

Supplementary data**Supplementary Table S1. List of diagnoses of neuropsychiatric diseases**

Type of neuropsychiatric disease	ICD-10-CM code	Diagnosis
Anxiety disorders	F40	Phobic anxiety disorders
	F40.0	Agoraphobia
	F40.1	Social phobias
	F40.2	Specific (isolated) phobias
	F40.8	Other phobic anxiety disorders
	F40.9	Phobic anxiety disorder, unspecified
	F41	Other anxiety disorders
	F41.0	Panic disorder (episodic paroxysmal anxiety)
	F41.1	Generalised anxiety disorder
	F41.2	Mixed anxiety and depressive disorder
	F41.3	Other mixed anxiety disorders
	F41.8	Other specified anxiety disorders
	F41.9	Anxiety disorder, unspecified

F42	Obsessive-compulsive disorders
F42.0	Predominantly obsessional thoughts or ruminations
F42.1	Predominantly compulsive acts (obsessional rituals)
F42.2	Mixed obsessional thoughts and acts
F42.8	Other obsessive-compulsive disorders
F42.9	Obsessive-compulsive disorder, unspecified
F43	Reaction to severe stress, and adjustment disorders
F43.0	Acute stress reaction
F43.1	Post-traumatic stress disorder
F43.2	Adjustment disorders
F43.8	Other reactions to severe stress
F43.9	Reaction to severe stress, unspecified
F44	Dissociative and conversion disorders
F44.0	Dissociative amnesia
F44.1	Dissociative fugue

F44.2	Dissociative stupor
F44.3	Trance and possession disorders
F44.4	Dissociative motor disorders
F44.5	Dissociative convulsions
F44.6	Dissociative anaesthesia and sensory loss
F44.7	Mixed dissociative (conversion) disorders
F44.8	Other dissociative (conversion) disorders
F44.9	Dissociative (conversion) disorder, unspecified
F45	Somatoform disorders
F45.0	Somatisation disorder
F45.1	Undifferentiated somatoform disorder
F45.2	Hypochondriacal disorder
F45.3	Somatoform autonomic dysfunction
F45.4	Persistent somatoform pain disorder
F45.8	Other somatoform disorders
F45.9	Somatoform disorder, unspecified

	F48	Other nonpsychotic mental disorders
	F48.0	Neurasthenia
	F48.1	Depersonalisation-derealisation syndrome
	F48.8	Other specified neurotic disorders
	F48.9	Neurotic disorder, unspecified
	R45.5	Hostility

Cognitive disorders	R41.0	Disorientation, unspecified
	R41.1	Anterograde amnesia
	R41.2	Retrograde amnesia
	R41.3	Other amnesia
	F05	Delirium due to known physiological condition
	F05.0	Delirium not superimposed on dementia, so described
	F05.1	Delirium superimposed on dementia
	F05.8	Other delirium
	F05.9	Delirium, unspecified

Mood disorders	F30	Manic episode
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F30.0	Hypomania
F30.1	Mania without psychotic symptoms
F30.2	Mania with psychotic symptoms
F30.8	Other manic episodes
F30.9	Manic episode, unspecified
F31	Bipolar disorder
F31.0	Bipolar affective disorder, current episode hypomanic
F31.1	Bipolar affective disorder, current episode manic without psychotic symptoms
F31.2	Bipolar affective disorder, current episode manic with psychotic symptoms
F31.3	Bipolar affective disorder, current episode mild or moderate depression
F31.4	Bipolar affective disorder, current episode severe depression without psychotic symptoms
F31.5	Bipolar affective disorder, current episode severe depression with psychotic symptoms
F31.6	Bipolar affective disorder, current episode mixed
F31.7	Bipolar affective disorder, currently in remission

F31.8	Other bipolar affective disorders
F31.9	Bipolar affective disorder, unspecified
F32	Depressive episode
F32.0	Mild depressive episode
F32.1	Moderate depressive episode
F32.2	Severe depressive episode without psychotic symptoms
F32.3	Severe depressive episode with psychotic symptoms
F32.8	Other depressive episodes
F32.9	Depressive episode, unspecified
F33	Major depressive disorder, recurrent
F33.0	Recurrent depressive disorder, current episode mild
F33.1	Recurrent depressive disorder, current episode moderate
F33.2	Recurrent depressive episode, current episode severe without psychotic symptoms
F33.3	Recurrent depressive episode, current episode with severe psychotic symptoms
F33.4	Recurrent depressive disorder, currently in remission
F33.8	Other recurrent depressive disorders

F33.9	Recurrent depressive disorder, unspecified
F34	Persistent mood (affective) disorders
F34.0	Cyclothymia
F34.1	Dysthymia
F34.8	Other persistent mood (affective) disorders
F34.9	Persistent mood (affective) disorder, unspecified
F38	Other mood (affective) disorders
F38.0	Other single mood (affective) disorders
F38.1	Other recurrent mood (affective) disorders
F38.8	Other specified mood (affective) disorders
F39	Unspecified mood (affective) disorders
F92.0	Depressive conduct disorder
F93	Emotional disorders with onset specific to childhood
F93.0	Separation anxiety disorder of childhood
F93.1	Phobic anxiety disorder of childhood
F93.2	Social anxiety disorder of childhood

	F93.3	Sibling rivalry disorder
	F93.8	Other childhood emotional disorders
	F93.9	Childhood disorder, unspecified
	F94	Disorders of social functioning with onset specific to childhood and adolescence
	F94.0	Elective mutism
	F94.1	Reaction attachment disorder of childhood
	F94.2	Disinhibited attachment disorder of childhood
	F94.8	Other childhood disorders of social functioning
	F94.9	Childhood disorder of social functioning, unspecified
	R45.0	Nervousness
	R45.1	Restlessness and agitation
	R45.2	Unhappiness
	R45.3	Demoralisation and apathy
	R45.4	Irritability and anger
	R45.6	Physical violence
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Movement disorders	G20	Parkinson disease

G21	Secondary parkinsonism
G21.0	Malignant neuroleptic syndrome
G21.1	Other drug-induced secondary parkinsonism
G21.2	Secondary parkinsonism due to other external agents
G21.3	Potencephalitic parkinsonism
G21.4	Vascular parkinsonism
G21.8	Other secondary parkinsonism
G21.9	Secondary parkinsonism, unspecified
G24	Dystonia
G24.0	Drug-induced dystonia
G24.1	Idiopathic familial dystonia
G24.2	Idiopathic nonfamilial dystonia
G24.3	Spasmodic torticollis
G24.4	Idiopathic orofacial dystonia
G24.5	Blepharospasm
G24.8	Other dystonia

	G24.9	Dystonia, unspecified
	G25	Other extrapyramidal and movement disorders
	G25.0	Essential tremor
	G25.1	Drug-induced tremor
	G25.2	Other specified forms of tremor
	G25.3	Myoclonus
	G25.4	Drug-induced chorea
	G25.5	Other chorea
	G25.6	Drug-induced tics and other tics of organic origin
	G25.8	Other specified extrapyramidal and movement disorders
	G25.9	Extrapyramidal and movement disorder, unspecified
	R25.1	Tremor, unspecified
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Personality disorders	F60	Specific personality disorders
	F60.0	Paranoid personality disorder
	F60.1	Schizoid personality disorder
	F60.2	Dissocial personality disorder

F60.3	Emotionally unstable personality disorder
F60.4	Histrionic personality disorder
F60.5	Anankastic personality disorder
F60.6	Anxious (avoidant) personality disorder
F60.7	Dependent personality disorder
F60.8	Other specific personality disorders
F60.9	Personality disorder, unspecified
F61	Mixed and other personality disorders
F62	Enduring personality changes, not attributable to brain damage and disease
F62.0	Enduring personality change after catastrophic experience
F62.1	Enduring personality change after psychiatric illness
F62.8	Other enduring personality changes
F62.9	Enduring personality change, unspecified
F63	Habit and impulsive disorders
F63.0	Pathological gambling
F63.1	Pathological fire-setting (pyromania)

F63.2	Pathological stealing (kleptomania)
F63.3	Trichotillomania
F63.8	Other habit and impulse disorders
F63.9	Habit and impulse disorders, unspecified
F64	Gender identity disorders
F64.0	Transsexualism
F64.1	Dual-role transvestism
F64.2	Gender identity disorder of childhood
F64.8	Other gender identity disorders
F64.9	Gender identity disorder, unspecified
F65	Disorders of sexual preference
F65.0	Fetishism
F65.1	Fetishistic transvestism
F65.2	Exhibitionism
F65.3	Voyeurism
F65.4	Paedophilia

F65.5	Sadomasochism
F65.6	Multiple disorders of sexual preference
F65.8	Other disorders of sexual preference
F65.9	Disorder of sexual preference, unspecified
F66	Psychological and behavioural disorders associated with sexual development and orientation
F66.0	Sexual maturation disorder
F66.1	Egodystonic sexual orientation
F66.2	Sexual relationship disorder
F66.8	Other psychosexual development disorders
F66.9	Psychosexual development disorder, unspecified
F68	Other disorders of adult personality and behaviour
F68.0	Elaboration of physical symptoms for psychological reasons
F68.1	Intentional production or feigning of symptoms or disabilities, either physical or psychological (factitious disorder)
F68.8	Other specified disorders of adult personality and behaviour

	F69	Unspecified disorder of adult personality and behaviour
	F90	Hyperkinetic disorders
	F90.0	Disturbance of activity and attention
	F90.1	Hyperkinetic conduct disorder
	F90.8	Other hyperkinetic disorders
	F90.9	Hyperkinetic disorder, unspecified
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Psychotic disorders	F20	Schizophrenia
	F20.0	Paranoid schizophrenia
	F20.1	Hebephrenic schizophrenia
	F20.2	Catatonic schizophrenia
	F20.3	Undifferentiated schizophrenia
	F20.4	Post-schizophrenic depression
	F20.5	Residual schizophrenia
	F20.6	Simple schizophrenia
	F20.8	Other schizophrenia
	F20.9	Schizophrenia, unspecified

F21	Schizotypal disorder
F22	Persistent delusional disorders
F22.0	Delusional disorder
F22.8	Other persistent delusional disorders
F22.9	Persistent delusional disorder, unspecified
F23	Acute and transient psychotic disorders
F23.0	Acute polymorphic psychotic disorder without symptoms of schizophrenia
F23.1	Acute polymorphic psychotic disorder with symptoms of schizophrenia
F23.2	Acute schizophrenia-like psychotic disorder
F23.3	Other acute predominantly delusional psychotic disorders
F23.8	Other acute and transient psychotic disorders
F23.9	Acute and transient psychotic disorder, unspecified
F24	Induced delusional disorder
F25	Schizoaffective disorders
F25.0	Schizoaffective disorder, manic type
F25.1	Schizoaffective disorder, depressive type

	F25.2	Schizoaffective disorder, mixed type
	F25.8	Other schizoaffective disorders
	F25.9	Schizoaffective disorder, unspecified
	F28	Other nonorganic psychotic disorders
	F29	Unspecified nonorganic psychosis
	R44	Other symptoms and signs involving general sensations and perceptions
	R44.0	Auditory hallucinations
	R44.1	Visual hallucinations
	R44.2	Other hallucinations
	R44.3	Hallucinations, unspecified
	R44.8	Other and unspecified symptoms and signs involving general sensations and perceptions
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Sleep-related disorders	F51	Nonorganic sleep disorders
	F51.0	Nonorganic insomnia
	F51.1	Nonorganic hypersomnia
	F51.2	Nonorganic disorder of the sleep-wake schedule
	F51.3	Sleepwalking (somnambulism)

	F51.4	Sleep terrors (night terrors)
	F51.5	Nightmares
	F51.8	Other nonorganic sleep disorders
	F51.9	Nonorganic sleep disorder, unspecified
	G47	Sleep disorders
	G47.0	Disorders of initiating and maintaining sleep (insomnias)
	G47.1	Disorders of excessive somnolence (hypersomnias)
	G47.2	Disorders of the sleep-wake schedule
	G47.3	Sleep apnoea
	G47.4	Narcolepsy and cataplexy
	G47.8	Other sleep disorders
	G47.9	Sleep disorder, unspecified
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Self-harm	X70	Intentional self-harm by hanging, strangulation and suffocation
	X71	Intentional self-harm by drowning and submersion
	X72	Intentional self-harm by handgun discharge
	X73	Intentional self-harm by rifle, shotgun and larger firearm discharge

	X74	Intentional self-harm by other and unspecified firearm discharge
	X75	Intentional self-harm by explosive material
	X76	Intentional self-harm by smoke, fire and flames
	X77	Intentional self-harm by steam, hot vapours and hot objects
	X78	Intentional self-harm by sharp object
	X79	Intentional self-harm by blunt object
	X80	Intentional self-harm by jumping from a high place
	X81	Intentional self-harm by jumping or lying before moving object
	X82	Intentional self-harm by crashing of motor vehicle
	X83	Intentional self-harm by other specified means
	X84	Intentional self-harm by unspecified means
	T14.9	Injury, unspecified
	T76	Unspecified effects of external causes
Others	F98	Other behavioural and emotional disorders with onset usually occurring in childhood and adolescence
	F98.0	Nonorganic enuresis
	F98.1	Nonorganic encopresis

F98.2	Feeding disorder of infancy and childhood
F98.3	Pica of infancy and childhood
F98.4	Stereotyped movement disorders
F98.5	Stuttering (stammering)
F98.6	Cluttering
F98.8	Other specified behavioural and emotional disorders with onset usually occurring in childhood and adolescence
F98.9	Unspecified behavioural and emotional disorders with onset usually occurring in childhood and adolescence

Abbreviation: ICD-10-CM, International Classification of Disease, Tenth Revision, Clinical Modification.

Supplementary Table S2. List of montelukast codes

Medication	Strength	ATC code	HIRA code
Montelukast	4mg	R03DC03	374603AGN,
			374603ATB,
			374603ATD
	5mg		374601ATB,
			374601ATD
	10mg		374602ATB,
			374602ATD

Abbreviations: ATC, Anatomical Therapeutic Chemical Classification; HIRA, Health Insurance and Review

Assessment Service.

Supplementary Table S3. List of concomitant medications

Therapeutic class	Medications	ATC code	HIRA code
Antidepressants	Amitriptyline	N06AA09	107504A, 107501A, 107502A
	Amoxapine	N06AA17	108002A
	Bupropion	N06AX12	428101A, 428102A, 428103A
	Clomipramine	N06AA04	136301A, 136302A
	Doxepin	N06AA02	149203A, 149204A
	Escitalopram	N06AB10	474801A, 474802A, 474803A, 474804A
	Fluoxetine	N06AB03	161501A, 161502A
	Fluvoxamine	N06AB08	162501A, 162502A
	Imipramine	N06AA02	173701A
	Mirtazapine	N06AX11	196204A, 196202A, 196203A
	Nortriptyline	N06AA10	203401A, 203402A
	Paroxetine	N06AB05	209301A, 209304A, 209302A, 209305A
	Sertraline	N06AB06	227003A, 227001A, 227002A
	Trazodone	N06AX05	242901A, 242902A
	Duloxetine	N06AX21	495501A, 495502A
Lithium	N05AN01	184702A, 184701A	

Antiepileptics	Clonazepam	N03AE01	136401A
	Ethosuximide	N03AD01	155901A
	Lamotrigine	N03AX09	181005A, 181004A, 181002A, 181003A, 181001A
	Fosphenytoin	N03AB05	509330B, 509331B
	Phenytoin	N03AB02	146801A, 146830B
	Topiramate	N03AX11	241803A, 241804A, 241801A, 242802A
	Valproic acid	N03AG01	229734A, 229701A, 229730B, 229703A, 229705A, 229731B, 229704B, 246901A, 229707A
	Vigabatrin	N03AG04	247701A
Antihistamines (1 st generation)	Clemastine	R06AA04	135201A
	Hydroxyzine	N05BB01	172130A, 172101A
	Chlorpheniramine	R06AB02	131801A, 268000A, 296900A, 690300A, 532500A, 131830B, 684000A
	Dimenhydrinate	R06AA11	145901A
Antihistamines	Cetirizine	R06AE07	130501A, 259900A

(2 nd generation)			
	Desloratadine	R06AX27	551501A
	Ebastine	R06AX22	150601A, 260100A
	Fexofenadine	R06AX26	347903A, 347901A, 347902A, 395400A
	Ketotifen	R06AX17	180142A, 180101A
	Levocetirizine	R06AE09	463601A, 463637A
	Loratadine	R06AX13	185430A, 185401A
	Mizolastine	R06AX25	355901A
	Oxatomide	R06AE06	206201A
	Rupatadine	R06AX28	659601A
Antipsychotics	Amisulpride	N05AL05	420003A, 420004A, 420002A
	Aripiprazole	N05AX12	451508A, 451504A, 451503A, 451501A, 451502A, 451505A, 451506B, 451507B
	Chlorpromazine	N05AA01	131908A, 131901A, 131905A
	Clozapine	N05AH02	137502A, 137503A, 137501A, 137504A
	Haloperidol	N05AD01	167903A, 167906A, 167908A, 167904A, 167905A, 167930B,

			168030B
	Olanzapine	N05AH03	204004A, 204002A, 204001A, 204005A
	Paliperidone	N05AX13	503201A, 503202A, 503203A, 586430B, 586431B, 586432B, 586433B, 586434B, 586435B, 586437B, 586438B, 586436B, 713301B, 713302B
	Quetiapine	N05AH04	378601A, 378602A, 378603A, 378604A, 378605A, 378609A, 378608A
	Risperidone	N05AX08	224204A, 224201A, 224202A, 224203A, 224205A, 224206B
	Ziprasidone	N05AE04	464901A, 464902A, 464903A, 464904A
Benzodiazepines	Clobazam	N05BA09	135702A, 135701A
	Clotiazepam	N05BA21	137302A
	Diazepam	N05BA01	142902A, 142903A, 142901A, 142930B
	Ethyl loflazepate	N05BA18	156201A, 156202A

	Etizolam	N05BA19	156503A, 156502A, 156501A
	Flunitrazepam	N05CD03	160601A
	Flurazepam	N05CD01	161801A
	Lorazepam	N05BA06	185504A, 185501A, 185530B, 185531B
	Midazolam	N05CD08	195230B, 195231B, 195232B
	Tofisopam	N05BA23	241201A
Corticosteroids	Beclometasone	R01AD01, R03AK08, H02AB01	114533C, 114511A, 544200C, 696700C, 116401A, 116530B
	Budesonide	R03BA02, R03AK07, R03AK12, R01AD05, A07EA06	119530C, 544000C, 543900C, 544100C, 681100C, 681000C, 119533C, 119435C, 119501C
	Deflazacort	H02AB13	140801A
	Dexamethasone	H02AB02, R01AD03	141901A, 141903A, 714901A, 142230B, 142232B, 141910C
	Fludrocortisone	H02AA02	160201A
	Hydrocortisone	H02AB09	170906A, 170901A
	Methylprednisolone	H02AB04	193305A, 193302A,

			193601B, 193603B, 193604B
	Prednisolone	H02AB06	217001A, 217034A, 217035A
	Triamcinolone	H02AB08	243335B, 243336B, 243337B, 243201A, 243202A, 243203A
Histamine H2- receptor antagonists	Cimetidine	A02BA01	133301A, 133303A, 133330B
	Famotidine	A02BA03	157302A
	Nizatidine	A02BA04	202704A, 202701A
Neuraminidase inhibitors	Oseltamivir	J05AH02	358903A, 358902A, 358901A, 358907A
	Zanamivir	J05AH01	250001C
NSAIDs	Celecoxib	M01AH01	347702A, 347701A, 347703A
	Dexibuprofen	M01AE14, M01AE17	142301A, 142303A, 454330B
	Diclofenac	M01AB05	143504A, 143506A, 143535B
	Etodolac	M01AB08	156602A, 156603A, 156604A
	Etoricoxib	M01AH05	636901A
	Ibuprofen	M01AE01	172802A, 172806A,

			172834A, 172830B
	Imidazole salicylate	N02BA16	173502A
	Ketoprofen	M01AE03	179731B
	Loxoprofen	M02AA31	186101A, 186102A
	Meloxicam	M01AC06	189701A, 189702A
	Naproxen	M01AE02	199501A, 199404A
	Nimesulide	M01AX17	201801A
	Pelubiprofen	M01AE	493401A, 493402A, 697701A
	Piroxicam	M01AC01	214031B, 214001A, 214004A
	Polmacoxib	M01AH07	636401A
	Proglumetacin	M01AB14	218602A
	Sulindac	M01AB02	233201A
	Talniflumate	M01AX	234401A
	Zaltoprofen		249901A
Opioids	Alfentanil	N01AH02	1047330B
	Buprenorphine	N02AE01	120205C, 120203C, 120233C, 120232C
	Codeine	R05DA04	137703A
	Dihydrocodeine	N02AA08	144901A, 267400A, 690300A, 532800A, 532600A
	Fentanyl	N02AB03	158330B, 158331B,

			158332B, 158333B, 158334B
	Hydrocodone	R05DA03	518200A, 518300A
	Hydromorphone	N02AA03	441130B, 441131B, 441102A
	Morphine	N02AA01	197330B, 197332B, 197231B, 197305A, 197334B
	Nalbuphine	N02AF02	198930B
	Pethidine	N02AB02	211530B, 211531B
	Remifentanyl	N01AH06	457601B, 457602B, 457603B
	Sufentanyl	N01AH03	232530B, 232531B
	Tramadol	N02AX02	242330B, 242331B, 242305A, 242301A, 242302A, 242304A, 513000A, 514100A, 480600A
Psychostimulants	Methylphenidate	N06BA04	193203A, 193206A, 193204A, 193209A, 193202A, 193201A, 193207A, 193211A, 193210A
	Atomoxetine	N06BA09	489601A, 489602A,

489603A, 489604A,

489605A, 489606A

Abbreviations: ATC, Anatomical Therapeutic Chemical Classification; HIRA, Health Insurance and Review Assessment Service; NSAIDs, non-steroidal anti-inflammatory drugs.

Supplementary Table S4. Risk of NPAEs associated with the use of montelukast at different time window periods (3, 7, 14, 28, and 56 days) excluding antidepressants and antipsychotics from concomitant medications

Time window period (days)	No. of exposed in hazard period (N=161,386)		No. of exposed in control period (N=645,544)		Crude		Adjusted		
	n	(%)	n	(%)	OR (95% C.I) ^a	p-value	OR (95% C.I) ^b	p-value	
3	9,773	(6.06)	38,276	(5.93)	1.04 (1.01 , 1.08)	0.0090	1.29 (1.25 , 1.32)	< 0.0001	
7	12,673	(7.85)	48,882	(7.57)	1.07 (1.04 , 1.09)	< 0.0001	1.30 (1.26 , 1.33)	< 0.0001	
14	17,080	(10.58)	63,578	(9.85)	1.13 (1.10 , 1.15)	< 0.0001	1.34 (1.31 , 1.37)	< 0.0001	
28	24,568	(15.22)	87,991	(13.63)	1.20 (1.18 , 1.22)	< 0.0001	1.39 (1.36 , 1.41)	< 0.0001	
56	35,969	(22.29)	135,123	(20.93)	1.11 (1.10 , 1.13)	< 0.0001	1.21 (1.19 , 1.23)	< 0.0001	

^a Calculated by conditional logistic regression

^b Calculated by conditional logistic regression adjusted for concomitant medications

Supplementary Table S5. Risk of NPAEs associated with the use of montelukast in the previous 7 days, stratified analysis according to age group, gender, and season excluding antidepressants and antipsychotics from concomitant medications

Variables	Exposed in hazard period		Exposed in control period		Crude OR (95% C.I) ^a		Adjusted OR (95% C.I) ^b		p-value for interaction ^c
	n/N	(%)	n/N	(%)					
Total	12,673 / 161,386	(7.85)	48,882 / 645,544	(0.08)	1.07	(1.04 , 1.09)	1.30	(1.26 , 1.33)	
Age group (years)									0.0065
0-2	864 / 5,332	(16.20)	3,518 / 21,328	(16.49)	0.97	(0.88 , 1.07)	1.10	(1.00 , 1.22)	
3-5	2,530 / 21,312	(11.87)	10,199 / 85,248	(11.96)	0.99	(0.93 , 1.05)	1.15	(1.08 , 1.22)	
6-9	4,648 / 49,079	(9.47)	17,996 / 196,316	(9.17)	1.06	(1.02 , 1.11)	1.24	(1.18 , 1.29)	
10-12	1,413 / 21,026	(6.72)	5,450 / 84,104	(6.48)	1.07	(0.99 , 1.15)	1.37	(1.26 , 1.48)	
13-19	3,218 / 64,637	(4.98)	11,719 / 258,548	(4.53)	1.16	(1.11 , 1.22)	1.45	(1.38 , 1.53)	
Gender									0.1235
Male	8,137 / 94,049	(8.65)	31,812 / 376,196	(8.46)	1.04	(1.01 , 1.08)	1.26	(1.22 , 1.31)	
Female	4,536 / 67,337	(6.74)	17,070 / 269,348	(6.34)	1.11	(1.06 , 1.16)	1.35	(1.30 , 1.41)	
Season									<0.0001
Spring	2,973 / 35,912	(8.28)	10,680 / 143,648	(7.43)	1.21	(1.15 , 1.28)	1.41	(1.33 , 1.49)	
Summer	2,344 / 43,872	(5.34)	10,841 / 175,488	(6.18)	0.78	(0.73 , 0.82)	0.97	(0.91 , 1.03)	
Autumn	4,259 / 47,157	(9.03)	14,048 / 188,628	(7.45)	1.40	(1.34 , 1.47)	1.71	(1.63 , 1.80)	
Winter	3,097 / 34,445	(8.99)	13,313 / 137,780	(9.66)	0.88	(0.84 , 0.93)	1.08	(1.03 , 1.14)	

^a Calculated by conditional logistic regression

^b Calculated by conditional logistic regression adjusted for concomitant medication

^c Joint test for exposure and strata variable interaction, indicating whether montelukast affects NPAEs differently depending on age group, gender, and season

Supplementary Table S6. Risk of NPAEs associated with the use of montelukast in the previous 14 days, stratified analysis according to age group, gender, and season excluding antidepressants and antipsychotics from concomitant medications

Variables	Exposed in hazard period		Exposed in control period		Crude		Adjusted		p-value for interaction ^c
	n/N	(%)	n/N	(%)	OR (95% C.I) ^a	OR (95% C.I) ^b			
Total	17,080 / 161,386	(10.58)	63,578 / 645,544	(9.985)	1.13	(1.10 , 1.15)	1.34	(1.31 , 1.37)	
Age group (years)									0.1829
0-2	1,173 / 5,332	(22.00)	4,586 / 21,328	(21.50)	1.04	(0.96 , 1.13)	1.16	(1.07 , 1.27)	
3-5	3,433 / 21,312	(16.11)	13,165 / 85,248	(15.44)	1.08	(1.03 , 1.14)	1.24	(1.18 , 1.31)	
6-9	6,293 / 49,079	(12.82)	23,526 / 196,316	(11.98)	1.12	(1.08 , 1.16)	1.29	(1.24 , 1.34)	
10-12	1,896 / 21,026	(9.02)	7,103 / 84,104	(8.45)	1.11	(1.04 , 1.19)	1.38	(1.29 , 1.48)	
13-19	4,285 / 64,637	(6.63)	15,198 / 258,548	(5.88)	1.19	(1.15 , 1.24)	1.44	(1.38 , 1.50)	
Gender									0.8971
Male	10,965 / 94,049	(11.66)	41,073 / 376,196	(10.92)	1.12	(1.09 , 1.15)	1.32	(1.29 , 1.36)	
Female	6,115 / 67,337	(9.08)	22,205 / 269,348	(8.36)	1.14	(1.10 , 1.18)	1.37	(1.32 , 1.42)	
Season									<0.0001
Spring	3,989 / 35,912	(11.11)	13,309 / 143,648	(9.27)	1.35	(1.29 , 1.42)	1.54	(1.47 , 1.61)	
Summer	3,231 / 43,872	(7.36)	15,729 / 175,488	(8.96)	0.73	(0.69 , 0.76)	0.89	(0.85 , 0.94)	
Autumn	5,679 / 47,157	(12.04)	16,089 / 188,628	(8.53)	1.80	(1.69 , 1.83)	2.08	(2.00 , 2.17)	
Winter	4,181 / 34,445	(12.14)	18,451 / 137,780	(13.39)	0.85	(0.81 , 0.88)	1.02	(0.98 , 1.07)	

^a Calculated by conditional logistic regression

^b Calculated by conditional logistic regression adjusted for concomitant medication

^c Joint test for exposure and strata variable interaction, indicating whether montelukast affects NPAEs differently depending on age group, gender, and season

Supplementary Table S7. List of pranlukast codes

Medication	Strength/Formulation	ATC code	HIRA code
Pranlukast	0.5g powder	R03DC02	216430ASY
	0.7g powder		216431ASY
	1.0g powder		216432ASY
	100g powder		216433ASY
	50mg tablet		216408ATB
	75mg tablet		216404ATB
	112.5mg capsule		216401ACH,
			216403ACH
	50mg dispersible tablet		216405ASS
	70mg dispersible tablet		216406ASS
	100mg dispersible tablet		216402ASS
			216401ASS
	140mg dispersible tablet		

Abbreviations: ATC, Anatomical Therapeutic Chemical Classification; HIRA, Health Insurance and Review Assessment Service.