

## Supplementary Online Content

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**eTable 1.** *International Classification of Diseases (ICD) Eighth (ICD-8; 1969-1986), Ninth (ICD-9; 1987-1996), and Tenth (ICD-10; 1997-2013) Revisions Codes From the Swedish National Patient Register for all Comorbidities in the Study*

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

**eTable 1.** *International Classification of Diseases (ICD) Eighth (ICD-8; 1969-1986), Ninth (ICD-9; 1987-1996), and Tenth (ICD-10; 1997-2013) Revisions Codes From the Swedish National Patient Register for all Comorbidities in the Study*

<b>Comorbidities</b>	<b><i>ICD-8</i></b>	<b><i>ICD-9</i></b>	<b><i>ICD-10</i></b>
<b>Organic disorders</b>			
Organic brain disorder	290, 292, 293, 294	290, 293, 294	F0
Epilepsy	345	345	G40
<b>Obsessive-Compulsive Disorder</b>	300.3	300D	F42
<b>Attention-Deficit/Hyperactivity Disorder</b>	–	314	F90
<b>Conduct disorders</b>	–	312	F91
<b>Pervasive developmental disorders</b>	–	299A	F84.0, F84.1, F84.5, F84.8, F84.9
<b>Psychotic disorders</b>	291, 295, 296.99, 297, 298, 299	291, 292, 295, 296X, 297, 298, 299	F20-F25, F28, F29, F32.3, x.5 in F10-F19
<b>Bipolar disorders</b>	296.00, 296.10, 296.30, 296.88, 296.99	296A, 296C, 296E, 296W, 296X	F30-F31
<b>Anxiety disorders</b>	300.0, 300.2	300A, 300C, 308, 309	F40, F41, F43
<b>Mood disorders*</b>	296.2, 300.4	296B, 300E, 311	F32-F39, except F32.3

\* Except for manic episodes and bipolar disorders.

**eTable 2.** Correspondence Between the Harmonized Definition of the Metabolic Syndrome<sup>1</sup> and the Selected Metabolic and Cardiovascular Disorders and Drug Prescriptions for Such Disorders Used as Proxy in the Current Study

Criteria for clinical diagnosis of the metabolic syndrome <sup>1</sup>		Metabolic and cardiovascular disorders from the Swedish National Patient Register	Drug prescriptions for metabolic and cardiovascular disorders from the Swedish Prescribed Drug Register
Measure	Categorical cut points		
Elevated waist circumference [it is recommended that the IDF cut points be used for non-Europeans and either the IDF or AHA/NHLBI cut points used for people of European origin until more data are available]	Population- and country-specific definitions	Obesity [ICD-8 code 277; ICD-9 codes 278.0/.1; ICD-10 code E66]	–
Elevated triglycerides (drug treatment for elevated triglycerides is an alternate indicator)	≥150 mg/dL (1.7 mmol/L)	–	Lipid modifying agents, plain [ATC code C10A]
Reduced HDL-C (drug treatment for reduced HDL-C is an alternate indicator)	<40 mg/dL (1.0 mmol/L) in males; <50 mg/dL (1.3 mmol/L) in males	–	Lipid modifying agents, plain [ATC code C10A]
Elevated blood pressure (antihypertensive drug treatment in a patient with a history of hypertension is an alternate indicator)	Systolic ≥130 and/or diastolic ≥85 mm Hg	Hypertension [ICD-8 codes 400-404; ICD-9 codes 401-405; ICD-10 codes I10-15]	Antihypertensives [ATC code C02], except for clonidine (ATC code C02AC01) and guanfacine (ATC code C02AC02) <sup>2</sup> Diuretics [ATC code C03] Beta blocking agents [ATC code C07] Calcium channel blockers [ATC code C08] Agents acting on the renin-angiotensin system [ATC code C09]
Elevated fasting glucose [most patients with type 2 diabetes mellitus will have the metabolic syndrome by the proposed criteria] (drug treatment of elevated	≥100 mg/dL	Type 2 diabetes mellitus [ICD-10 code E11], but not type 1 diabetes mellitus [ICD-10 code E10]	Blood glucose lowering drugs, excluding insulins [ATC code A10B], but not Insulins and analogues [ATC code A10A]

glucose is an alternate indicator)			
–	–	Ischemic heart diseases [ICD-8 codes 410-414; ICD-9 codes 411-414; ICD-10 codes I20-25] Arrhythmia [ICD-8 codes 427-429; ICD-9 codes 426-429; ICD-10 codes I44-49] Cerebrovascular diseases and transient ischemic attack [ICD-8 codes 430-438; ICD-9 codes 430-437; ICD-10 codes I60-66 and G45] Arteriosclerosis [ICD-8 codes 440-444; ICD-9 codes 440-444; ICD-10 codes I70-74]	Cardiac therapy [ATC code C01] Antihypertensives [ATC code C02] Diuretics [ATC code C03] Peripheral vasodilators [ATC code C04] Vasoprotectives [ATC code C05] Beta blocking agents [ATC code C07] Calcium channel blockers [ATC code C08] Agents acting on the renin-angiotensin system [ATC code C09]

<sup>1</sup>Harmonized definition of the metabolic syndrome from the joint interim statement of the International Diabetes Federation Task Force on Epidemiology and Prevention, the National Heart, Lung, and Blood Institute; the American Heart Association; the World Heart Federation; the International Atherosclerosis Society; and the International Association for the Study of Obesity (Alberti et al., 2009 *Circulation*).

<sup>2</sup>Clonidine and guanfacine are excluded as outcomes since they are indicated and increasingly used for the treatment of tic disorders.

*Abbreviations:* AHA/NHLBI American Heart Association/National Heart, Lung, and Blood Institute; ATC Anatomical Therapeutic Chemical Classification System; HDL-C High-Density Lipoprotein Cholesterol; ICD International Classification of Diseases; IDF International Diabetes Federation.

**eTable 3.** Sensitivity Analysis – Risk of Metabolic and Cardiovascular Disorders in Individuals with Tourette Syndrome or Chronic Tic Disorder, Compared With Unaffected Individuals From the General Population, in a Subcohort of Individuals Followed Up From Birth

	Tourette Syndrome or Chronic Tic Disorder cohort (n=6,245)		Unaffected general population (n=4,244,718)		HR (95% CI) <i>Adjusted for sex and birth year</i>
	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>	
<i>Metabolic and cardiovascular disorders</i>					
Any disorder	949	15.20	369,688	8.71	<b>2.06 (1.93-2.19)</b>
Obesity	264	4.23	66,175	1.56	<b>2.88 (2.55-3.25)</b>
Dyslipidemia	24	0.38	14,261	0.34	<b>1.58 (1.06-2.36)</b>
Type 2 diabetes mellitus	87	1.39	29,910	0.70	<b>1.85 (1.50-2.29)</b>
Circulatory system diseases	690	11.05	296,171	6.98	<b>1.95 (1.81-2.10)</b>

*Note:* Statistically significant hazard ratios are highlighted in bold.

*Abbreviations:* CI confidence interval, HR hazard ratio.

**eTable 4.** Frequencies of Comorbidities in Individuals With Tourette Syndrome or Chronic Tic Disorder and in the Unaffected General Population Cohort

	Tourette Syndrome or Chronic Tic Disorder cohort (n=7,804)		Unaffected general population (n=14,037,222)	
	<i>n</i>	%	<i>n</i>	%
<i>Comorbidities</i>				
Organic disorders (organic brain disorder and epilepsy)	507	6.50	663,950	4.73
Obsessive-Compulsive Disorder	1,353	17.34	35,760	0.25
Attention-Deficit/Hyperactivity Disorder	3,677	47.12	110,920	0.79
Conduct Disorder	558	7.15	11,790	0.08
Pervasive Developmental Disorders	2,006	25.70	51,516	0.37
Psychosis + Bipolar Disorder	823	10.55	316,698	2.26
Anxiety Disorders	1,964	25.17	550,021	3.92
Mood Disorders*	1,569	20.11	597,159	4.25

\* Except for manic episodes and bipolar disorders.