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Evid Based Ment Health

Supplementary material for:

The prevalence of depression and anxiety in people with inflammatory bowel disease and associated healthcare use: population-based cohort study

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sTable 1: Read codes used to identify inflammatory bowel disease

Ulcerative colitis		
Read V2 Code	**Term ID**	**Description**
J41..	All	Ulcerative colitis and/or proctitis
J410.	All	Ulcerative proctocolitis
J4100	All	Ulcerative ileocolitis
J4101	All	Ulcerative colitis
J4102	All	Ulcerative rectosigmoiditis
J4103	All	Ulcerative proctitis
J4104	All	Exacerbation of ulcerative colitis
J410z	All	Ulcerative proctocolitis NOS
J411.	All	Ulcerative (chronic) enterocolitis
J412.	All	Ulcerative (chronic) ileocolitis
J413.	All	Ulcerative pancolitis
N0454	All	Juvenile arthritis in ulcerative colitis
N0310	All	Arthropathy in ulcerative colitis
Read CTV3 Code	**Term ID**	**Description**
XE0ag	All	Ulcerative colitis
XaZ2j	All	Left sided ulcerative colitis
XaYzX	All	Ulcerative pancolitis
XaK6E	All	Exacerbation of ulcerative colitis
J410.	All	Ulcerative proctocolitis
J4100	All	Ulcerative ileocolitis
J410z	All	Ulcerative proctocolitis NOS
Jyu41	All	[X]Other ulcerative colitis
Crohn's disease		
Read V2 Code	**Term ID**	**Description**
J40..	All	Regional enteritis- Crohn's disease
J400.	All	Regional enteritis of the small bowel
J4002	All	Crohn's disease of the termnal ileum
J4003	All	Crohn's disease of the ileum unspecified
J4004	All	Crohn's disease of the ileum NOS
J4005	All	Exacerbation of Crohn's disease of small intestine
J400z	All	Crohn's disease of the small bowel NOS
J40..	All	Crohn's disease
J4012	All	Exacerbation of Crohn's disease of large intestine
J401z	All	Crohn's disease of the largel bowel NOS
J402.	All	Regional ileocolitis
J40z.	All	Crohn's disease NOS
Read CTV3 Code	**Term ID**	**Description**
XE2QL	All	Crohn's disease
Xa0lh	All	Regional enteritis
X302r	All	Crohn's jejunitis
X302t	All	Crohn's ileitis

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J4003	All	Crohn's disease of the ileum unspecified
J4004	All	Crohn's disease of the ileum NOS
J4002	All	Crohn's disease of terminal ileum
J400.	All	Regional enteritis of small bowel
XaK6C	All	Exacerbation of Crohn's disease of small intestine
J400z	All	Crohn's disease of the small bowel NOS
J401.	All	Regional enteritis of the large bowel
XE0af	All	Crohn's disease of the large bowel NOS
XaK6D	All	Exacerbation of Crohn's disease of large intestine
J40z.	All	Regional enteritis NOS
J4010	All	Crohn's colitis
J4011	All	Crohn's proctitis
X3050	All	Perianal Crohn's disease
Jyu40	All	[X]Other Crohn's disease

sTable 2. Algorithms used to identify anxiety episodes, depression episodes, and recurrent major depression. Expressions in capitals equate to Boolean expressions.

Clinical entity	ICD 10 code	Definition
Anxiety	F41	Any coded anxiety episode AND concurrent treatment for anxiety
Depressive episode	F32	Any coded depressive episode AND concurrent treatment for depression
Recurrent depressive disorder	F33	(Any historical code* for a depressive episode AND current treatment for depression) OR Any code for recurrent depressive disorder
Anxiety treatments**	NA	SSRIs, anxiolytics, counselling, CBT, and psychotherapy
Depression treatments	NA	SSRIs, TCAs, MAOIs, counselling, CBT, and psychotherapy

*More than 1 year ago. SSRIs = selective serotonin reuptake inhibitors, TCA = tricyclic antidepressants, MAOI = monoamine oxidase inhibitors, CBT = cognitive behavioural therapy. ** TCS were not included in the list of anxiety treatments used for case finding. Whilst they are indicated for use in anxiety this make indication makes up only a small proportion of TCA prescribing (https://doi.org/10.1136/bmj.j603). TCAs are also prescribed in people with functional gastrointestinal disorders which are more common in people with IBD. We therefore did not consider TCA prescriptions specific enough for this purpose.

Supplementary table S3. Read codes used to identify anxiety episodes.

Read V2 Code	Term ID	Description
E200.	All	Anxiety states
E2000	All	Anxiety state unspecified
E2001	All	Panic disorder
E2002	All	Generalised anxiety disorder
E2003	All	Anxiety with depression
E2004	All	Chronic anxiety
E2005	All	Recurrent anxiety
E200z	All	Anxiety state NOS
Eu41.	All	[X]Other anxiety disorders
Eu410	All	[X]Panic disorder [episodic paroxysmal anxiety]
Eu411	All	[X]Generalized anxiety disorder
Eu412	All	[X]Mixed anxiety and depressive disorder
Eu413	All	[X]Other mixed anxiety disorders
Eu41y	All	[X]Other specified anxiety disorders
Eu41z	All	[X]Anxiety disorder, unspecified
Read CTV3 Code	**Term ID**	**Description**
E200.	All	Anxiety disorder
XE1Y7	All	Panic disorder
Eu410	All	[X]Panic disorder [episodic paroxysmal anxiety]
E2002	All	Generalised anxiety disorder
X00Sb	All	Mixed anxiety and depressive disorder
X00RP	All	Organic anxiety disorder
E2004	All	Chronic anxiety
E2005	All	Recurrent anxiety
E200z	All	Anxiety state NOS
X00Sc	All	Anxiety hysteria
Eu41.	All	[X]Other anxiety disorders
Eu413	All	[X]Other mixed anxiety disorders
Eu41z	All	[X]Anxiety disorder, unspecified
XE1Zj	All	[X]Other specified anxiety disorders

sTable 4. Read codes used to identify depression episodes.

Read V2 Code	Term ID	Description
E0013	All	Presenile dementia with depression
E0021	All	Senile dementia with depression
E112.	All	Single major depressive episode
E1120	All	Single major depressive episode, unspecified
E1121	All	Single major depressive episode, mild
E1122	All	Single major depressive episode, moderate
E1123	All	Single major depressive episode, severe, without mention of psychosis
E1124	All	Single major depressive episode, severe, with psychosis
E1125	All	Single major depressive episode, in partial or unspecified remission
E1126	All	Single major depressive episode, in full remission
E112z	All	Single major depressive episode NOS
E113.	All	Recurrent major depressive episode
E1130	All	Recurrent major depressive episodes, unspecified
E1131	All	Recurrent major depressive episodes, mild
E1132	All	Recurrent major depressive episodes, moderate
E1133	All	Recurrent major depressive episodes, severe, without mention of psychosis
E1134	All	Recurrent major depressive episodes, severe, with psychosis
E1137	All	Recurrent depression
E113z	All	Recurrent major depressive episode NOS
E118.	All	Seasonal affective disorder
E11y2	All	Atypical depressive disorder
E11z2	All	Masked depression
E130.	All	Reactive depressive psychosis
E135.	All	Agitated depression
E2003	All	Anxiety with depression
E291.	All	Prolonged depressive reaction
E2B..	All	Depressive disorder NEC
E2B1.	All	Chronic depression
E2B0.	All	Postviral depression
Eu204	All	[X]Post-schizophrenic depression
Eu251	All	[X]Schizoaffective disorder, depressive type
Eu32.	All	[X]Depressive episode
Eu320	All	[X]Mild depressive episode
Eu321	All	[X]Moderate depressive episode
Eu322	All	[X]Severe depressive episode without psychotic symptoms
Eu323	All	[X]Severe depressive episode with psychotic symptoms
Eu324	All	[X]Mild depression
Eu325	All	[X]Major depression, mild
Eu326	All	[X]Major depression, moderately severe
Eu327	All	[X]Major depression, severe without psychotic symptoms
Eu328	All	[X]Major depression, severe with psychotic symptoms
Eu32y	All	[X]Other depressive episodes

Eu32z	All	[X]Depressive episode, unspecified
Eu33.	All	[X]Recurrent depressive disorder
Eu330	All	[X]Recurrent depressive disorder, current episode mild
Eu331	All	[X]Recurrent depressive disorder, current episode moderate
Eu332	All	[X]Recurrent depressive disorder, current episode severe without psychotic symptoms
Eu333	All	[X]Recurrent depressive disorder, current episode severe with psychotic symptoms
Eu334	All	[X]Recurrent depressive disorder, currently in remission
Eu33y	All	[X]Other recurrent depressive disorders
Eu33z	All	[X]Recurrent depressive disorder, unspecified
Eu412	All	[X]Mixed anxiety and depressive disorder
Read CTV3 Code	**Term ID**	**Description**
X00Sb	All	Mixed anxiety and depressive disorder
X00SO	All	Depressive disorder
X761L	All	Seasonal affective disorder
Xa0wV	All	Recurrent brief depressive disorder
X00SQ	All	Agitated depression
XE1YC	All	Reactive depression
X00SR	All	Endogenous depression
X00SS	All	Endogenous depression first episode
XE1Y0	All	Single major depressive episode
E1120	All	Single major depressive episode, unspecified
E1120	All	Single major depressive episode, unspecified
E1121	All	Single major depressive episode, mild
E1122	All	Single major depressive episode, moderate
E1123	All	Single major depressive episode, severe, without mention of psychosis
E1124	All	Single major depressive episode, severe, with psychosis
XaX53	All	Single major depressive episode, severe, with psychosis, psychosis in remission
E1125	All	Single major depressive episode, in partial or unspecified remission
E1126	All	Single major depressive episode, in full remission
E112z	All	Single major depressive episode NOS
XM1GC	All	Endogenous depression - recurrent
E1130	All	Recurrent major depressive episodes, unspecified
E1131	All	Recurrent major depressive episodes, mild
E1132	All	Recurrent major depressive episodes, moderate
E1133	All	Recurrent major depressive episodes, severe, without mention of psychosis
E1134	All	Recurrent major depressive episodes, severe, with psychosis
E1135	All	Recurrent major depressive episodes, in partial or unspecified remission
E1136	All	Recurrent major depressive episodes, in full remission
E113z	All	Recurrent major depressive episode NOS
X00SU	All	Masked depression
E11y2	All	Atypical depressive disorder
X00S8	All	Post-schizophrenic depression
XSEGJ	All	Major depressive disorder
XSKr7	All	Cotard syndrome

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XSGol	All	Moderate major depression
XSGok	All	Mild major depression
XSGom	All	Severe major depression without psychotic features
XSGon	All	Severe major depression with psychotic features
E1137	All	Recurrent depression
E130.	All	Reactive depressive psychosis
E2B..	All	Depressive disorder NEC
E2B0.	All	Postviral depression
E2B1.	All	Chronic depression
Eu320	All	[X]Mild depressive episode
Eu321	All	[X]Moderate depressive episode
Eu331	All	[X]Recurrent depressive disorder, current episode moderate
XE1Y1	All	Recurrent major depressive episodes
XE1ZY	All	[X]Severe depressive episode without psychotic symptoms
XE1ZZ	All	[X]Severe depressive episode with psychotic symptoms
XE1Za	All	[X]Other depressive episodes
XE1Zb	All	[X]Depressive episode, unspecified
XE1Zd	All	[X]Recurrent depressive disorder, current episode severe without psychotic symptoms
XE1Ze	All	[X]Recurrent depressive disorder, current episode severe with psychotic symptoms
XE1Zf	All	[X]Recurrent depressive disorder, unspecified
XaB9J	All	Depression NOS
XaCHr	All	[X] Single episode agitated depression without psychotic symptoms
XaCHs	All	[X] Single episode major depression without psychotic symptoms
XaCIs	All	Mild depression
XaCIt	All	Moderate depression
XaCIu	All	Severe depression
E0013	All	Presenile dementia with depression
E0021	All	Senile dementia with depression

sTable 5. Read codes used to identify a diagnosis of recurrent major depression.

Read V2 Code	Term ID	Description
E113.	All	Recurrent major depressive episode
E1130	All	Recurrent major depressive episodes, unspecified
E1131	All	Recurrent major depressive episodes, mild
E1132	All	Recurrent major depressive episodes, moderate
E1133	All	Recurrent major depressive episodes, severe, without mention of psychosis
E1134	All	Recurrent major depressive episodes, severe, with psychosis
E1135	All	Recurrent major depressive episodes, in partial or unspecified remission
E1136	All	Recurrent major depressive episodes, in full remission
E1137	All	Recurrent depression
E113z	All	Recurrent major depressive episode NOS
E2B1.	All	Chronic depression
Eu32A	All	[X]Recurrent major depressive episodes, severe, with psychosis, psychosis in remission
Eu33.	All	[X]Recurrent depressive disorder
Eu330	All	[X]Recurrent depressive disorder, current episode mild
Eu331	All	[X]Recurrent depressive disorder, current episode moderate
Eu332	All	[X]Recurrent depressive disorder, current episode severe without psychotic symptoms
Eu333	All	[X]Recurrent depressive disorder, current episode severe with psychotic symptoms
Eu334	All	[X]Recurrent depressive disorder, currently in remission
Eu33y	All	[X]Other recurrent depressive disorders
Eu33z	All	[X]Recurrent depressive disorder, unspecified

Read CTV3 Code	Term ID	Description
Xa0wV	All	Recurrent brief depressive disorder
XM1GC	All	Endogenous depression - recurrent
E1130	All	Recurrent major depressive episodes, unspecified
E1131	All	Recurrent major depressive episodes, mild
E1132	All	Recurrent major depressive episodes, moderate
E1133	All	Recurrent major depressive episodes, severe, without mention of psychosis
E1134	All	Recurrent major depressive episodes, severe, with psychosis
XaX54	All	Recurrent major depressive episodes, severe, with psychosis, psychosis in remission
E1135	All	Recurrent major depressive episodes, in partial or unspecified remission
E1136	All	Recurrent major depressive episodes, in full remission
E113z	All	Recurrent major depressive episode NOS
E1137	All	Recurrent depression
E2B1.	All	Chronic depression
Eu331	All	[X]Recurrent depressive disorder, current episode moderate
XE1Y1	All	Recurrent major depressive episodes
XE1Zd	All	[X]Recurrent depressive disorder, current episode severe without psychotic symptoms
XE1Ze	All	[X]Recurrent depressive disorder, current episode severe with psychotic symptoms
XE1Zf	All	[X]Recurrent depressive disorder, unspecified

sTable 6. Read codes used to identify non-medication based treatments for depression or anxiety.

Counselling		
Read V2 Code	**Term ID**	**Description**
67...	11	Counselling/health education
671..	All	Counselling - general
6712.	All	Counselling offered
6714.	All	Counselling carried out
6715.	All	Counselling by other agency
6716.	All	Counselling of benefit
6717.	All	Counselling of no benefit
671Z.	All	Counselling - general NOS
672..	All	Person counselled
6721.	All	Patient counselled
6722.	All	Family counselled
673..	All	Person counselled by
6731.	All	Counselled by a doctor
6732.	All	Counselled by a nurse
6733.	All	Counselled by a health visitor
6735.	All	Counselled by a social worker
6736.	All	Counselled by a counsellor
6737.	All	Counselled by a vol. worker
673Z.	All	Counselled by person NOS
8M8..	All	Counselling requested
9NJ1.	All	In-house counselling
9NJR.	All	In-house counselling first appointment
9NJT.	All	In-house counselling follow-up appointment
Read CTV3 Code	**Term ID**	**Description**
X71Ec	All	Counselling
X71Ep	All	Coping strategy counselling
XaEC1	All	Phobia counselling
XaD27	All	Family counselling
6779.	All	Psychological counselling
XaECG	All	Anxiety counselling
XaECF	All	Self-esteem counselling
XaI8j	All	Stress counselling
672..	All	Person counselled
6721.	All	Patient counselled
6722.	All	Family counselled
XE1TI	All	Person counselled by
6715.	All	Counselling by other agency
6731.	All	Counselled by a doctor
6732.	All	Counselled by a nurse
6733.	All	Counselled by a health visitor
6735.	All	Counselled by a social worker

6736.	All	Counselled by a counsellor
6737.	All	Counselled by voluntary worker
673Z.	All	Counselled by person NOS
Xa07L	All	Counselled by member of primary health care team
9N2B.	All	Seen by counsellor
XaAS4	All	Seen by mental health counsellor
XaBT1	All	Refer to counsellor
XaAfJ	All	Referral to mental health counsellor
9NJ1.	All	In-house counselling
XaLnp	All	In-house counselling first appointment
XaLnr	All	In-house counselling follow-up appointment
671..	All	Counselling - general
6712.	All	Counselling offered
6714.	All	Counselling carried out
6716.	All	Counselling of benefit
6717.	All	Counselling of no benefit
671Z.	All	Counselling - general NOS
XaAOd	All	Under care of counsellor
XaAOh	All	Under care of mental health counsellor

Cognitive Behavioural Therapy

Read V2 Code	Term ID	Description
8G13.	All	Cognitive-behaviour therapy
8G130	All	Cognitive behavioural therapy parenting programme
8G131	All	CBTp - cognitive behavioural therapy for psychosis
7L1a.	All	Cognitive behavioural therapy
7L1a0	All	Cognitive behavioural therapy by unidisciplinary team
7L1a1	All	Cognitive behavioural therapy by multidisciplinary team
7L1ay	All	Other specified cognitive behavioural therapy
7L1az	All	Cognitive behavioural therapy NOS
8G510	All	Group cognitive behavioural therapy
8G15.	All	Computerised cognitive behavioural therapy
8HlK.	All	Referral for cognitive behavioural therapy

Read CTV3 Code	Term ID	Description
Ub0qp	All	Cognitive and behavioural therapy
XaABO	All	Cognitive - behaviour therapy
Xad6J	All	Cognitive behavioural therapy for psychosis
Xaaa6	All	Cognitive behavioural therapy parenting programme
XaQC0	All	Guided self help cognitive behavioural therapy
XaKzQ	All	Computerised cognitive behavioural therapy
Xa8I9	All	Generic cognitive behavioural therapy
XaM2I	All	Cognitive behavioural therapy by unidisciplinary team
XaM2J	All	Cognitive behavioural therapy by multidisciplinary team
XaM2K	All	Other specified cognitive behavioural therapy
XaM2L	All	Cognitive behavioural therapy NOS

XaR2j	All	Referral to cognitive behavioural therapist
XaR5D	All	Referral for cognitive behavioural therapy
XaYgB	All	Referral for high intensity cognitive behavioural therapy

Psychotherapy		
Read V2 Code	**Term ID**	**Description**
8G...	All	Psychotherapy
8G1..	All	General psychotherapy
8G10.	All	Psychotherapy - behavioural
8G100	All	Behavioural activation therapy
8G101	All	Dialectical behaviour therapy
8G102	All	Behavioural parent training
8G11.	All	Psychotherapy - cognitive
8G12.	All	Psychotherapy - psychodynamic
8G120	All	Short-term psychodynamic therapy
8G121	All	Dynamic interpersonal therapy
8G122	All	Focal psychodynamic therapy
8G14.	All	Cognitive analytic therapy
8G15.	All	Computerised cognitive behavioural therapy
8G16.	All	Interpersonal psychotherapy
8G18.	All	Cognitive stimulation therapy
9NlK.	All	Seen by psychotherapist
9NlK0	All	Seen by trainee psychotherapist
8HHT.	All	Referral to psychotherapist
ZV57D	All	[V]Psychotherapy, not elsewhere classified
ZV673	All	[V]Psychotherapy or other treatment for mental disorder follow-up
8G9Z.	All	Other psychotherapy NOS
8G9..	All	Other psychotherapy
Read CTV3 Code	**Term ID**	**Description**
X71bp	All	Psychotherapy
XaaUO	All	Cognitive rehabilitation therapy
XaItc	All	Brief solution focused psychotherapy
Xa8IG	All	Psychoanalytic and psychodynamic therapy
Xa8IJ	All	Long-term exploratory psychotherapy
3841.	All	Psychoanalysis
XaA8V	All	Generic psychoanalysis
XaA8W	All	Independent psychoanalysis
XaA8T	All	Kleinian psychoanalysis
XaA8U	All	Bion-based group psychoanalysis
XaA8X	All	Classical psychoanalysis
XaA8Y	All	Lacanian psychoanalysis
XaA8g	All	Group psychoanalysis
XaA8U	All	Bion-based group psychoanalysis
384Z.	All	Psychological analysis NOS
Xa8IM	All	Jungian-based therapy

Xa8IN	All	Generic Jungian-based therapy
Xa8IP	All	Analytical psychology
Xa8IR	All	Long-term psychodynamic psychotherapy
XaA8Z	All	Developmental psychodynamic psychotherapy
XaA8c	All	Supportive expressive psychodynamic psychotherapy
XaA8d	All	Psychodynamic-interpersonal psychotherapy
XaEVq	All	Psychodynamic psychotherapy
Xad7C	All	Focal psychodynamic therapy
Xa8IR	All	Long-term psychodynamic psychotherapy
XaA8Z	All	Developmental psychodynamic psychotherapy
XaA8c	All	Supportive expressive psychodynamic psychotherapy
XaA8d	All	Psychodynamic-interpersonal psychotherapy
Xa8II	All	Short-term psychodynamic therapy
XaXuc	All	Dynamic interpersonal therapy
XaA9g	All	Specific task orientated psychotherapy
XE0iL	All	Psychotherapy/sociotherapy
8G9Z.	All	Other psychotherapy NOS
8G9..	All	Other psychotherapy

sTable 7. Medications analysed by medication class. SSRI = selective serotonin reuptake inhibitors, TCA = tricyclic antidepressants, MAOI = monoamine oxidase inhibitors, 5ASA = 5-aminosalicylic acid.

Medication class	Medications
Medications for mental health conditions	
SSRIs and related medication	Venlafaxine, Bupropion, Duloxetine, Citalopram, Dapoxetine, Escitalopram, Fluoxetine, Fluvoxamine, Paroxetine, Sertraline
TCAs	Amitriptyline, Clomipramine, Dosulepin, Doxepin, Mianserin, Trazodone, Trimipramine, Imipramine, Lofepramine, Nortriptyline
MAOIs	Tranylcypromine, Phenelzine, Isocarboxazid, Moclobemide
Anxiolytic medications	Alprazolam, Chlordiazepoxide, Clobazam, Clonazepam, Diazepam, Lorazepam, Oxazepam, Buspirone, Meprobamate, Clomipramine, Clomethiazole
Medication for IBD	
Rectal 5-ASA	Mesalazine, Sulfasalazine
Rectal glucocorticoids	Budesonide, Hydrocortisone, Prednisolone
Oral 5-ASA	Balsalazide, Mesalazine, Olsalazine, Sulfasalazine
Oral glucocorticoids	Prednisolone, Cortisone, Dexamethasone, Methylprednisolone, Beclomethasone, Betamethasone, Budesonide, Deflazacort
Antimetabolites	Azathioprine, Cyclosporine, Mercaptopurine, Methotrexate, Tacrolimus
Biologic therapies	Adalimumab, Golimumab, Infliximab, Vedolizumab

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sTable 8. The prevalence of common mental health conditions in people with Crohn's disease and ulcerative colitis by markers of disease severity.

	Anxiety episodes n (%)		Depressive episodes n (%)		Depressive disorder n (%)	
	Ulcerative Colitis (n=11,454)	Crohn's Disease (n=7,557)	Ulcerative Colitis (n=11,454)	Crohn's Disease (n=7,557)	Ulcerative Colitis (n=11,454)	Crohn's Disease (n=7,557)
Duration of disease						
0-2 years	73 (2.8%)	65 (4.0%)	93 (3.6%)	86 (5.3%)	291 (11.2%)	229 (14.2%)
2-5 years	35 (2.4%)	35 (3.6%)	59 (4.1%)	68 (7.0%)	180 (12.5%)	161 (16.5%)
5-10 years	50 (2.6%)	37 (2.7%)	86 (4.4%)	73 (5.3%)	267 (13.8%)	223 (16.2%)
10+ years	183 (3.3%)	125 (3.5%)	269 (4.9%)	204 (5.7%)	889 (16.2%)	709 (19.7%)
Current systemic therapy*						
No	299 (3.1%)	183 (3.6%)	431 (4.4%)	279 (5.5%)	1413 (14.5%)	914 (17.9%)
Yes	42 (2.4%)	79 (3.2%)	76 (4.4%)	152 (6.2%)	214 (12.3%)	408 (16.7%)

*defined as use of mercaptopurine, azathioprine, cyclosporine, methotrexate, tacrolimus, or biologic therapies

sTable 9. Healthcare resource use during three years of follow-up. Data are rates per person-year, with 95% confidence intervals

	All Inflammatory bowel disease n=19,011	Ulcerative Colitis n=11,454	Crohn's disease n=7,557	Controls n=76,044
Primary care visits	6.41 (6.39-6.44)	6.18 (6,15, 6,20)	6.78 (6.75, 6.82)	4.49 (4.48, 4.50)
Secondary care emergency attendances	0.455 (0.449, 0.461)	0.396 (0.389, 0.403)	0.546 (0.536, 0.557)	0.259 (0.257, 0.262)
Fitness for work notes	0.311 (0.306, 0.316)	0.270 (0.265, 0.276)	0.378 (0.368, 0.386)	0.215 (0.213, 0.217)
Medications for mental health conditions				
Selective serotonin reuptake inhibitors (SSRIs)	1.328 (1.317, 1.338)	1.218 (1.205, 1.230	1.495 (1.478, 1.512)	1.046 (1.041, 1.050)
Anxiolytic medications	0.219 (0.214, 0.223)	0.189 (0.183, 0.194)	0.264 (0.257, 0.272)	0.166 (0.164, 0.168)

sTable 10. Medication use in people with inflammatory bowel disease during three years of follow-up

Medications for IBD	All Inflammatory bowel disease n=19,011		Ulcerative Colitis n=11,454		Crohn's disease n=7,557	
	N (%) with at least one prescription	Rate per 100 person years (95% CI)	N (%) with at least one prescription	Rate per 100 person years (95% CI)	N (%) with at least one prescription	Rate per 100 person years (95% CI)
Rectal 5-ASA	3102 (16.3)	36.1 (35.6, 36.7)	2772 (24.2)	53.4 (52.6, 54.3)	330 (4.4)	9.8 (9.3, 10.3)
Rectal glucocorticoids	2164 (11.4)	16.1 (15.8, 16.5)	1808 (15.8)	23.3 (22.8, 23.9)	356 (4.7)	5.2 (4.8, 5.5)
Oral 5-ASA	9640 (50.7)	347 (345, 349)	7046 (61.5)	428 (426, 431)	2594 (34.3)	224 (222, 226)
Oral glucocorticoids	5876 (30.9)	67.4 (66.7, 68.1)	3374 (29.5)	63.6 (62.7, 64.5)	2502 (33.0)	73.1 (72.0, 74.5)
Non-biologic immunomodulators	3494 (22.6)	141 (140, 142)	1848 (16.1)	104 (103, 105)	2446 (32.3)	196 (194, 198)

sTable 11. Full multivariable associations for patient features and measures of healthcare utilisation (A: primary care visits, B: Emergency secondary care visits, C: Fitness for work certificates) in people with IBD.

Estimates are adjusted incidence rate ratios (IRR) with 95% confidence intervals. For each feature category, incidence rate ratios represent the relative change in rate of the healthcare utilisation measure compared to the reference category. An IRR greater than 1 indicates that the presence of a feature category is associated with an increased rate of healthcare utilisation.

A)   Primary care visits

	IBD	UC	CD
N	19,011	7,557	11,454
Mental health conditions			
Anxiety episodes	1.36 (1.21, 1.52)	1.30 (1.13, 1.51)	1.42 (1.19, 1.68)
Depressive episodes	1.04 (0.93, 1.17)	0.99 (0.84, 1.16)	1.11 (0.96, 1.29)
Depressive disorder	1.32 (1.22, 1.43)	1.41 (1.25, 1.60)	1.21 (1.12, 1.30)
Age at study entry			
18 to 30	1.00 (ref)	1.00 (ref)	1.00 (ref)
30 to 40	0.87 (0.81, 0.94)	0.93 (0.84, 1.03)	0.83 (0.75, 0.92)
40 to 50	0.86 (0.80, 0.92)	0.88 (0.80, 0.98)	0.86 (0.77, 0.95)
50 to 60	0.88 (0.81, 0.95)	0.92 (0.83, 1.02)	0.87 (0.78, 0.97)
60 to 70	1.05 (0.97, 1.14)	1.15 (1.03, 1.27)	1.01 (0.90, 1.13)
70 or older	1.30 (1.19, 1.42)	1.41 (1.26, 1.57)	1.25 (1.10, 1.42)
Sex			
Male	0.80 (0.77, 0.83)	0.82 (0.78, 0.86)	0.79 (0.75, 0.83)
Female	1.00 (ref)	1.00 (ref)	1.00 (ref)
Duration of disease			
0-2 years	1.00 (ref)	1.00 (ref)	1.00 (ref)
2-5 years	0.47 (0.44, 0.51)	0.47 (0.42, 0.53)	0.48 (0.43, 0.53)
5-10 years	0.46 (0.43, 0.49)	0.45 (0.41, 0.50)	0.48 (0.43, 0.53)
10+ years	0.46 (0.43, 0.49)	0.44 (0.40, 0.49)	0.49 (0.45, 0.53)
Current systemic therapy			
No	1.00 (ref)	1.00 (ref)	1.00 (ref)
Yes	1.23 (1.18, 1.28)	1.23 (1.16, 1.31)	1.17 (1.11, 1.24)
BMI(kg/m^2)			
Underweight (<=18.5)	1.01 (0.91, 1.12)	0.96 (0.84, 1.11)	1.01 (0.88, 1.17)
Normal Weight (18.5-25)	1.00 (ref)	1.00 (ref)	1.00 (ref)
Overweight (25-30)	1.02 (0.98, 1.06)	0.98 (0.92, 1.03)	1.09 (1.03, 1.16)
Obese (>=30)	1.11 (1.06, 1.17)	1.08 (1.01, 1.16)	1.15 (1.08, 1.24)
Smoking status			
Non-smoker	1.00 (ref)	1.00 (ref)	1.00 (ref)
Current Smoker	1.13 (1.07, 1.19)	1.20 (1.11, 1.29)	1.03 (0.96, 1.10)
Ex-smoker	1.08 (1.04, 1.12)	1.10 (1.05, 1.15)	1.04 (0.98, 1.11)
Index of multiple deprivation			
1 (most deprived)	1.00 (ref)	1.00 (ref)	1.00 (ref)
2	0.93 (0.87, 0.99)	0.93 (0.85, 1.02)	0.92 (0.84, 1.00)
3	0.92 (0.86, 0.97)	0.95 (0.87, 1.03)	0.87 (0.80, 0.94)
4	0.96 (0.90, 1.04)	0.99 (0.88, 1.10)	0.93 (0.86, 1.01)
5 (least deprived)	0.92 (0.86, 0.98)	0.88 (0.81, 0.96)	0.98 (0.89, 1.07)
Comorbidities			
Type 2 Diabetes	1.39 (1.28, 1.51)	1.50 (1.35, 1.67)	1.18 (1.06, 1.30)
Hypertension	1.14 (1.09, 1.19)	1.13 (1.06, 1.19)	1.16 (1.08, 1.25)
Atrial Fibrillation	1.54 (1.27, 1.87)	1.60 (1.25, 2.05)	1.36 (1.16, 1.60)
Angina	1.10 (0.97, 1.26)	1.07 (0.90, 1.27)	1.20 (1.03, 1.39)
Myocardial Infarction	1.03 (0.90, 1.19)	1.05 (0.87, 1.27)	0.97 (0.83, 1.13)
Stroke	1.00 (0.88, 1.13)	0.99 (0.84, 1.16)	1.03 (0.90, 1.19)
Heart Failure	1.41 (0.89, 2.24)	1.64 (0.85, 3.16)	1.04 (0.85, 1.27)
Chronic Liver Disease	1.30 (1.14, 1.47)	1.26 (1.10, 1.45)	1.40 (1.12, 1.76)

	IBD	UC	CD
Dementia	1.18 (0.96, 1.45)	1.24 (0.94, 1.64)	1.06 (0.92, 1.21)
Rheumatoid Arthritis	1.30 (1.11, 1.52)	1.33 (1.09, 1.62)	1.29 (1.03, 1.62)
Asthma	1.21 (1.15, 1.27)	1.20 (1.13, 1.28)	1.21 (1.14, 1.30)

IBD model intercept = 11.08; IMD missing category IRR 1.29 (1.12, 1.48); BMI missing category IRR 0.85 (0.79, 0.91); Smoking status missing category IRR 1.81 (1.46, 2.24)
UC model intercept = 10.14; IMD missing category IRR 1.36 (1.12, 1.66); BMI missing category IRR 0.83 (0.75, 0.91); Smoking status missing category IRR 1.78 (1.32, 2.39).
CD model intercept = 12.16; IMD missing category IRR 1.18 (0.96, 1.46); BMI missing category IRR 0.88 (0.80, 0.98); Smoking status missing category IRR 1.83 (1.34, 2.50)

B)   Emergency secondary care visits

	IBD	UC	CD
N	19,011	7,557	11,454
Mental health conditions			
Anxiety episodes	1.01 (0.93, 1.09)	0.98 (0.88, 1.11)	1.05 (0.94, 1.17)
Depressive episodes	1.02 (0.95, 1.09)	0.96 (0.86, 1.06)	1.04 (0.95, 1.14)
Depressive disorder	1.22 (1.17, 1.27)	1.34 (1.27, 1.42)	1.11 (1.05, 1.18)
Age at study entry			
18 to 30	1.00 (ref)	1.00 (ref)	1.00 (ref)
30 to 40	0.75 (0.70, 0.79)	0.75 (0.69, 0.82)	0.75 (0.69, 0.81)
40 to 50	0.71 (0.67, 0.75)	0.67 (0.61, 0.74)	0.75 (0.70, 0.81)
50 to 60	0.75 (0.70, 0.79)	0.64 (0.59, 0.71)	0.87 (0.81, 0.94)
60 to 70	0.78 (0.74, 0.83)	0.78 (0.71, 0.86)	0.82 (0.76, 0.89)
70 or older	0.95 (0.89, 1.01)	1.11 (1.02, 1.22)	0.83 (0.76, 0.91)
Sex			
Male	0.98 (0.95, 1.01)	1.07 (1.03, 1.12)	0.93 (0.89, 0.97)
Female	1.00 (ref)	1.00 (ref)	1.00 (ref)
Duration of disease			
0-2 years	1.00 (ref)	1.00 (ref)	1.00 (ref)
2-5 years	0.70 (0.67, 0.74)	0.69 (0.64, 0.74)	0.70 (0.65, 0.75)
5-10 years	0.68 (0.65, 0.71)	0.66 (0.62, 0.71)	0.67 (0.62, 0.71)
10+ years	0.72 (0.69, 0.74)	0.63 (0.60, 0.67)	0.78 (0.74, 0.83)
Current systemic therapy			
No	1.00 (ref)	1.00 (ref)	1.00 (ref)
Yes	1.22 (1.18, 1.26)	1.14 (1.08, 1.21)	1.17 (1.12, 1.22)
BMI(kg/m^2)			
Underweight (<=18.5)	1.18 (1.10, 1.26)	1.13 (1.01, 1.26)	1.22 (1.11, 1.34)
Normal Weight (18.5-25)	1.00 (ref)	1.00 (ref)	1.00 (ref)
Overweight (25-30)	0.97 (0.94, 1.01)	0.92 (0.88, 0.97)	1.03 (0.97, 1.08)
Obese (>=30)	1.09 (1.04, 1.13)	1.04 (0.98, 1.10)	1.17 (1.11, 1.24)
Smoking status			
Non-smoker	1.00 (ref)	1.00 (ref)	1.00 (ref)
Current Smoker	1.15 (1.10, 1.20)	1.05 (0.97, 1.12)	1.15 (1.08, 1.22)
Ex-smoker	0.95 (0.91, 0.98)	0.95 (0.90, 0.99)	0.93 (0.88, 0.98)
Index of multiple deprivation			
1 (most deprived)	1.00 (ref)	1.00 (ref)	1.00 (ref)
2	0.86 (0.81, 0.90)	0.87 (0.81, 0.93)	0.84 (0.78, 0.90)
3	0.86 (0.82, 0.90)	0.81 (0.76, 0.87)	0.90 (0.84, 0.96)
4	0.85 (0.81, 0.89)	0.82 (0.76, 0.87)	0.88 (0.82, 0.94)
5 (least deprived)	0.80 (0.76, 0.84)	0.75 (0.70, 0.80)	0.86 (0.80, 0.92)
Comorbidities			
Type 2 Diabetes	1.06 (1.01, 1.11)	1.14 (1.08, 1.21)	0.94 (0.88, 1.02)
Hypertension	1.07 (1.03, 1.11)	1.01 (0.96, 1.07)	1.11 (1.04, 1.17)
Atrial Fibrillation	1.28 (1.20, 1.36)	1.35 (1.26, 1.46)	1.14 (1.02, 1.27)
Angina	1.36 (1.28, 1.45)	1.06 (0.98, 1.16)	1.97 (1.79, 2.17)
Myocardial Infarction	1.03 (0.95, 1.11)	1.20 (1.09, 1.32)	0.83 (0.73, 0.94)
Stroke	1.48 (1.38, 1.59)	1.61 (1.47, 1.77)	1.31 (1.17, 1.47)
Heart Failure	1.29 (1.19, 1.39)	1.16 (1.04, 1.29)	1.52 (1.34, 1.73)
Chronic Liver Disease	1.40 (1.30, 1.51)	1.63 (1.47, 1.80)	1.14 (1.01, 1.28)
Dementia	1.14 (1.07, 1.22)	1.11 (1.02, 1.21)	1.23 (1.10, 1.37)
Rheumatoid Arthritis	1.05 (0.95, 1.15)	1.18 (1.04, 1.33)	0.93 (0.80, 1.08)
Asthma	1.18 (1.14, 1.22)	1.11 (1.06, 1.17)	1.24 (1.19, 1.30)

IBD model intercept = 1.52; IMD missing category IRR 0.79 (0.70, 0.89); BMI missing category IRR 1.03 (0.96, 1.09); Smoking status missing category IRR 1.24 (1.08, 1.44). UC model intercept = 1.52; IMD missing category IRR 0.80 (0.68, 0.94); BMI missing category IRR 0.90 (0.82, 0.99); Smoking status missing category IRR 1.84 (1.50, 2.26). CD model intercept = 1.57; IMD missing category IRR 0.80 (0.67, 0.94); BMI missing category IRR 1.17 (1.07,1.28); Smoking status missing category IRR 0.94 (0.77, 1.15)

C)   Fitness for work certificates

	IBD	UC	CD
N	19,011	7,557	11,454
Mental health conditions			
Anxiety episodes	1.28 (1.18, 1.39)	1.38 (1.24, 1.53)	1.16 (1.02, 1.32)
Depressive episodes	0.98 (0.91, 1.06)	1.00 (0.91, 1.11)	1.00 (0.90, 1.12)
Depressive disorder	1.29 (1.24, 1.35)	1.31 (1.23, 1.40)	1.24 (1.16, 1.33)
Age at study entry			
18 to 30	1.00 (ref)	1.00 (ref)	1.00 (ref)
30 to 40	0.93 (0.87, 0.98)	0.92 (0.83, 1.00)	0.94 (0.87, 1.02)
40 to 50	0.92 (0.87, 0.98)	0.93 (0.85, 1.02)	0.92 (0.85, 1.00)
50 to 60	1.04 (0.98, 1.11)	1.08 (0.99, 1.19)	1.00 (0.92, 1.09)
60 to 70	1.00 (0.93, 1.09)	1.06 (0.94, 1.18)	0.96 (0.85, 1.08)
70 or older	0.69 (0.49, 0.97)	0.66 (0.44, 0.98)	0.56 (0.26, 1.19)
Sex			
Male	1.00 (0.97, 1.04)	1.05 (1.00, 1.10)	0.96 (0.92, 1.02)
Female	1.00 (ref)	1.00 (ref)	1.00 (ref)
Duration of disease			
0-2 years	1.00 (ref)	1.00 (ref)	1.00 (ref)
2-5 years	0.71 (0.68, 0.75)	0.75 (0.70, 0.81)	0.66 (0.61, 0.71)
5-10 years	0.70 (0.66, 0.74)	0.68 (0.63, 0.73)	0.72 (0.67, 0.78)
10+ years	0.64 (0.61, 0.67)	0.63 (0.59, 0.67)	0.65 (0.61, 0.69)
Current systemic therapy			
No	1.00 (ref)	1.00 (ref)	1.00 (ref)
Yes	1.04 (1.00, 1.08)	1.09 (1.03, 1.16)	1.00 (0.95, 1.05)
BMI(kg/m^2)			
Underweight (<=18.5)	0.96 (0.87, 1.07)	0.89 (0.75, 1.05)	1.01 (0.89, 1.15)
Normal Weight (18.5-25)	1.00 (ref)	1.00 (ref)	1.00 (ref)
Overweight (25-30)	1.10 (1.06, 1.15)	1.12 (1.05, 1.19)	1.09 (1.02, 1.16)
Obese (>=30)	1.13 (1.08, 1.19)	1.12 (1.05, 1.20)	1.13 (1.05, 1.21)
Smoking status			
Non-smoker	1.00 (ref)	1.00 (ref)	1.00 (ref)
Current Smoker	1.24 (1.19, 1.30)	1.25 (1.16, 1.34)	1.23 (1.15, 1.31)
Ex-smoker	1.09 (1.05, 1.14)	1.15 (1.08, 1.21)	1.04 (0.97, 1.10)
Index of multiple deprivation			
1 (most deprived)	1.00 (ref)	1.00 (ref)	1.00 (ref)
2	0.97 (0.92, 1.02)	0.85 (0.79, 0.91)	1.11 (1.03, 1.20)
3	0.87 (0.82, 0.92)	0.84 (0.78, 0.90)	0.91 (0.84, 0.98)
4	0.83 (0.79, 0.88)	0.75 (0.69, 0.81)	0.92 (0.85, 1.00)
5 (least deprived)	0.76 (0.72, 0.80)	0.71 (0.66, 0.77)	0.80 (0.74, 0.87)
Comorbidities			
Type 2 Diabetes	1.21 (1.12, 1.30)	1.16 (1.06, 1.28)	1.30 (1.15, 1.47)
Hypertension	0.99 (0.94, 1.05)	1.08 (1.00, 1.16)	0.88 (0.81, 0.97)
Atrial Fibrillation	1.02 (0.84, 1.23)	1.12 (0.87, 1.44)	1.00 (0.74, 1.34)
Angina	1.12 (0.93, 1.34)	0.75 (0.57, 0.99)	1.93 (1.50, 2.49)
Myocardial Infarction	0.86 (0.71, 1.05)	0.63 (0.46, 0.85)	1.23 (0.95, 1.59)
Stroke	0.80 (0.67, 0.97)	0.95 (0.72, 1.24)	0.63 (0.48, 0.83)
Heart Failure	1.08 (0.84, 1.39)	1.09 (0.80, 1.49)	1.44 (0.94, 2.22)
Chronic Liver Disease	1.11 (1.00, 1.24)	1.18 (1.02, 1.36)	1.02 (0.85, 1.22)
Dementia	1.29 (1.11, 1.49)	1.33 (1.10, 1.60)	1.26 (1.00, 1.60)
Rheumatoid Arthritis	1.14 (0.98, 1.32)	1.23 (1.02, 1.48)	1.04 (0.79, 1.36)
Asthma	1.06 (1.02, 1.10)	1.03 (0.97, 1.09)	1.09 (1.03, 1.15)

IBD model intercept = 1.76; IMD missing category IRR 0.75 (0.66, 0.85); BMI missing category IRR 1.07 (0.99, 1.15); Smoking status missing category IRR 1.04 (0.84, 1.28). UC model intercept = 1.72; IMD missing category IRR 0.76 (0.64, 0.91); BMI missing category IRR 0.98 (0.89, 1.10); Smoking status missing category IRR 1.29 (0.92, 1.80). CD model intercept = 1.82; IMD missing category IRR 0.73 (0.61, 0.88); BMI missing category IRR 1.15 (1.04, 1.27); Smoking status missing category IRR 0.91 (0.69, 1.21)