

**Hyponatremia is Associated with Increased Osteoporosis and Bone Fractures in Diabetics
with Matched Glycemic Control: Supplemental Materials**

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Abbreviated title: Diabetic osteoporotic fractures and hyponatremia

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Methods: Explorys research informatics tool

Data is passed into the Explorys private cloud-based data store using HL7 messaging or direct data transfer for capture of information that is standardized and normalized. Data is automatically updated at least once every 24 hours. Querying and analysis of the data by all participating healthcare organizations is available at the MedStar Health Research Institute through the Explore application.

Data used in Explore is de-identified according to HIPAA and HITECH standards and mapped into UMLS ontologies to facilitate data collection and querying. Patients receive unique identifiers, which allow longitudinal documentation of clinical care at all participating institutions in the network. SNOMED-CT hierarchy is used to map diagnoses, findings, and procedures. SNOMED and RxNorm are used to map prescription drugs to pharmacological class and drug identities, respectively. LOINC hierarchy is used to map laboratory test observations.

Supplemental Table 1. Disease history diagnostic codes

Disease	ICD-9 codes
Liver disease	570
	571
	572
	573
Heart failure	428
Pulmonary disease	480
	481
	482
	483
	484
	485
	486
	487
	488
	490
	491
	492
	493
	494
	495
	496
Central Nervous System disease	290
	291
	292
	293
	294
	320
	321
	322
	323
	324
	325
	326
	345
	431
	432
	433
	434
	435
	436

	437
	438
Malignancy	140
	141
	142
	143
	144
	145
	146
	147
	148
	149
	161
	162
	163
	164
	165
	191
	192
	194
	209
Hypotension	458
Acute Kidney disease	584
Chronic Kidney disease	585
Renal failure	586
Diabetic ophthalmopathy	250.5
Diabetic neuropathy	250.6
Diabetic peripheral circulatory disease	250.7
