

Supplementary Online Content

Josephson CB, Lowerison M, Vallerand I, et al. Association of depression and treated depression with epilepsy and seizure outcomes: a multicohort analysis. *JAMA Neurol.* Published online February 27, 2017. doi:10.1001/jamaneurol.2016.5042

eTable. Hazard of developing depression when adjusting for known risk factors. Incident epilepsy is treated as a time-varying covariate in this Cox proportional hazards regression analysis

eAppendix 1. Read codes identified through a consensus driven process for depression

eAppendix 2. Read codes and multilex codes used to identify treatment for depression

This supplementary material has been provided by the authors to give readers additional information about their work.

ONLINE TABLE:

eTable. Hazard of developing depression when adjusting for known risk factors. Incident epilepsy is treated as a time-varying covariate in this Cox proportional hazards regression analysis.

	Hazard ratio	95%CI	P value
Incident epilepsy	2.04	1.97-2.09	<0.001
Age at index date	1.003	1.003-1.003	<0.001
Female sex	1.73	1.71-1.75	<0.001
Townsend Index	1.11	1.11-1.12	<0.001
Charlson Comorbidity Index	1.19	1.18-1.20	<0.001

*Abbreviations: 95%CI = 95% Confidence interval

**Hazard ratio for age, Townsend Index, and Charlson Comorbidity Index is for each incremental increase in value. Higher values indicate more social deprivation and a larger number of comorbidities.

APPENDICES

Appendix 1. Read codes identified through a consensus driven process for depression

Eu32y [X]Other depressive episodes / [X]Atypical depression / [X]Single episode of masked depression NOS

Eu33z [X]Recurrent depressive disorder, unspecified / [X]Monopolar depression NOS

E11z2 Masked depression

E135. Agitated depression

E1137 Recurrent depression

E2B1. Chronic depression

E112. Single major depressive episode / Agitated depression / Endogenous depression first episode / Endogenous depression first episode / Endogenous depression

E113. Recurrent major depressive episode / Endogenous depression - recurrent

Eu32. [X]Depressive episode / [X]Single episode of depressive reaction / [X]Single episode of psychogenic depression / [X]Single episode of reactive depression

Eu322 [X]Severe depressive episode without psychotic symptoms / [X]Single episode agitated depressn w/out psychotic symptoms / [X]Single episode major depression w/out psychotic symptoms / [X]Single episode vital depression w/out psychotic symptoms

Eu324 [X]Mild depression

Eu325 [X]Major depression, mild

Eu326 [X]Major depression, moderately severe

Eu327 [X]Major depression, severe without psychotic symptoms

Eu32z [X]Depressive episode, unspecified / [X]Depression NOS / [X]Depressive disorder NOS / [X]Prolonged single episode of reactive depression / [X] Reactive depression NOS

Eu33. [X]Recurrent depressive disorder / [X]Recurrent episodes of depressive reaction / [X]Recurrent episodes of psychogenic depression / [X]Recurrent episodes of reactive depression / [X]Seasonal depressive disorder / [X]SAD - Seasonal affective disorder

E1120 Single major depressive episode, unspecified

E1121 Single major depressive episode, mild

E1122 Single major depressive episode, moderate

E1123 Single major depressive episode, severe, without psychosis

E1125 Single major depressive episode, partial or unspec remission

E112z Single major depressive episode NOS

E1130 Recurrent major depressive episodes, unspecified

E1131 Recurrent major depressive episodes, mild

E1132 Recurrent major depressive episodes, moderate

E1133 Recurrent major depressive episodes, severe, no psychosis

E1135 Recurrent major depressive episodes, partial/unspec remission

E113z Recurrent major depressive episode NOS

E11y2 Atypical depressive disorder

E291. Prolonged depressive reaction

E2B. Depressive disorder NEC

Eu320 Mild depressive episode

Eu321 Moderate depressive episode

Eu330 Recurrent depressive disorder, current episode mild

Eu331 Recurrent depressive disorder, current episode moderate

Eu33y Other recurrent depressive disorders

Eu3y1 Other recurrent mood affective disorders / Recurrent brief depressive episodes

E130. Reactive depressive psychosis / Psychotic reactive depression

E1134 Recurrent major depressive episodes, severe, with psychosis

Eu323 [X]Severe depressive episode with psychotic symptoms / [X]Single episode of major depression and psychotic symptoms / [X]Single episode of psychogenic depressive psychosis / [X]Single episode of psychotic depression / [X]Single episode of reactive depressive psychosis

Eu328 [X]Major depression, severe with psychotic symptoms

E1124 Single major depressive episode, severe, with psychosis

Appendix 2. Read codes and multilex codes used to identify treatment for depression

'91380998'	Citalopram tabs 20mg 28 tablet(s)
'91380997'	Citalopram tabs 10mg 28 tablet(s)
'91380996'	Citalopram tabs 40mg 28 tablet(s)
'91671998'	Escitalopram tabs 10mg 28 tablet(s)
'98561998'	Escitalopram tabs 20mg 28 tablet(s)
'91395998'	CITALOPRAM 20mg tablets
'87663998'	Escitalopram tabs 5mg 28 tablet(s)
'88285998'	ESCITALOPRAM 10mg tablets
'91395997'	CITALOPRAM 10mg tablets
'92174998'	Citalopram oral drops 40mg/ml 15 mls
'91395996'	CITALOPRAM 40mg tablets
'98088998'	ESCITALOPRAM 20mg tablets
'87662998'	ESCITALOPRAM 5mg tablets
'92172998'	CITALOPRAM 40mg/mL oral drops

'85971998'	Escitalopram oral drops 10mg/ml 28 mls
'95704990'	Citalopram tabs 20mg 28 tablet(s)
'95705990'	Citalopram tabs 10mg 28 tablet(s)
'95703990'	Citalopram tabs 40mg 28 tablet(s)
'85970998'	ESCITALOPRAM 10mg/mL oral dps
'95632990'	Citalopram tabs 20mg 28 tablet(s)
'82791998'	Escitalopram oral drops 20mg/ml 15 mls
'95334990'	Citalopram tabs 20mg 28 tablet(s)
'95666990'	Citalopram tabs 40mg 28 tablet(s)
'95667990'	Citalopram tabs 20mg 28 tablet(s)
'95668990'	Citalopram tabs 10mg 28 tablet(s)
'95421990'	Citalopram tabs 10mg 28 tablet(s)
'95335990'	Citalopram tabs 10mg 28 tablet(s)
'95633990'	Citalopram tabs 10mg 28 tablet(s)
'94894990'	Citalopram tabs 20mg 28 tablet(s)

'95333990'	Citalopram tabs 40mg 28 tablet(s)
'95420990'	Citalopram tabs 20mg 28 tablet(s)
'95418990'	Citalopram tabs 40mg 28 tablet(s)
'94936990'	Citalopram tabs 40mg 28 tablet(s)
'82790998'	ESCITALOPRAM 20mg/mL oral dps
'95270990'	Citalopram tabs 20mg 28 tablet(s)
'95631990'	Citalopram tabs 40mg 28 tablet(s)
'94895990'	Citalopram tabs 10mg 28 tablet(s)
'94937990'	Citalopram tabs 20mg 28 tablet(s)
'94893990'	Citalopram tabs 40mg 28 tablet(s)
'95271990'	Citalopram tabs 10mg 28 tablet(s)
'87251998'	CITALOPRAM 10mg tablets
'93948990'	Citalopram tabs 10mg 28 tablet(s)
'93994990'	Citalopram tabs 10mg 28 tablet(s)
'93996990'	Citalopram tabs 20mg 28 tablet(s)

'94880990'	Citalopram tabs 40mg 28 tablet(s)
'95269990'	Citalopram tabs 40mg 28 tablet(s)
'91671998'	Escitalopram tabs 10mg 28 tablet(s)
'98561998'	Escitalopram tabs 20mg 28 tablet(s)
'87663998'	Escitalopram tabs 5mg 28 tablet(s)
'88285998'	ESCITALOPRAM 10mg tablets
'98088998'	ESCITALOPRAM 20mg tablets
'87662998'	ESCITALOPRAM 5mg tablets
'85971998'	Escitalopram oral drops 10mg/ml 28 mls
'85970998'	ESCITALOPRAM 10mg/mL oral dps
'82791998'	Escitalopram oral drops 20mg/ml 15 mls
'82790998'	ESCITALOPRAM 20mg/mL oral dps
'93173998'	Sertraline tabs 50mg 28 tablet(s)
'93173997'	Sertraline tabs 100mg 28 tablet(s)
'93174998'	SERTRALINE 50mg tablets

'93174997'	SERTRALINE 100mg tablets
'86159998'	SERTRALINE
'93842990'	Sertraline tabs 100mg 28 tablet(s)
'93732990'	Sertraline tabs 100mg 28 tablet(s)
'93749990'	Sertraline tabs 50mg 28 tablet(s)
'92729990'	Sertraline tabs 100mg 28 tablet(s)
'92728990'	Sertraline tabs 50mg 28 tablet(s)
'96493998'	Fluvoxamine tabs 50mg 60 tablet(s)
'96493997'	Fluvoxamine tabs 100mg 30 tablet(s)
'96492998'	FLUVOXAMINE MALEATE 50mg tabs
'96492997'	FLUVOXAMINE MALEATE 100mg tabs
'96810989'	Fluvoxamine tabs 100mg 30 tablet(s)
'96345989'	Fluvoxamine tabs 100mg 30 tablet(s)
'93490998'	Paroxetine tabs 20mg 30 tablet(s)
'93490997'	Paroxetine tabs 30mg 30 tablet(s)

'93489998'	PAROXETINE 20mg tablets
'93489997'	PAROXETINE 30mg tablets
'93490996'	Paroxetine sf oral susp 20mg/10ml 150 mls
'85382998'	Paroxetine tabs 10mg 28 tablet(s)
'93489996'	PAROXETINE 10mg/5mL s/f liq
'84807998'	PAROXETINE 10mg tablets
'96087990'	Paroxetine tabs 20mg 30 tablet(s)
'95051990'	Paroxetine tabs 20mg 30 tablet(s)
'95578990'	Paroxetine tabs 20mg 30 tablet(s)
'95332990'	Paroxetine tabs 20mg 30 tablet(s)
'95350990'	Paroxetine tabs 20mg 30 tablet(s)
'95007990'	Paroxetine tabs 30mg 30 tablet(s)
'95028990'	Paroxetine tabs 30mg 30 tablet(s)
'93487990'	Paroxetine tabs 30mg 30 tablet(s)
'94447998'	Fluoxetine caps 20mg 30 capsule(s)

'94490998'	FLUOXETINE 20mg capsules
'94447997'	Fluoxetine oral soln 20mg/5ml 70 mls
'94447996'	Fluoxetine caps 60mg 30 capsule(s)
'90814998'	FLUOXETINE 20mg capsules
'94490997'	FLUOXETINE 20mg/5mL oral liq
'96729990'	Fluoxetine caps 20mg 30 capsule(s)
'84403998'	Fluoxetine sf oral soln 20mg/5ml 70 mls
'94490996'	FLUOXETINE 60mg capsules
'82367998'	FLUOXETINE tabs 10mg
'96651990'	Fluoxetine caps 20mg 30 capsule(s)
'96709990'	Fluoxetine caps 20mg 30 capsule(s)
'90159998'	FLUOXETINE 20mg capsules
'96654990'	Fluoxetine caps 20mg 30 capsule(s)
'99592998'	FLUOXETINE 20mg capsules
'95610990'	Fluoxetine caps 60mg 30 capsule(s)

'90766998'	FLUOXETINE 20mg/5mL oral liq
'96674990'	Fluoxetine caps 20mg 30 capsule(s)
'96281990'	Fluoxetine caps 20mg 30 capsule(s)
'84436998'	Fluoxetine hydrochloride product
'96272990'	Fluoxetine caps 20mg 30 capsule(s)
'96606990'	Fluoxetine caps 20mg 30 capsule(s)
'96659990'	Fluoxetine caps 20mg 30 capsule(s)
'95388990'	Fluoxetine caps 20mg 30 capsule(s)
'93066990'	Fluoxetine caps 20mg 30 capsule(s)
'95813990'	Fluoxetine oral soln 20mg/5ml 70 mls
'96644990'	Fluoxetine caps 20mg 30 capsule(s)
'95820990'	Fluoxetine syrp 20mg/5ml 70 mls
'95426990'	Fluoxetine oral soln 20mg/5ml 70 mls
'96647990'	Fluoxetine caps 20mg 30 capsule(s)
'86998998'	Duloxetine gastro-res cap 60mg 84 capsule(s)

'86999998'	Duloxetine gastro-res cap 30mg 28 capsule(s)
'87337998'	Duloxetine gastro-res cap 20mg 56 capsule(s)
'87336998'	Duloxetine gastro-res cap 40mg 56 capsule(s)
'86996998'	DULOXETINE 60mg g/r capsules
'86997998'	DULOXETINE 30mg g/r capsules
'87335998'	DULOXETINE 20mg g/r capsules
'87334998'	DULOXETINE 40mg g/r capsules
'88776998'	Venlafaxine mr cap 75mg 14 capsule(s)
'88776997'	Venlafaxine mr cap 150mg 14 capsule(s)
'98336998'	Venlafaxine tabs 37.5mg 28 tablet(s)
'98336997'	Venlafaxine tabs 75mg 28 tablet(s)
'88755998'	VENLAFAXINE 75mg m/r capsules
'88755997'	VENLAFAXINE 150mg m/r capsules
'83159998'	Venlafaxine mr tab 150mg 28 tablet(s)
'83160998'	Venlafaxine mr tab 75mg 28 tablet(s)

'99896998'	VENLAFAXINE 37.5mg tablets
'99896997'	VENLAFAXINE 75mg tablets
'82961998'	Venlafaxine mr tab 225mg 30 tablet(s)
'98336996'	Venlafaxine tabs 50mg 42 tablet(s)
'82963998'	VENLAFAXINE 75mg m/r tablets
'82962998'	VENLAFAXINE 150mg m/r tablets
'82875998'	VENLAFAXINE 75mg m/r capsules
'82874998'	VENLAFAXINE 150mg m/r capsules
'82959998'	VENLAFAXINE 225mg m/r tablets
'83150998'	VENLAFAXINE 75mg m/r capsules
'83158998'	VENLAFAXINE 75mg m/r tablets
'83149998'	VENLAFAXINE 150mg m/r capsules
'83205998'	VENLAFAXINE 75mg m/r capsules
'83204998'	VENLAFAXINE 150mg m/r capsules
'99896996'	VENLAFAXINE 50mg tablets

'83157998'	VENLAFAXINE 150mg m/r tablets
'86431998'	VENLAFAXINE
'81506998'	Venlafaxine mr tab 37.5mg 30 tablet(s)
'83163998'	VENLAFAXINE 37.5mg tablets
'83218998'	VENLAFAXINE 75mg m/r capsules
'83265998'	VENLAFAXINE 75mg m/r capsules
'83162998'	VENLAFAXINE 75mg m/r tablets
'83264998'	VENLAFAXINE 150mg m/r capsules
'81505998'	VENLAFAXINE 37.5mg m/r tablets
'83217998'	VENLAFAXINE 150mg m/r capsules
'81930998'	Venlafaxine product
'81929998'	Venlafaxine product
'83114998'	VENLAFAXINE 150mg m/r capsules
'83115998'	VENLAFAXINE 75mg m/r capsules
'83075998'	VENLAFAXINE 75mg m/r capsules

'82540998'	Venlafaxine product
'88717998'	Mirtazapine tabs 30mg 30 tablet(s)
'86982998'	Mirtazapine tabs 15mg 28 tablet(s)
'86981998'	Mirtazapine tabs 45mg 30 tablet(s)
'87687998'	Mirtazapine orodisp tab 15mg 6 tablet(s)
'87946998'	Mirtazapine orodisp tab 30mg 30 tablet(s)
'87686998'	Mirtazapine orodisp tab 45mg 30 tablet(s)
'88715998'	MIRTAZAPINE 30mg tablets
'87945998'	MIRTAZAPINE 30mg disp tabs
'87685998'	MIRTAZAPINE 15mg disp tabs
'87684998'	MIRTAZAPINE 45mg disp tabs
'87430998'	MIRTAZAPINE
'94847990'	Mirtazapine tabs 30mg 28 tablet(s)
'94035990'	Mirtazapine tabs 45mg 28 tablet(s)
'94400990'	Mirtazapine tabs 45mg 28 tablet(s)

'94401990'	Mirtazapine tabs 15mg 28 tablet(s)
'92992990'	Mirtazapine orodisp tab 45mg 30 tablet(s)
'92814990'	Mirtazapine tabs 15mg 28 tablet(s)
'92979990'	Mirtazapine orodisp tab 45mg 30 tablet(s)
'93178990'	Mirtazapine orodisp tab 45mg 30 tablet(s)
'94037990'	Mirtazapine tabs 15mg 28 tablet(s)
'92981990'	Mirtazapine orodisp tab 15mg 30 tablet(s)
'92980990'	Mirtazapine orodisp tab 30mg 30 tablet(s)
'93180990'	Mirtazapine orodisp tab 15mg 30 tablet(s)
'94797990'	Mirtazapine tabs 30mg 28 tablet(s)
'92906990'	Mirtazapine orodisp tab 15mg 30 tablet(s)
'92454990'	Mirtazapine orodisp tab 15mg 30 tablet(s)
'92903990'	Mirtazapine orodisp tab 45mg 30 tablet(s)
'92986990'	Mirtazapine orodisp tab 45mg 30 tablet(s)
'92988990'	Mirtazapine orodisp tab 15mg 30 tablet(s)

'94250990'	Mirtazapine tabs 15mg 28 tablet(s)
'92309998'	Bupropion mr tab 150mg 60 tablet(s)
'92311998'	BUPROPION HCL 150mg m/r tabs
7L1a.00	Cognitive behavioural therapy
7L1a000	Cognitive behavioural therapy by unidisciplinary team
7L1a100	Cognitive behavioural therapy by multidisciplinary team
7L1ay00	Other specified cognitive behavioural therapy
7L1az00	Cognitive behavioural therapy NOS
8G1..00	General psychotherapy
8G10.00	Psychotherapy - behavioural
8G11.00	Psychotherapy - cognitive
8G12.00	Psychotherapy - psychodynamic
8G13.00	Cognitive-behaviour therapy
8G14.00	Cognitive analytic therapy
8G15.00	Computerised cognitive behavioural therapy

Z5...00	Psychotherapy
Z52..00	Cognitive and behavioural therapy
Z521.00	Cognitive - behaviour therapy
Z521.11	CBT - Cognitive - behaviour therapy
Z521.12	Cognitive-behavioural therapy approach
Z521.13	Cognitive-behaviour therapy
Z521100	Generic cognitive behavioural therapy
Z522.00	Behavioural psychotherapy
Z522.11	Behaviour therapy
Z522.13	Cognitive therapy approach
Z522.14	Cognitive approach
Z522.16	Structural psychotherapy
Z4I..00	Psychodynamic interventions relating to emotions
Z4I..11	Psychodynamic interventions relating to feelings
Z5A..00	Psychoanalytic and psychodynamic therapy

Z5A..11	Psychoanalytical - psychodynamic therapy
Z5A..12	Explorative psychotherapy
Z5A3.00	Psychodynamic psychotherapy
Z5A3100	Long-term psychodynamic psychotherapy
Z5A3400	Psychodynamic-interpersonal psychotherapy
Z5A4.00	Brief focal psychodynamic therapy
8G9Z.00	Other psychotherapy NOS
Z523.00	Cognitive therapy
Z523.11	Cognitive therapy approach
Z523.12	Cognitive approach
Z523100	Beck's cognitive therapy
Z523200	Rational emotive therapy
Z523211RET	Rational emotive therapy
Z523300	Cognitive restructuring
