### RECOMMENDED FOLLOW UP

#### Adult in Health Care System

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Adult at risk, every 3 years (age &gt;45)</td>
</tr>
<tr>
<td>2</td>
<td>Adult with fasting plasma glucose ≥ 110 &lt; 126</td>
</tr>
</tbody>
</table>

#### Adult with Diabetes

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>3</td>
<td>Initial visit following diagnosis</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Each routine primary care visit</td>
</tr>
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<td></td>
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<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Quarterly to annually</td>
</tr>
<tr>
<td>6</td>
<td>Annually</td>
</tr>
<tr>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>When HbA1c is not on target</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>When change in vision, or eye risk factors</td>
</tr>
<tr>
<td>9</td>
<td>Age 40 OR onset of cardiovascular disease risk factors</td>
</tr>
<tr>
<td>10</td>
<td>Confirmed microalbuminuria or SBP ≥ 140 or DBP ≥ 80</td>
</tr>
<tr>
<td>11</td>
<td>Per national cholesterol guidelines (LDL-C ≥ 130)</td>
</tr>
</tbody>
</table>

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**UPDATE 2003**

- Consider aspirin therapy for patients with diabetes age > 40 OR evidence of cardiovascular disease risk factors
- If the patient is a candidate for an influenza vaccine, administer it in season
- Administer pneumonia vaccine, if indicated
- If the patient is using tobacco, refer to the VA/DoD Clinical Practice Guideline for the Management of Tobacco Use Cessation

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**IF**

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**GO TO**

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**VA/DoD Clinical Practice Guideline for the Management of Diabetes Mellitus in Primary Care Pocket Guide**

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**RECOMMENDED FOLLOW UP**

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**VA/DoD Clinical Practice Guideline for the Management of Hypertension**

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**VA/DoD Guideline for the Management of Dyslipidemia**

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**VA/DoD Guideline for the Management of Dystipidemia**

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**Module G – Glycemic Control**

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**Module R – Kidney Function**

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**Module E – Eye Care**

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**Module F – Foot Care**

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**Module M – Self-Management and Education**
**DIAGNOSIS OF DIABETES MELLITUS**

<table>
<thead>
<tr>
<th>Status</th>
<th>Fasting Plasma Glucose (FPG) (Preferred) (a), (b)</th>
<th>Casual Plasma Glucose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes Mellitus</td>
<td>FPG &gt;126 mg/dL (7.0 mmol/L)</td>
<td>Casual plasma glucose &gt;200 mg/dL (11.3 mmol/L) plus symptoms of diabetes (c)</td>
</tr>
<tr>
<td>Impaired Glucose Tolerance</td>
<td>Impaired fasting glucose (IFG) FPG ≥110, &lt;126 mg/dL</td>
<td>—</td>
</tr>
<tr>
<td>Normal</td>
<td>FPG &lt;110 mg/dL</td>
<td>—</td>
</tr>
</tbody>
</table>

(a) Fasting is defined as no caloric intake for at least 8 hours.
(b) FPG is the preferred test for diagnosis, but either of the two listed is acceptable. In the absence of unequivocal hyperglycemia with acute metabolic decompensation, one of these two tests should be used on a different day to confirm the diagnosis.
(c) “Casual” means any time of day without regard to time since the last meal; classic symptoms include polyuria, polydipsia, and unexplained weight loss.

**Foot Care**
- Every patient with diabetes must have an annual documented foot risk assessment
- Every high-risk patient should have a visual inspection of his/her feet at each routine primary care visit

**Eye Care**
- Persons who have had no retinopathy on all previous examinations should be screened for retinopathy at least every other year
- Persons who have ocular risk factors, are on insulin, or have had retinopathy detected on a previous examination should have a yearly fundus examination

**Definition of Chronic Kidney Disease Criteria**

1. Kidney damage for ≥3 months, as defined by structural or functional abnormalities of the kidney, with or without decreased glomerular filtration rate (GFR), manifest by either:
   - Pathological abnormalities; OR
   - Markers of kidney damage, including abnormalities in the composition of the blood or urine, or abnormalities in imaging tests

2. GFR <60 mL/min/1.73m² for ≥3 months, with or without kidney damage

**CHRONIC KIDNEY DISEASE (CKD): A CLINICAL ACTION PLAN**

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
<th>GFR (mL/min/1.73m²)</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kidney damage with normal or ↑ GFR</td>
<td>&gt;90 (with CKD risk factors)</td>
<td>• Screen and CKD risk reduction</td>
</tr>
<tr>
<td>2</td>
<td>Kidney damage with mild ↓ GFR</td>
<td>60 – 89</td>
<td>• Estimate progression</td>
</tr>
<tr>
<td>3</td>
<td>Moderate GFR</td>
<td>30 – 59</td>
<td>• Evaluate and treat complications</td>
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<td>15 – 29</td>
<td>• Prepare for kidney replacement therapy</td>
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<td>5</td>
<td>Kidney failure</td>
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**Dyslipidemia Treatment in Patients with Diabetes**

<table>
<thead>
<tr>
<th>Baseline LDL-C (mg/dL)</th>
<th>Diet &amp; Exercise Consider drug therapy</th>
<th>Diet &amp; Exercise Initiate drug therapy</th>
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<tbody>
<tr>
<td>≥100</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;130</td>
<td>Diet &amp; Exercise Consider drug therapy</td>
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**Hypertriglyceridemia in Patients with Diabetes**

<table>
<thead>
<tr>
<th>LDL-C ≤130 mg/dl and HDL-C &lt; 40 mg/dl</th>
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**Determination of Target HbA1c Level**

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<tr>
<th>Major Compensatory or Physiologic Age</th>
<th>Microvascular Complications</th>
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<tr>
<td>Absent or Mild*</td>
<td>Moderate**</td>
</tr>
<tr>
<td>(5 – 15 years life expectancy)</td>
<td>&lt;3% above normal range</td>
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(a) Mild microvascular disease is defined by early background retinopathy, and/or microalbuminuria, and/or mild neuropathy.
(b) Moderate microvascular disease is defined by pre-proliferative (without severe hemorrhage, intraretinal microvascular anomalies (IRMA), or venous bleeding) retinopathy or persistent, fixed proteinuria (microalbuminuria) and/or demonstrable peripheral neuropathy (sensory loss).
(c) Advanced microvascular disease is defined by severe non-proliferative (with severe hemorrhage, IRMA, or venous bleeding) or proliferative retinopathy and/or renal insufficiency (Cran Chronic creatinine level >2.0 mg/dL and/or increase in serum creatinine attributable to kidney disease), and/or autonomic neuropathy (e.g., gastroparesis, impaired sweating, or orthostatic hypotension).
(d) Major comorbidities includes, but is not limited to, any several of the following conditions: cardiovascular disease, chronic obstructive pulmonary disease, chronic liver disease, stroke, and malignancy.
(e) Moderate degree of major comorbid condition.
(f) Severe degree or end-stage major comorbid condition.

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Insulin (see Annotation J-3 Insulin Therapy)

- Efficacy: Dose can be adjusted to achieve a wide range of glucose lowering.
- Requires intensive patient education.
- Regular, neutral protamine hagedorn insulin (NPH), and lente – inexpensive.
- Insulin analogs – moderately expensive.

Contraindications: Hypersensitivity to insulin.

Adverse Events: Hypoglycemia, hypersensitivity, injection site reactions, weight gain.

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**VADoD Clinical Practice Guideline**

Management of Diabetes Mellitus in Primary Care Pocket Guide

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**DoD Access to full guideline:** http://www.qmo.amedd.army.mil

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**Insulin**

<table>
<thead>
<tr>
<th>Insulin</th>
<th>Onset (hours)</th>
<th>Peak (hours)</th>
<th>Duration (hours)</th>
<th>Compatible Mixed With</th>
<th>Appearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rapid-Acting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Regular NPH (Humulin R)</td>
<td>0.5 – 1</td>
<td>2 – 5</td>
<td>6 – 10</td>
<td>NPH, lente, ultralente</td>
<td>Clear</td>
</tr>
<tr>
<td>Laspor (Humalog)</td>
<td>0.25 – 0.5</td>
<td>0.5 – 2.5</td>
<td>3 – 6.5</td>
<td>Human NPH, human ultralente</td>
<td>Clear</td>
</tr>
<tr>
<td>Aspart NovoLog®</td>
<td>0.17 – 0.33</td>
<td>1 – 3</td>
<td>3 – 6</td>
<td>Human Ultralente</td>
<td>Clear</td>
</tr>
<tr>
<td>Intermediate-Acting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NPH (Novolin N; Humulin N)</td>
<td>1 – 1.5</td>
<td>4 – 12</td>
<td>16 – 24</td>
<td>Regular</td>
<td>Cloudy</td>
</tr>
<tr>
<td>Lente (Novolin L; Humulin L)</td>
<td>1 – 2.5</td>
<td>7 – 15</td>
<td>16 – 24</td>
<td>Regular</td>
<td>Cloudy</td>
</tr>
<tr>
<td>Long-Acting</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ultralente Humulin (U)</td>
<td>4 – 6</td>
<td>8 – 20</td>
<td>24 – 28</td>
<td>Regular</td>
<td>Cloudy</td>
</tr>
<tr>
<td>Insulin glargine (Lantus)</td>
<td>1.1</td>
<td>2 – 20</td>
<td>Up to 24</td>
<td>Not to be mixed with other insulins</td>
<td>Clear</td>
</tr>
</tbody>
</table>

---

**Recommended Combinations**

1. **Insulin (cont.)**

<table>
<thead>
<tr>
<th>Insulin (see Annotation J-3 Insulin Therapy) cont.</th>
<th>Compatible Mixed With</th>
<th>Appearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>PRE-MIXED PRODUCTS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>70% NPH/30% Regular (Humulin 70/30, Humulin 70/50, Humulin 50/50)</td>
<td>Not to be mixed with other insulins</td>
<td>Cloudy</td>
</tr>
<tr>
<td>75% intermediate/25% laspor (Humalog mix 75/25)</td>
<td>Not to be mixed with other insulins</td>
<td>Cloudy</td>
</tr>
</tbody>
</table>

**Determination of Target HbA1c Level**

- **Major Complications of Physiological Age**
  - Absent or Mild (a) (≤1% above upper normal range)
  - Moderate (b) (≤2% above upper normal range)
  - Advanced (c) (≤3% above upper normal range)

- **Microvascular Complications**
  - Absent >15 years life expectancy
  - Moderate (≤2% above upper normal range)
  - Advanced (≤3% above upper normal range)

**Recommended Combination Therapy**

1. **Lifestyle modification, diet, and exercise**
   - None
   - Recommended for all patients.

2. **Lifestyle modification, diet, and exercise**
   - Sulfonylurea or biguanide
   - 1–2%
   - Recommended for patients with limited lifestyle modification.

3. **Lifestyle modification, diet, and exercise**
   - Sulfonylurea + biguanide
   - 1–2%
   - Recommended for patients with limited lifestyle modification.

**Recommended Combination Therapy**

4. **Insulin**
   - Biguanide + insulin
   - 0.2–2.6%
   - Recommended for patients with limited lifestyle modification.

5. **Insulin**
   - Insulin alone
   - 2%
   - Recommended for patients with limited lifestyle modification.

**Expected HbA1c Reduction**

- Over a 2–3 month period of follow-up.

**Management of Glycemic Control**

**Update 2003**

- Very symptomatic
  - Severe hyperglycemia
  - Ketoacidosis
  - Unrecognized DM type 1
  - Present or planned pregnancy

- Insulin alone or combination
  - Required by International Consensus

- Oral agent not tolerable or HbA1c > 2% above target

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### Oral Pharmacologic Agents

#### Sulfonylureas
- **Glyburide**, **glipizide**, and **glimepiride** are renally eliminated by 80–85%, 50%, and 60%, respectively. All but glipizide have active metabolites.
- **Glyburide**, **glipizide**, and **glimepiride** are rarely eliminated by 80–85%, 50%, and 80%, respectively. All but glipizide have active metabolites.
- **Nateglinide**
  - Decrease in vitamin B12 levels
  - Not recommended
- **Repaglinide**
  - Transient dose-related GI symptoms
  - Not recommended
- **Acarbose**
  - Increased stool frequency
  - May require reduction in insulin dose
- **Miglitol**
  - Transient dose-related GI symptoms
  - May require reduction in insulin dose

#### Meglitinides
- **Repaglinide**
  - Hypoglycemia
  - Hypokalemia
  - Weight gain
- **Nateglinide**
  - Hypoglycemia
  - Hypokalemia
  - Weight gain

#### Thiazolidinediones
- **Pioglitazone**
  - Edema
  - Hypertension
  - Transient dose-related GI symptoms

### Alpha-glucosidase inhibitors
- **Acarbose**
  - Weight gain
  - GI symptoms
  - Not recommended
- **Miglitol**
  - Weight gain
  - GI symptoms
  - Not recommended

### Adverse Events
- **Hypoglycemia**
  - Doses >6 mg may provide a better response when divided
  - The response is dose-dependent
- **Glipizide**, **glyburide**, and **glimepiride** are renally eliminated by 80–85%, 50%, and 60%, respectively. All but glipizide have active metabolites.
- **1st generation sulfonylurea**s are no longer commonly used
- **Thiazolidinediones**
  - Weight gain
  - Hypokalemia
  - Transient dose-related GI symptoms