Supplemental Appendix for:
Risk of Osteoporosis and Fractures in Thyroid Cancer Patients: A case-control study in United States Veterans
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SUPPLEMENTAL MATERIAL

Measures
The ICD-9 and CPT-4 codes used were as follows:

- **Osteoporosis:**
  - **ICD-9 codes:** 733.0x
- **Hip fractures:**
  - **ICD-9 codes:** 820.xx (excluding concomitant codes for motor vehicle accident E810-E819 or pathologic fracture 733.1x)
  - **CPT codes:** 27230, 27232, 27235, 27236, 27238, 27240, 27244, 27245, 27246, 27248, 27254, 27267, 27268, 27269, 1018543, 1004949, 1004954, 1004957
- **Pelvic fractures:**
  - **ICD-9 codes:** 808.xx
  - **CPT codes:** 27200, 27202, 27215, 27216, 27217, 27218, 27226, 27227, 27228, 1004934, 1004943
- **Vertebral fractures:**
  - **ICD-9 codes:** 805.xx
  - **CPT codes:** 22305, 22520, 22521, 22522, 22523, 22524, 22525
- **Forearm/Wrist fractures (including distal radial fractures):**
  - **ICD-9 codes:** 813.xx and 814.xx
  - **CPT codes:** 25600, 25605, 25606, 25607, 25608, 25609
- **Bone density scans:**
  - **ICD-9 codes:** 88.98
  - **CPT codes:** 76070, 76071, 76075, 76076, 77078, 77079, 77080, 77081

Charlson/Deyo Comorbidity Score

The Charlson/Deyo Comorbidity Score is a method of categorizing comorbidities of patients based on the ICD diagnosis codes found in administrative data. Each comorbidity category has an associated weight (from 1 to 6), based on the adjusted risk of mortality or resource use, and the sum of all the weights results in a single comorbidity score for a patient. A score of zero indicates that no comorbidities were found. The higher the score, the more likely the predicted outcome will result in mortality or higher resource use.

Note: The Charlson/Deyo value is a weighted score derived from the sum of the scores for each of the comorbid conditions listed below. Because of the small proportion of cases with a Charlson/Deyo Comorbidity score exceeding 2, the data were truncated as Charlson/Deyo Comorbidity Index score 0, 1 and ≥2.

Charlson/Deyo Comorbidity Score Mapping Table:

Reported ICD-9 CM Codes	Condition	Charlson/Deyo Comorbidity Score
410 – 410.9	Myocardial Infarction	1
428 – 428.9	Congestive Heart Failure	1
433.9, 441 – 441.9, 785.4, V43.4	Peripheral Vascular Disease	1
430 – 438	Cerebrovascular Disease	1
290 – 290.9	Dementia	1
490 – 496, 500 – 505, 506.4	Chronic Pulmonary Disease	1
710.0, 710.1, 710.4, 714.0 – 714.2, 714.81, 725	Rheumatologic Disease	1
531.x – 534.9	Peptic Ulcer Disease	1
571.2, 571.5, 571.6, 571.4 – 571.49	Mild Liver Disease	1
250.0 – 250.3, 250.7	Diabetes	1
250.4 – 250.7	Diabetes with Chronic Complications	2
344.1, 342.0 – 342.9	Hemiplegia or Paraplegia	2
582.0 – 582.9, 583.0 – 583.7, 585, 586, 588.0 – 588.9	Moderate or Severe Renal Disease	2
140.x-152.x, 155.x-172.0, 174.x-195.8 (exclude 193), 200.x-208.x	Any malignancy, including lymphoma and leukemia	2
572.2 – 572.8	Moderate or Severe Liver Disease	3
042.0 – 044.9	AIDS	6
196-199.1	Metastatic solid malignancies	6