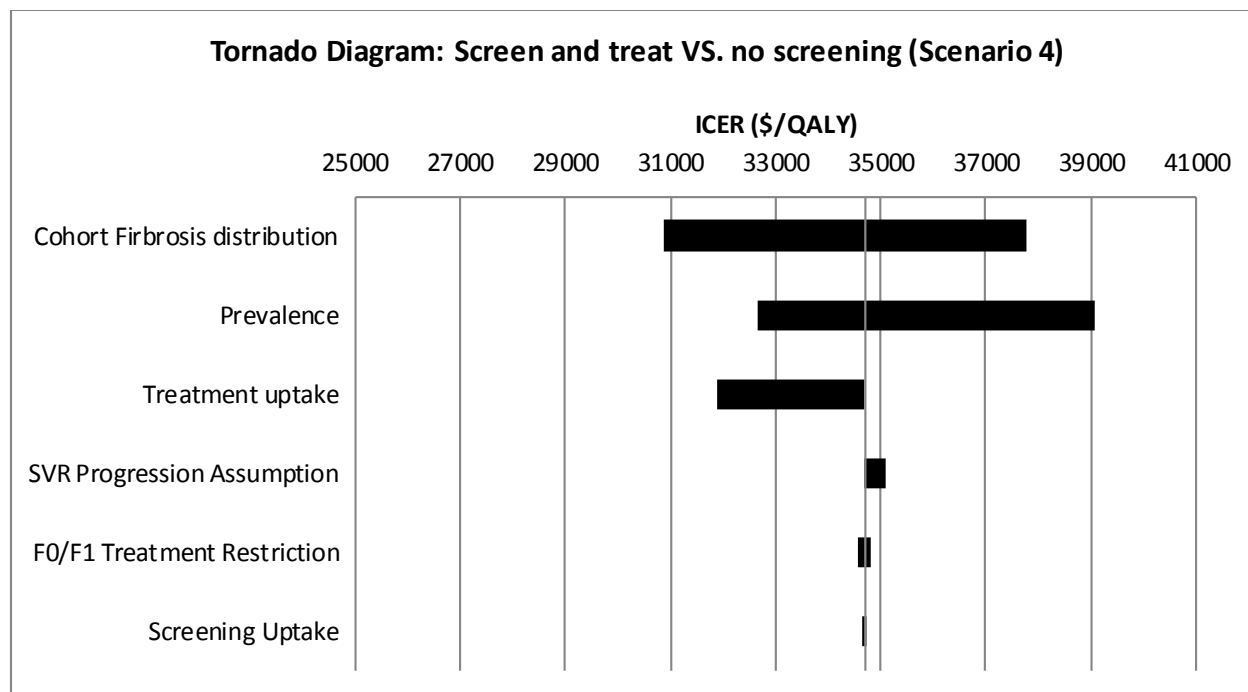
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