

Table e1. Administrative case definitions for chronic conditions²¹⁻²⁶

| Chronic Condition | Years of Data ^a | Definition | ICD-9-CM/10-CA ^b | ATC or DINs |
|------------------------|----------------------------|-------------------------------------|--------------------------------|--|
| Diabetes | 3 | ≥ 1H or ≥ 2P | 250, E10-14 | |
| Ischemic heart disease | 3 | ≥ 2P AND ≥ 1Rx | 410-414, I20-25 | C01, C07, C08, C09 |
| Hypertension | 1 | ≥ 1H or ≥ 1P or ≥ 1Rx | 401-405, I10-13, I15 | C02AB01, C02AB02, C02AC01, C02CA04, C02CA05, C02DB02, C02DC01, C02LA01, C02LB01, C03AA03, C03BA04, C03BA11, C03CA01, C03CA02, C03CC01, C03DA01, C03DB01, C03DB02, C03EA01, C07AA02, C07AA03, C07AA05, C07AA06, C07AA12, C07AB02, C07AB03, C07AB04, C07AB07, C07AG01, C07BA05, C07BA06, C07CA03, C07CB03, C08CA01, C08CA02, C08CA04, C08CA05, C08CA06, C08DA01, C08DB01, C09AA01, C09AA02, C09AA03, C09AA04, C09AA05, C09AA06, C09AA07, C09AA08, C09AA09, C09AA10, C09BA02, C09BA03, C09BA04, C09BA06, C09BA08, C09BB10, C09CA01, C09CA02, C09CA03, C09CA04, C09CA06, C09CA07, C09CA08, C09DA01, C09DA02, C09DA03, C09DA04, C09DA06, C09DA07, C09DA08, C09DB02, C09XA02, C09XA52, C10BX03, G04CA03 <i>Exclusions:</i> DINs 00028606, 00180408, 00285455, 00594377, 00613215, 00613223, 00613231, 00657182 |
| Chronic lung disease | 5 | ≥ 1H or ≥ 2P or ≥ 2Rx | 491-492, J42-44 | R03BB, R03AL |
| Rheumatoid arthritis | | ≥ 5(H or P) or 3 if < 3 years in MB | 714, M05, M06 | |
| Substance abuse | 3 | ≥ 1H or ≥ 1P | 291, 292, 303-305, F1-F19, F55 | |

| Chronic Condition | Years of Data ^a | Definition | ICD-9-CM/10-CA ^b | ATC or DINs |
|-------------------|----------------------------|--|---|---|
| Dementia | 2 | <p>≥ 1H or ≥ 3P* or 1 ≥Rx</p> <p>*Requires at least 30 days between each physician claim</p> | <p>046.1, 290.0, 290.1, 290.2, 290.3, 290.4, 294, 331.0, 331.1, 331.82, G30, F00, F01, F02, F03</p> | <p>02232043, 02232044, 02269457, 02269465, 02419866, 02419874, 02397595, 02397609, 02397617, 02397625, 02362260, 02362279, 02400561, 02400588, 02412853, 02412861, 02416417, 02416425, 02420597, 02420600, 02402645, 02402653, 02404419, 02404427, 02416948, 02416956, 02402092, 02402106, 02359472, 02359480, 02322331, 02322358, 02381508, 02381516, 02412918, 02412934, 02328666, 02328682, 02367688, 02367696, 02428482, 02428490, 02340607, 02340615, 02244298, 02244299, 02244300, 02266717, 02266725, 02266733, 02316943, 02316951, 02316978, 02339439, 02339447, 02339455, 02377950, 02377969, 02377977, 02425157, 02425165, 02425173, 02416573, 02416581, 02416603, 02420821, 02420848, 02398370, 02398389, 02398397, 02305984, 02305992, 02306018, 02306026, 02306034, 02306042, 02306050, 02306069, 02311283, 02311291, 02311305, 02311313, 02332809, 02332817, 02332825, 02332833, 02336715, 02336723, 02336731, 02336758, 02242115, 02242116, 02242117, 02242118, 02245240, 02302845, 02302853, 02324563, 02324571, 02324598, 02324601, 02401614, 02401622, 02401630, 02401649, 02406985, 02406993, 02407000, 02407019, 02416999, 02417006, 02417014, 02417022, 02260638, 02320908, 02321130, 02324067, 02344807, 02348950, 02349116, 02366487, 02409895, 02382830, 02421364, 02420856</p> |

| Chronic Condition | Years of Data ^a | Definition | ICD-9-CM/10-CA ^b | ATC or DINs |
|---------------------------|----------------------------|-----------------------|---|--|
| Autoimmune thyroid | 5 | ≥ 1H or ≥ 1P or ≥ 1Rx | 242, 245, 376.21, 376.22, E05, E06.3 Exclude anyone with 193, C73, D34, D440 Also exclude anyone with tariff codes 4911, 4912, 4917, 4914, 4925, 4924, 4941 or procedure codes 1.FU.52., 1.FU.87., 1.FU.89. and 1.FU.91 | H03AA01, H03AA05, H03BA02, H03BA03, H03BB02 Exclude anyone with N05AN01 |
| Mood and Anxiety disorder | 5 | ≥ 5 (H or P) | 296, 300, 311 F32, F33, F34.1, F43.2, F53.0, F30, F31, F38.0, F40, F41, F42, F43.1 | |
| Hyperlipidemia | 5 | ≥ 1H or ≥ 2P or ≥ 2Rx | 272, E780, E782, E784, E785 | C10 |

a- Maximum number of years over which definition can be met; b- For physician claims ICD-9 codes were used, at the 3 digit level
H = hospital claim, P = physician claim, Rx = prescription claim, ICD-9-CM = International Classification of Disease, 9th edition, clinical modification, ICD-10-CA = International Classification of Disease, 10th edition, Canadian ATC = Anatomical Therapeutic Classification System, DIN = Drug Identification Number

Table e2. Adjusted odds ratios (OR) and 95% confidence intervals (95%CI) for factors associated with osteoporosis at non-femoral sites

| Variable | Lumbar | | | Total Hip | | | Minimum Score | | |
|---|-------------|-------------|-------------|-------------|-------------|-------------|---------------|-------------|-------------|
| | OR | 95% CI | | OR | 95 % CI | | OR | 95 % CI | |
| | | Lower | Upper | | Lower | Upper | | Lower | Upper |
| MS cases (<i>ref: controls</i>) | 1.24 | 0.96 | 1.60 | 2.98 | 2.18 | 4.07 | 1.52 | 1.22 | 1.90 |
| Age (per decade) | 1.08 | 1.07 | 1.09 | 1.07 | 1.06 | 1.09 | 1.08 | 1.07 | 1.09 |
| Sex (<i>ref: female</i>) | 0.62 | 0.42 | 0.92 | 0.69 | 0.41 | 1.16 | 0.59 | 0.42 | 0.84 |
| Urban region of residence (<i>ref: rural</i>) | 0.96 | 0.79 | 1.16 | 1.05 | 0.79 | 1.39 | 0.97 | 0.81 | 1.15 |
| Continuity of care (<i>ref: no</i>) | 1.19 | 0.73 | 1.97 | 0.82 | 0.45 | 1.50 | 1.14 | 0.75 | 1.75 |
| Diabetes (<i>ref: no</i>) | 0.60 | 0.39 | 0.94 | 0.65 | 0.33 | 1.28 | 0.65 | 0.45 | 0.95 |
| Hypertension (<i>ref: no</i>) | 0.72 | 0.58 | 0.90 | 0.94 | 0.69 | 1.29 | 0.77 | 0.63 | 0.94 |
| Chronic lung disease (<i>ref: no</i>) | 1.98 | 1.38 | 2.84 | 2.09 | 1.33 | 3.30 | 2.13 | 1.54 | 2.95 |
| Autoimmune thyroid disease (<i>ref: no</i>) | 0.77 | 0.59 | 1.00 | 0.78 | 0.53 | 1.15 | 0.84 | 0.67 | 1.07 |
| Mood and anxiety disorder (<i>ref: no</i>) | 0.83 | 0.60 | 1.13 | 0.93 | 0.61 | 1.43 | 0.88 | 0.67 | 1.15 |
| Hyperlipidemia (<i>ref: no</i>) | 0.88 | 0.68 | 1.15 | 0.73 | 0.48 | 1.12 | 0.89 | 0.70 | 1.12 |
| Rheumatoid arthritis (<i>ref: no</i>) | 0.91 | 0.56 | 1.48 | 1.45 | 0.79 | 2.67 | 1.07 | 0.71 | 1.63 |
| Recent fracture (<i>ref: no</i>) | 1.61 | 1.13 | 2.28 | 1.07 | 0.62 | 1.83 | 1.70 | 1.23 | 2.35 |
| Substance abuse (<i>ref: no</i>) | 0.96 | 0.61 | 1.52 | 1.26 | 0.70 | 2.29 | 1.22 | 0.83 | 1.79 |
| Dementia (<i>ref: no</i>) | 1.41 | 0.85 | 2.34 | 1.12 | 0.54 | 2.31 | 1.21 | 0.77 | 1.91 |
| Ischemic heart disease (<i>ref: no</i>) | 1.07 | 0.61 | 1.86 | 0.55 | 0.20 | 1.47 | 0.85 | 0.52 | 1.42 |
| Greater disability (<i>ref: no</i>) | 1.20 | 0.65 | 2.19 | 3.22 | 1.76 | 5.91 | 1.86 | 1.14 | 3.05 |
| Prolonged glucocorticoid use (<i>ref: no</i>) | 0.88 | 0.52 | 1.48 | 1.77 | 0.92 | 3.38 | 0.92 | 0.58 | 1.45 |
| Antidepressant use (<i>ref: no</i>) | | | | | | | | | |
| Short-term (<180 days) | 0.82 | 0.57 | 1.19 | 0.79 | 0.47 | 1.33 | 0.77 | 0.55 | 1.07 |

| | | | | | | | | | |
|--------------------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Long-term (≥ 180 days) | 0.99 | 0.73 | 1.33 | 0.92 | 0.61 | 1.40 | 0.96 | 0.73 | 1.25 |
| Antispasmodic use (<i>ref: no</i>) | | | | | | | | | |
| Short-term (< 180 days) | 1.51 | 0.89 | 2.57 | 1.27 | 0.65 | 2.49 | 1.53 | 0.95 | 2.46 |
| Long-term (≥ 180 days) | 1.04 | 0.61 | 1.77 | 2.64 | 1.60 | 4.36 | 2.05 | 1.38 | 3.04 |
| History of falls (<i>ref: no</i>) | 1.25 | 0.65 | 2.40 | 3.11 | 1.42 | 6.81 | 1.21 | 0.67 | 2.19 |
| BMI (per 5 kg/m ²) | 0.90 | 0.89 | 0.92 | 0.79 | 0.76 | 0.82 | 0.89 | 0.87 | 0.91 |

Bold = statistically significant

Table e3. Adjusted odds ratios (OR) and 95% confidence intervals (95%CI) for factors associated with osteoporosis at all sites, excluding participants with missing body mass index

| Effect | Femoral Neck | | | Lumbar | | | Total Hip | | | Minimum Score | | |
|---|--------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|---------------|-------------|-------------|
| | OR | 95 % CI | | OR | 95 % CI | | OR | 95 % CI | | OR | 95 % CI | |
| | | Lower | Upper | | Lower | Upper | | Lower | Upper | | Lower | Upper |
| MS cases (<i>ref: controls</i>) | 2.44 | 1.83 | 3.25 | 1.28 | 0.98 | 1.66 | 3.07 | 2.23 | 4.23 | 1.58 | 1.25 | 1.98 |
| Sex (<i>ref: female</i>) | 0.61 | 0.38 | 0.98 | 0.67 | 0.44 | 1.00 | 0.72 | 0.43 | 1.23 | 0.61 | 0.43 | 0.87 |
| Age (per decade) | 1.08 | 1.06 | 1.09 | 1.08 | 1.07 | 1.09 | 1.07 | 1.06 | 1.09 | 1.08 | 1.07 | 1.09 |
| Urban region (<i>ref: rural</i>) | 0.89 | 0.69 | 1.14 | 0.90 | 0.74 | 1.10 | 0.98 | 0.73 | 1.31 | 0.92 | 0.77 | 1.11 |
| Continuity of care (<i>ref: no</i>) | 1.27 | 0.75 | 2.17 | 1.28 | 0.77 | 2.14 | 0.91 | 0.49 | 1.69 | 1.25 | 0.81 | 1.94 |
| Diabetes (<i>ref: no</i>) | 1.04 | 0.64 | 1.70 | 0.57 | 0.36 | 0.90 | 0.67 | 0.34 | 1.34 | 0.64 | 0.44 | 0.94 |
| Hypertension (<i>ref: no</i>) | 0.95 | 0.72 | 1.26 | 0.76 | 0.61 | 0.96 | 0.99 | 0.72 | 1.36 | 0.81 | 0.66 | 1.00 |
| Chronic lung disease (<i>ref: no</i>) | 2.43 | 1.63 | 3.61 | 2.08 | 1.44 | 2.99 | 2.08 | 1.31 | 3.30 | 2.22 | 1.59 | 3.09 |
| Autoimmune thyroid (<i>ref: no</i>) | 0.72 | 0.51 | 1.02 | 0.77 | 0.58 | 1.01 | 0.75 | 0.50 | 1.13 | 0.84 | 0.65 | 1.07 |
| Mood/Anxiety (<i>ref: no</i>) | 0.91 | 0.63 | 1.33 | 0.83 | 0.60 | 1.13 | 0.95 | 0.62 | 1.46 | 0.91 | 0.69 | 1.19 |
| Hyperlipidemia (<i>ref: no</i>) | 0.90 | 0.63 | 1.27 | 0.94 | 0.72 | 1.23 | 0.72 | 0.46 | 1.11 | 0.94 | 0.74 | 1.19 |
| Rheumatoid Arthritis (<i>ref: no</i>) | 1.40 | 0.80 | 2.42 | 1.01 | 0.62 | 1.64 | 1.45 | 0.77 | 2.73 | 1.14 | 0.74 | 1.74 |
| History of fractures (<i>ref: no</i>) | 1.41 | 0.89 | 2.25 | 1.69 | 1.17 | 2.43 | 1.00 | 0.56 | 1.77 | 1.78 | 1.27 | 2.50 |

| | | | | | | | | | | | | |
|---|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Substance abuse (<i>ref: no</i>) | 1.36 | 0.80 | 2.29 | 0.99 | 0.62 | 1.59 | 1.25 | 0.68 | 2.31 | 1.20 | 0.80 | 1.79 |
| Dementia (<i>ref: no</i>) | 0.63 | 0.30 | 1.33 | 1.45 | 0.86 | 2.46 | 1.09 | 0.51 | 2.33 | 1.23 | 0.77 | 1.96 |
| Ischemic heart disease (<i>ref: no</i>) | 0.91 | 0.46 | 1.78 | 1.04 | 0.59 | 1.83 | NA | NA | NA | 0.84 | 0.50 | 1.40 |
| Greater disability (<i>ref: no</i>) | 2.82 | 1.62 | 4.93 | 1.20 | 0.65 | 2.21 | 3.31 | 1.80 | 6.10 | 1.83 | 1.12 | 3.01 |
| Prolonged glucocorticoid use (<i>ref: no</i>) | 1.18 | 0.65 | 2.16 | 0.82 | 0.48 | 1.41 | 1.92 | 0.99 | 3.70 | 0.90 | 0.57 | 1.44 |
| Antidepressant use (<i>ref: no</i>) | | | | | | | | | | | | |
| Short-term (<180 days) | 0.94 | 0.60 | 1.46 | 0.86 | 0.59 | 1.25 | 0.84 | 0.50 | 1.42 | 0.80 | 0.57 | 1.11 |
| Long-term (≥180 days) | 0.94 | 0.65 | 1.37 | 0.94 | 0.69 | 1.29 | 0.92 | 0.60 | 1.42 | 0.91 | 0.70 | 1.20 |
| Antispasmodic use (<i>ref: no</i>) | | | | | | | | | | | | |
| Short-term (<180 days) | 1.30 | 0.70 | 2.42 | 1.58 | 0.93 | 2.70 | 1.19 | 0.59 | 2.41 | 1.52 | 0.94 | 2.47 |
| Long-term (≥180 days) | 2.40 | 1.49 | 3.86 | 0.88 | 0.50 | 1.55 | 2.46 | 1.47 | 4.13 | 1.96 | 1.30 | 2.95 |
| History of falls (<i>ref: no</i>) | 1.50 | 0.70 | 3.23 | 1.27 | 0.65 | 2.48 | 3.33 | 1.48 | 7.47 | 1.14 | 0.62 | 2.10 |
| BMI (per 5 kg/m ²) | 0.84 | 0.82 | 0.87 | 0.90 | 0.88 | 0.92 | 0.78 | 0.75 | 0.81 | 0.89 | 0.87 | 0.90 |

Bold = statistically significant