

**Appendix Table A2. Criteria for Comorbidities**

Condition	Encounter, Billing, or Problem List		Medication GPI (2-digit)	Lab/Biometric/Other	Description (Meet ≥1 Criterion)	Exclusions
	ICD-9	ICD-10				
<b>Metabolic Syndrome</b>	277.7	E88.81	N/A	See criteria below †	See criteria below †	
<b>Prediabetes</b>	790.29	R73.09 V77.1-TS	27	FBG: 100 to <126mg/dL  HbA1c: 5.7% to <6.5%  OGTT: 140 to <200mg/dL	<ol style="list-style-type: none"> <li>≥2 abnormal labs 90-365 days apart;</li> <li>≥1 abnormal lab <b>AND</b> ≥1 medication order;</li> <li>1 problem list, encounter, or billing diagnosis <b>AND</b> ≥1 abnormal lab</li> </ol>	Meet criteria for type 2 diabetes (below) or has evidence of type 1 diabetes, defined as a problem list, encounter, or billing diagnosis of 250.x1 or E10.x
<b>Type 2 Diabetes</b>	250.x	E11.x	27	FBG: ≥126mg/dL  HbA1c: ≥6.5%  OGTT: ≥200mg/dL	<ol style="list-style-type: none"> <li>1 problem list diagnosis <b>AND</b> ≥1 encounter or billing diagnoses;</li> <li>≥2 encounter or billing diagnoses ≥90 days apart;</li> <li>≥2 abnormal labs 90-365 days apart;</li> <li>≥1 abnormal lab <b>AND</b> ≥1 medication order;</li> <li>1 problem list, encounter, or, billing diagnosis <b>AND</b> ≥1 medication order;</li> <li>1 problem list, encounter, or billing diagnosis <b>AND</b> ≥1 abnormal lab</li> </ol>	Evidence of type 1 diabetes, defined as a problem list, encounter, or billing diagnosis of 250.x1 or E10.x
<b>Hypertension</b>	401.x; 796.2	I10	37, 36, 34, 33	SBP: ≥140 (≥130 for T2D)  DBP: ≥ 90 (≥80 for T2D)	<ol style="list-style-type: none"> <li>1 problem list diagnosis <b>AND</b> ≥1 encounter or billing diagnoses;</li> <li>≥2 encounter or billing diagnoses ≥90 days apart;</li> <li>≥2 confirmatory SBP or DB ≥90-365 days apart;</li> <li>≥1 problem list, encounter, or billing diagnosis <b>AND</b> ≥1 medication order;</li> </ol>	

					5. ≥1 problem list, encounter, or billing diagnosis <b>AND</b> ≥1 abnormal SBP or DBP	
<b>Dyslipidemia</b>	272.x	E78.x	39	TC: ≥200mg/dL LDL: ≥160mg/dL HDL: <40mg/dL TG: ≥200mg/dL	1. 1 problem list diagnosis <b>AND</b> ≥1 encounter or billing diagnoses ; 2. ≥2 encounter, or billing diagnoses ≥90 days apart 3. ≥2 abnormal labs 90-365 days apart; 4. ≥1 abnormal lab <b>AND</b> ≥1 medication order; 5. ≥ 1 problem list, encounter, or billing diagnosis <b>AND</b> ≥1 medication order; 6. 1 problem list, encounter, or billing diagnosis <b>AND</b> ≥1 abnormal lab	
<b>Depression</b>	311; 296.2x 296.3x 300.4	F32.x F33.x; F34.1	58	--	1. 1 problem list diagnosis <b>AND</b> ≥1 encounter or billing diagnosis 2. ≥2 encounter or billing diagnoses; 3. ≥1 problem list, encounter, or billing diagnosis <b>AND</b> ≥1 medication order	

DBP, diastolic blood pressure; FBG, fasting blood glucose; GPI, generic product identifier; HbA1c, hemoglobin A1c; ICD, International Classification of Disease; OGTT, oral glucose tolerance test; SBP, systolic blood pressure.

†Patients must have at least 3 of the following:

1. Body Mass Index ≥30 kg/m<sup>2</sup> in non-Asian patients or ≥27 kg/m<sup>2</sup> in Asian patients
2. Identified as having hypertension (described above)
3. Identified as having prediabetes or diabetes (described above)
4. Triglycerides ≥150 mg/dL (at least 2 values at least 90-365 days apart), or at least 1 value and evidence of a triglyceride lowering medication (fibrates [GPI=3920]; niacin [GPI=3945]; omega-3 fatty acids [GPI=3950])
5. Low HDL <40 mg/dL in men or <50 mg/dL in women (at least 2 values at least 90-365 days apart), or at least 1 value and evidence of an HDL raising medication (fibrates [GPI=3920], niacin [GPI=3945])