On-Line Appendix

The model was run for 105 years with the last 40 years, representing a valid picture of a population with incident and prevalent depression, aged between 20 and 85 years of age, accounted for in the analyses.

Here are some simple case examples of how population estimates presented in table 4 were calculated, and which were based on health service use patterns, recovery rates, and outcomes presented in tables 1 and 2.

Case example 1:

One cohort member presents with an incident episode of depression at age 67. The member consults with a health professional in that year and receives adequate care for depression, meeting guidelines. This member's first lifetime episode of depression lasts 148 days. This individual does not develop a second episode and does not use any other health services for a major depressive episode. The member leaves the model (i.e. is censored) at age 85.

In the total cohort, this member contributed 148 days in the depressed state using health services and 2407 days in the well state.

Case example 2:

Another member presents with an incident episode of major depression at age 48 but does not initially consult. The episode last 147 days, until the individual attempts suicide and is hospitalized for this suicide attempt. This member is in the suicidal health state for 218 days. The individual is then followed and receives health services for depression. The individual has another two episodes in remaining lifetime totaling 505 days. The member leaves the model (i.e. is censored) at age 85.

In the cohort, this individual contributed 147 days in the depressed state not using health services; 505 days in the depressed state while using health services, 218 days in a suicidal state, was hospitalized once due to suicide attempt, and contributed 12635 days in the well state.

 Case example 3:

Another member presents with an incident episode of major depression at age 59. The individual does not seem to respond to health services received which are adequate (follow guidelines). The individual is in a chronic depressed state for 948 days. The individual attempts suicide for which there is a hospitalization. The individual is in a suicidal health state for 182.5 days. The individual dies by suicide following hospitalization at the age of 62.50 years.

In the cohort, this individual is censored at age 62.50 years with suicide after having contributed 148 days to the depressed state; 948 days to the chronic depressed state; 182.5 days to the suicidal state; with 1 hospitalization and 1 suicide attempt. This member did not contribute any days to the well state of the cohort.

Table 1. Parameter estimates from published literature

Variable	Base Case Values	Reference
Health states / Events		
Incidence of major depression	2.9%	40
Persistent major depressive episode into following year	20%	41
Past year attempted suicide among individuals reporting a major depressive episode	7.8%	24
Past year attempted suicide among individuals reporting a major depressive episode not using or receiving adequate mental health care	9.13%	42
Past year attempted suicide among individuals reporting a major depressive episode receiving adequate mental health care	6.80%	42
Risk of repeat suicide attempt following attempt (median estimates) Year 1 Year1 to 4 Year >4	 16% 21%; 23%	43,44
Risk of Suicide in year following attempt (median estimates)	1.8%	45-47
TREATED Major Depression		
Time to 2nd, 3rd major depressive episode (i.e. time to relapse)	132 weeks	48,49
Length of 1st episode	21 weeks	
Length of 2nd episode	20 weeks	
Length of 3rd episode	19 weeks	
Length of 4th episode	21 weeks	
Length of 5th episode	20 weeks	
Probability of persistent major depressive episode in 2nd year	62%	
Probability of persistent major depressive episode in 3rd year	73%	
Probability of persistent major depressive episode in 4th year	84%	
Untreated Major Depression		
Time to 2nd, 3rd untreated major depressive episode (i.e. time to relapse)	48 weeks	48,49
Length of 2nd untreated major depressive episode	17 weeks	48-51
Length of 3rd untreated major depressive episode	29 weeks	
Length of 4th untreated major depressive episode	31 weeks	
Length of 5th - 9th episode untreated major depressive episode	22 weeks	
Probability of 2nd untreated major depressive episode	0.5	52
Probability of 3rd untreated major depressive episode	0.7	
Probability of 4th and 5th untreated major depressive episode	0.9	
Adequate treatment Recovery (one lifetime episode) within year		
GP/FP only, psychiatrist only, GP/FP and psychiatrist, antidepressant	63%	53-55
Other mental health specialist only	54%	54
GP/FP and other mental health specialist; psychiatrist and other mental health specialist; GP/FP and psychiatrist and other mental health specialist and antidepressant	67%	55
Non Adequate Treatment Arm: Recovery		
Not Adequate antidepressant and health service use for mental health reasons with any physician	24% – 30%	54
Not Adequate health service use with other mental health specialist only	25%	54,55
Spontaneous recovery without treatment	30%	23
Relapse among those presenting spontaneous recovery without treatment	44%	23
Length of antidepressant use (median)	365 days	56
Persistent antidepressant use among incident users: 1 month 3 months	 73% 59%	57

6 months	46%	
1 – 2 years	33%	
extrapolated to 3 years	22%	

Table 2. Costs and utilities used in model

Utilities for events/health states[a]	Base case Value		Source or reference
Well/Recovery	0.85		27
Well/Recovery in non-health service users[b]	0.72		
Depressed among health service users (moderate depression)	0.33		58
Dysthymia/chronic depression (partial remission)	0.58		27,58
Suicidal (severe depression)	0.09		61-62
Depressed, non-health service users	0.30		58-60
Dead	0		61
Utility decrement associated with antidepressant use	-0.005		27,62
Costs (in 2013 dollars)			
Health system costs	**Average**	**Range**	
Annual healthcare costs: Healthy/well state (i.e. non depressed and non-suicidal)	$2735	$2141	$3497	63
Per diem hospitalisation cost	$1084		64
Annual healthcare costs: Depression	$3647	$2854	$4662	65
Excess costs associated with antidepressant use	$1980	$426	$2232	32
Annual healthcare costs: Suicidal cases	$8303	$1838	$45 188	66
Healthcare costs: Attempted suicide	$14 229	$2042	$45 909	
Healthcare and related costs: Suicide	$26 270	$10 492	$108 230	
Indirect costs related to lost productivity			
Cost of short term disability	$18 689	$16 693	$20 685	67-69
Absenteeism and presenteeism costs	$2382	0	$27 516	70
Friction cost method: average replacement is 3 months (range 1 and 12 months)	$10 163	$3387	$40 653	66,71
Human capital approach	$729 314	$515 886	$772 406	

[a] Utility values were all based on the EQ-5D-5L
[b] Utility values associated with the well/recovery state are associated with a slightly lower utility given that relapse rates are higher in non-users