# Appendix

**Supplementary Table 1: Criteria for testing and follow-up screening for prediabetes or diabetes in adults**

| **ADA Guidelines(4-6)** | **USPSTF Guidelines(7)** |
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| 1. Testing should be considered in all adults who are overweight (BMI ≥25 kg/m2\*) and have additional risk factors:
* Physical inactivity
* First-degree relative with diabetes
* High risk race/ethnicity (e.g. African American, Latino, Native American, Asian American, Pacific Islander)
* Women who delivered a baby weighing >9lbs or were diagnosed with GDM (gestational diabetes)
* Hypertension (≥140/90 mmHg or on therapy for hypertension)
* HDL cholesterol level <35 mg/dL (0.90 mmol/L) and/or triglyceride level >250 mg/dL (2.82 mmol/L)
* Women with polycystic ovary syndrome
* A1C ≥5.7%, IGT , or IFG on previous testing
* Other clinical conditions associated with insulin resistance (e.g. severe obesity, acanthosis nigricans)
* History of CVD
1. In the absence of the above criteria, testing for diabetes should begin at age 45 years.
2. If results are normal, testing should be repeated at least at 3-year intervals, with consideration of more frequent testing depending on initial results (e.g. those with prediabetes should be tested yearly) and risk status.
 | **USPSTF 2008**The USPSTF recommends screening for type 2 diabetes in asymptomatic adults with sustained blood pressure (either treated or untreated) greater than 135/80 mmHg**UPSTF 2014 Draft Recommendation**Clinicians may assess patients risk for impaired glucose metabolism using following risk factors-* Age ≥ 45 years
* Overweight/Obese
* First-degree relative with diabetes
* History of gestational diabetes
* History of polycystic ovarian syndrome
* Certain racial/ethnic minorities, including African Americans, American Indians/Alaska Natives, Asian Americans, Hispanics/Latinos, and Native Hawaiians/Pacific Islanders, are also at increased risk compared with whites.

**USPSTF 2015 Recommendations*** The USPSTF recommends screening for abnormal blood glucose as part of cardiovascular risk assessment in adults aged 40 to 70 years who are overweight or obese. Clinicians should offer or refer patients with abnormal blood glucose to intensive behavioral counseling interventions to promote a healthful diet and physical activity.
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\* At risk BMI may be lower in some ethnic groups

**Supplementary Table 2: Guidelines Criteria Assessed using EMR data**

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| **2008 USPSTF Guidelines** |
| * Age ≥ 18 years and blood pressure level ≥ 135/80 mm Hg
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| **ADA Guidelines** |
| * Patients aged 18-45 years AND diagnosis of obesity or BMI ≥ 25 kg/m2
	+ - Blood pressure level :≥140/90 mm Hg or taking antihypertensive treatment
		- Recorded family history of diabetes ((1) diagnosis type was “Family History of” and ICD-9-CM code of diabetes or (2) ICD-9-CM Code-V18.x)
		- Member of high risk ethnic group (African American, Latino, Native American, Asian American, Pacific Islander)
		- History of:
			* Gestational diabetes [(1) diagnosis type was “History of” and ICD-9-CM code 640.0/640.8 or (2) ICD-9-CM Code-V12.2)
		- History of or diagnosis of (clinical conditions associated with insulin resistance):
			* Female gender and having diagnosis of Polycystic Ovarian Syndrome (ICD-9-CM: 256.4)
			* Cardiovascular disease (ICD-9-CM: 430, 431, 433.xx, 434.00, 434.01, 434.11, 434.91, 436, 410.xx-414.xx, 440.2x, 440.3x, 440.8x, 440.9x, 443.9; Procedure codes: 38.08, 38.18, 38.29, 38.38, 38.48, 38.68, 39.25, 39.29, 39.49, 39.5, 39.56, 39.57, 39.58, 39.9, 84.1x, 84.91, 88.42, 88.48, 88.77)
			* Acanthosis Nigricans (ICD-9-CM: 701.2)
			* Severe Obesity
				+ BMI ≥ 40 kg/m2, Obese Class III]
			* Pheochromocytoma (ICD-9-CM: 227.0, 194.0, 255.6)
			* Cushings (ICD-9-CM: 255.0)
			* Acromegaly (ICD-9-CM: 253.0)
			* Somatostatinoma (ICD-9-CM: 235.5)
			* Glucagonoma (ICD-9-CM: 157.4)
			* Leprechaunism (ICD-9-CM: 259.8)
		- Evidence of lab test result
			* HDL (High Density Lipoprotein) cholesterol level (< 35 mg/dl or 0.9 mmol/L) and/or triglyceride level (> 250 mg/dl or 2.82 mmol/l)
			* History of
				+ fasting plasma glucose (100 to 125mg/dl or 5.6 to 6.9 mmol/l)
				+ 2 hour glucose tolerance test (140 to 199mg/dl or 7.8 to 11.0 mmol/l)
				+ HbA1c (≥ 5.7%)
				+ Diagnosis of prediabetes (ICD-9-CM: 790.2x, V.77.1)
 |
| * + Patients aged ≥ 45 years
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**Supplementary** **Table 3. EMR Patient Sample Selection – Attrition Table.**

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| --- | --- | --- |
| **Step** | **Description** | **N** |
|  | **Total No. of Physician who responded to the survey** | **305** |
|   | **Inclusion Criteria** |  |
| 1 | Adults aged ≥18 years whose physicians participated in the online survey | 707,259 |
| 2 | 4 or more years of activity with the surveyed physician between 2009 and Sept 2014 | 214,826 |
| 3 | Adults aged ≥18 years between 2010 and Sept 2011 | 204,523 |
| **3.a** | **2008 USPSTF Guidelines** |  |
| 3.a.i |  Age ≥ 18 year and Blood Pressure level ≥ 135/80 mm Hg | **90,456** |
| **3.b** | **ADA Guidelines:**  | **158,163** |
| 3.b.i | Patients aged 18-45 years AND diagnosis of obesity or BMI ≥ 25 kg/m2 | 48,833 |
|   | Blood pressure level :≥140/90 mm Hg or on antihypertensive treatment | 12,064 |
|   | Recorded family history of diabetes  | 75 |
|   | Member of high risk ethnic group (African American, Latino, Native American, Asian American, Pacific Islander) | 11,691 |
|   | History of or diagnosis of:  |  |
|   | Female gender and having diagnosis of Polycystic Ovarian Syndrome | 359 |
|   | History of cardiovascular disease  | 342 |
|   | Other clinical conditions associated with insulin resistance |  |
|   | acanthosis nigricans (701.2) | 63 |
|   | Severe Obesity (BMI ≥ 40 kg/m2) | 848 |
|   | Pheochromocytoma | 12 |
|   | Cushing’s Syndrome | 8 |
|   | Acromegaly | 3 |
|   | Somatostatinoma | 2 |
|   | Glucagonoma | 0 |
|   | Leprechaunism | 75 |
|   | Evidence of lab test result |  |
|   | HDL (High Density Lipoprotein) cholesterol level (< 35 mg/dl or 0.9 mmol/L) and/or triglyceride level (> 250 mg/dl or 2.82 mmol/l) | 5,801 |
|   | History of:  |  |
|   | fasting plasma glucose (100 to 125mg/dl or 5.6 to 6.9 mmol/l) | 1,959 |
|   | 2 hour glucose tolerance test (140 to 199mg/dl or 7.8 to 11.0 mmol/l) | 0 |
|   | HbA1c (≥ 5.7%) | 5,226 |
|   | Diagnosis of prediabetes | 1,344 |
| 3.b.ii | Patients aged ≥45 years | 132,312 |
| 4 | At least one activity  in the year before they are observed to be eligible for diabetes screening | 140,455 |
|  | **Exclusion Criteria** |  |
| 5 | Evidence of pregnancy OR gestational diabetes [Not "History of"] (ICD-9-CM codes 648.0, 648.8) from 2009 through 2011 | 10,194 |
| 6 | Evidence of type 1 diabetes from 2009 through 2014 | 1,725 |
| 7 | Evidence of diagnosis of pre-diabetes/diabetes or use of antidiabetic medications in the one year baseline | 13,590 |
| 8 | **Final Cohort Total** | **123,990** |
| 9 | No. of Patients Receiving Diabetes Screening Test | 87,646 |