Appendix C. Sensitivity Analysis

We conducted a series of two-way sensitivity analyses to assess the impact of alternative model assumptions. More specifically, we varied specific parameters to account for methodological uncertainty associated with assumptions made in the reference case.

Table C1. Sensitivity analysis

Variable	Δ Cost	Δ QALYs
Base case	-$956,461,149	74,023
Time horizon: 20 years		
1 year	$35,189,686	1,908
2 years	-$28,057,314	4,300
3 years	-$62,139,552	6,409
5 years	-$175,198,580	12,644
10 years	-$451,525,151	33,529
81 years (Lifetime)	-$1,673,555,844	193,918
Discount (Cost & Effect): 1.5%		
Cost and Effect: 0%	-$1,082,186,439	85,793
Cost and Effect: 5%	-$669,156,924	53,446
Risk ratio of full remission: 1.46		
Lower bound: 1.02	$29,241,501	4,457
Upper bound: 2.08	-$1,730,606,589	128,558
Risk Ratio of partial remission: 1.2		
Lower bound: 0.96	-$953,579,627	73,826
Upper bound: 1.51	-$961,612,619	75,531
Risk Ratio of total discontinuation: 0.89		
Lower bound: 0.78	-$885,602,410	72,041
Upper bound: 1.01	-$1,022,082,271	75,439
Risk Ratio of discontinuation due to adverse effect: 0.43		
Lower bound: 0.16	-$1,009,941,161	74,708
Upper bound: 1.17	-$793,716,025	71,441
Cost of PGx testing[a]: $738		
Least expensive PGx testing[1,b]: $305	-$1,002,250,709	
Most expensive PGx testing[1,b]: $2338	-$693,415,396	
Cost of treating patients with refractory MDD per year[a]: $5286		
50% Decrease: $2643	-$138,909,139	
50% Increase: $7929	-$1,726,844,871	
Weekly cost of other medical conditions[a]: $20		
50% Decrease: $10	-$962,208,348	
50% Increase: $30	-$931,869,676	

Relative risk of mortality (MDD patients vs. general population): 1.58		
Lower bound: 1.31	-$963,933,223	70,961
Upper bound: 1.89	-$940,383,630	75,449
Relative risk of mortality (Refractory MDD vs. episodic MDD): 1.29		
Lower bound: 1.22	-$959,298,537	73,046
Upper bound: 1.38	-$923,454,035	75,315
Spontaneous remission of untreated[a]: 0.16		
Lower bound: 0.12		77,255
Upper bound: 0.2		70,576
Utility after remission[a]: 0.7		
Lower bound: 0.67		66,677
Upper bound: 0.73		74,226
Utility of patients with refractory MDD[a]: 0.57		
Lower bound: 0.52		87,630
Upper bound: 0.6		64,551
Utility of patients in well health state[a]: 0.8		
Lower bound: 0.7		48,184
Upper bound: 0.9		98,492
Utility of patients with mild MDD[a]: 0.57		
Lower bound: 0.54		74,999
Upper bound: 0.61		70,972
Utility of patients with moderate MDD[a]: 0.52		
Lower bound: 0.49		73,743
Upper bound: 0.56		72,405
Utility of patients with severe MDD[a]: 0.39		
Lower bound: 0.35		72,815
Upper bound: 0.43		77,248

[a] Sensitivity analyses were done around the cost [and health utility] values in the model, which only impact variations in incremental costs [and QALYs], and so only these results are reported.

[b] Cost of PGx testing includes the cost of one regular appointment with a physician for a test request and one counseling appointment with a GP to review the results and assess the treatment plan.

References

1.   Maruf AA, Fan M, Arnold PD, Muller DJ, Aitchison KJ, Bousman CA. Pharmacogenetic Testing Options Relevant to Psychiatry in Canada: Options de tests pharmacogenetiques pertinents en psychiatrie au Canada. Can J Psychiatry. 2020 Aug;65(8):521-30.