Diabetes and Military Service

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- Darrick Beckman, M.D., has no relevant financial or non-financial relationships to disclose relating to the content of this activity.

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Background

- Slightly more than 1% of the active duty population are diagnosed with diabetes
  - Rate remained stable from 2006-2010
  - Diagnosis more common as age increases
  - Type 2 diabetes more common
- Of active duty service members diagnosed with type 2 diabetes
  - Mean age at diagnosis 35.2 years old
  - Average 13.6 years of military service at time of diagnosis
  - Similar risk factors compared to the general US population
Access the Medical Standards Directory (MSD) through the Air Force Knowledge Exchange (Kx)

The MSD will tell you which medical diagnoses require a Medical Evaluation Board (MEB)
### Section M: Endocrinology and Metabolic USAF Medical Standards

<table>
<thead>
<tr>
<th>Endocrine and Metabolic Disqualifying Conditions</th>
<th>Retention</th>
<th>Flying Class IIA</th>
<th>Flying Class II</th>
<th>RFA Pilot</th>
<th>Private Class III</th>
<th>Ground Based Controller (GBC)</th>
<th>Missile Operation/Day (MOD)</th>
<th>Operational Support Flying Days</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>M1 Acromegaly.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>M2 Adrenal hyperfunction not responding to therapy or when requiring ongoing specialty f/u more than annually.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>M3 Adrenal insufficiency or Addison’s Disease.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>M4 Adrenal dysfunction of any degree including pheochromocytoma.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>M5 Diabetes insipidus.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>M6 Diabetes mellitus, type 1 or type 2, including diet controlled and those requiring insulin or oral hypoglycemic drugs. Note: Gestational diabetes is not specifically disqualifying; however, these aircrew members are at increased risk of subsequent development of diabetes mellitus and should be closely followed.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>See AMWG</td>
</tr>
<tr>
<td>M7 Persistent glucosuria from any cause, including fasting renal glucosuria is disqualifying. Glucosuria post-prandially, or during glucose loading challenge, is not disqualifying in the absence of any renal disease, or history of recurrent genitourinary infections. However, this finding requires evaluation.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>M8 Gout, with frequent acute exacerbations in spite of therapy, or with severe bone, joint, or kidney damage.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>See AMWG</td>
</tr>
<tr>
<td>M9 Gout.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>M10 Hyperinsulinism, when caused by a malignant tumor, or when the condition is not readily controlled.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>M11 Hyperinsulinism, confirmed, symptomatic.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>M12 Hyperparathyroidism, when residuals or complications are present, or when requiring ongoing specialty follow-up more than annually.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>M13 Parathyroid dysfunction.</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
</tbody>
</table>

"X" = Standard applies
Enlistment Standards

- DoD Instruction 6130.03 Medical Standards for Appointment, Enlistment, or Induction into the Military Services
  - Applies to all branches of the military
- Section 5: Disqualifying Conditions
- Applies for those entering military AND first six months of service
- If new diagnosis of diabetes in an Air Force trainee, notify Trainee Health at Reid Clinic (210) 671-5535
Enlistment Standards

- Diabetes is a disqualifying medical diagnosis
- Diabetic disorders including:
  - History of Diabetes Mellitus
  - History of unresolved pre-diabetes mellitus (as defined by the American Diabetes Association) within the last 2 years
  - History of gestational diabetes mellitus
  - Current persistent glycosuria, when associated with impaired glucose metabolism or renal tubular defects
Two major components:
- Medical Evaluation Board (MEB)
- Physical Evaluation Board (PEB Informal and Formal)

Two of the three members of the MEB are the Chief of Aerospace Medicine (SGP) and Chief of the Medical Staff (SGH)

All profiles are evaluated monthly by the Deployment Availability Working Group (DAWG) to identify service disqualifying conditions
Primary Care Manager OR the Deployment Availability Working Group (DAWG) can recommend MEB
- Notify your clinic DAWG representative or your PEBLO of need for a new MEB

Primary Care Manager or specialist completes Narrative Summary for the condition being evaluated by MEB
- Template provided by PEBLO

The PEBLO takes on each service member’s MEB

PEBLO required to submit a completed MEB package to AFPC within 30 days of the dictated MEB narrative summary

Different factors influence MEB decision
Army service members diagnosed with diabetes may also need a MEB.

This process should be triggered through the profiling system.

Review AR 40-501 Standards of Medical Fitness:

- Section 3-11 states that diabetes with A1c not maintained at 7% or less using lifestyle modification needs MEB.
- If MEB returns “fit for duty” Army personnel requiring insulin should not deploy to areas where insulin cannot be properly stored.
- Army personnel on oral diabetes medications may be considered worldwide deployable.
Diagnostic Considerations: Gestational Diabetes

- Active Duty women with gestational diabetes do not require MEB
- Increased risk of developing recurrent gestational diabetes, prediabetes and type 2 diabetes
- Recommend retest 4 to 12 weeks after delivery
  - Two hour 75g oral GTT recommended
    - Diabetes diagnosed if fasting glucose ≥126 or two hour glucose ≥200
  - A1c can be used but less accurate in post partum period due to increased peripartum red cell turnover
- Repeat testing at LEAST every three years
Diabetes and Deployment

- Little research exists regarding deployment and diabetes
- Deployment leads to increased physical demand
- Deployed locations may be austere
  - Limited access to electricity, refrigeration and clean water
  - Extremes of temperature and altitude
  - Limited medical treatment capabilities
**Effect of Military Deployment on Diabetes Mellitus in Air Force Personnel**

**FIGURE 1.** HbA1c before and after deployment for the overall population and subgroups. Data represents mean HbA1c +/- SE. *p < 0.05. †[10.93 × HbA1c%]−23.5 mmol/mol.
FIGURE 2. HbA1c before and after deployment based on therapeutic interventions. Data represents mean HbA1c +/- SE for those with paired HbA1c values. †[10.93 × HbA1c%]–23.5 = mmol/mol. ‡Sulfonylurea-containing.
**FIGURE 3.** BMI before and after deployment for the overall population and subgroups. Data represents mean BMI ± SE. *p < 0.05. ‡Data represents those with paired HbA1c and BMI values.
Folaron et al., 2018

- Recommend A1c <7% as an appropriate threshold for deployment, using ADA guidelines
- Assess for history of severe hypo or hyperglycemia prior to deployment
- Oral medications preferable due to portability, stability and ease of administration
  - Metformin has an adequate safety profile for deployment
- Sulfonylureas have risk for hypoglycemia, not optimal
- Insulin usage has risk of hypoglycemia, challenges with storage (refrigeration)
## Army Deployment Standards

<table>
<thead>
<tr>
<th>Table 5-1</th>
<th>Guidance on deployment of Soldiers with diabetes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Factor</strong></td>
<td><strong>OK to Deploy</strong></td>
</tr>
<tr>
<td>Hgb A1C (for patient)</td>
<td>At target</td>
</tr>
<tr>
<td>Monofilament discrimination</td>
<td>Present</td>
</tr>
<tr>
<td>Autonomic neuropathy</td>
<td>Absent</td>
</tr>
<tr>
<td>Knowledge of sick day rules</td>
<td>Sufficient</td>
</tr>
<tr>
<td>Proliferative diabetic retinopathy</td>
<td>Absent</td>
</tr>
<tr>
<td>Macular edema</td>
<td>Absent</td>
</tr>
<tr>
<td>Severe hypoglycemia (an episode requiring another person's assistance)</td>
<td>Infrequent</td>
</tr>
<tr>
<td>History of diabetic ketoacidosis in previous 6 mos.</td>
<td>No</td>
</tr>
<tr>
<td>Self-management skills</td>
<td>Good</td>
</tr>
<tr>
<td>Hypoglycemia unawareness</td>
<td>Absent</td>
</tr>
<tr>
<td>Parameters of permanent profile can be followed</td>
<td>Yes</td>
</tr>
<tr>
<td>Significant co-morbidities (for example, congestive heart failure, chronic kidney disease, significant coronary artery disease, poorly controlled hypertension) requiring intensive management</td>
<td>Absent</td>
</tr>
<tr>
<td>Risk of hypoglycemia is high if meals are missed or delayed</td>
<td>No</td>
</tr>
<tr>
<td>Duty will place the Soldier in an OCONUS-Isolated area where appropriate medical care and means to monitor and support him/her are not available</td>
<td>No</td>
</tr>
</tbody>
</table>
How to Obtain CE Credits

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3. Click on the REGISTER/TAKE COURSE tab.
   a. If you have previously used the CEPO LMS, click login.
   b. If you have not previously used the CEPO LMS click register to create a new account.
4. Verify, correct, or add your profile information.
5. Enter the Access code
6. Follow the onscreen prompts to complete the post-activity assessments:
   a. Read the Accreditation Statement
   b. Complete the Evaluation
   c. Take the Posttest
7. After completing the posttest at 80% or above, your certificate will be available for print or download.
8. You can return to the site at any time in the future to print your certificate and transcripts at https://www.dhaj7-cepo.com/
9. If you require further support, please contact us at dha.ncr.j7.mbx.cepo-lms-support@mail.mil
Case Study
Ivanna Babbe

Major Alexis Beauvais
MD, MPH, MC, USAF
International Health Specialist
HQ USSOUTHCOM
32 yo African American female
- AD Major
- Type 2 DM
- “What are the results of my pregnancy test? I’ve been tagged for the next deployment rotation.”

- What information will the provider need for the appointment?
- Considering the resources available
  - Who can collect the information?
  - When would the information be collected?
  - How will it be communicated?
Ivanna Babbee

Deployment considerations

- RILO
- Patient career preference
- Diabetes medications
  - Oral vs insulin
  - Glucose management
  - Resources at deployed site
- Pregnancy
  - Desire for pregnancy
  - Birth control

- 32 yo African American female
- AD Major, Pharmacy
  - Deployment Rotation
  - RILO
- Type 2 DM x 2 years
- “What are the results of my pregnancy test? I’ve been tagged for the next deployment rotation.”
Ivanna Babbee

- 32 yo African American female
- AD Major, Pharmacy
  - Deployment Rotation
  - RILO
- Type 2 DM x 2 years
- “What are the results of my pregnancy test? I’ve been tagged for the next deployment rotation.”

- A1C/BP/Lipid goal/target
- Medication considerations
- Lifestyle Management
  - DSME
  - Psychosocial*
  - Nutrition
  - Physical Activity

- BP 128/76  P 72  BMI 26.31
  - Ht 67 in  Wt 168 lb
- A1C 8.2  MicroAlb 20 (Prev 35 x 2)  
  Chol 194  LDL 143  HDL 31  Trig 214
  pregnancy test-negative
- HTN, HLP, GDM with 1st child (2yo)
- Social history:
  - Non-smoker
  - Married, one child
- Meds: Sitagliptin/metformin 50 mg/1000mg, Glipizide XL 10 mg daily, Atorvastatin 40 mg daily, Lisinopril 40 mg daily
- Retinal Exam: 2 months ago
- Foot exam: low risk foot
- Glucose log averages:
  - B 132  L 164  S 188  BT 297
Case Studies
Frank Pennerknie

Major Darrick Beckman
MD, USAF
Diabetes Center of Excellence, Director
Frank Pennerknie

- 34 yo Caucasian male
- AD TSgt
- Follow-up post-hospitalization for ACL repair
- New onset Diabetes
- “How soon can I get off this insulin?”

- What information will the provider need for the appointment?
- Considering the resources available
  - Who can collect the information?
  - When would the information be collected?
  - How will it be communicated?
34 yo Caucasian male
AD TSgt Security Forces
Follow-up post-hospitalization for ACL repair
New onset Diabetes
“How soon can I get off this insulin?”

MEB Considerations
- Different for each service
  - Air Force (AFI 36-3212)
    - Medical Standards directory (MSD)
    - AFKX
  - Army (AR 40-501)
  - Navy (SECNAV I 1850)
- Factors to influence retention
  - AFSC/MOS
  - Time in service
  - Deployability
  - Disease management
- VA eligibility
  - Disability rating
  - Defer to VA representative (va.gov)
Frank Pennerknie

- 34 yo Caucasian male
- AD TSgt, Security Forces
- Follow-up post-hospitalization for ACL repair
- New onset Diabetes
- “How soon can I get off this insulin?”

- A1C/BP/Lipid goal/target
- Medication considerations
- Lifestyle Management
  - DSME
  - Psychosocial*
  - Nutrition
  - Physical Activity

- BP 114/76  P 70  BMI 26.58
  - Ht 71 in  Wt 193 lb
- A1C 12.3
  - Chol 174  LDL 94  HDL 56  Trig 120
- ACL repair
- Social history:
  - Smoker
  - Single
- Meds: Metformin 1000 mg bid, Glargine 12 units daily, SSI Aspart 1:50>150 before meals/bedtime, Esomeprazole 20 mg daily, Lisinopril 10 mg daily, Hydrocodone/APAP prn pain
- Retinal Exam: none
- Foot exam: low risk foot
- Glucose log averages:
  - B 182  L 264  S 248  BT 323
Frank Pennerknie

- 34 yo Caucasian male
- AD TSgt, Security Forces
- Follow-up post-hospitalization for ACL repair
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- A1C/BP/Lipid goal/target
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  - Psychosocial*
  - Nutrition
  - Physical Activity

- BP 114/76  P 70  BMI 26.58
  - Ht 71 inches  Wt 193
- A1C 12.3  Chol 174  LDL 94  HDL 56  Trig 120  Glut Dcarb AB >30, Islet Cell AB 39, Insulin AB 0.5, TPO 15
- ACL repair
- Social history:
  - Smoker
  - Single
- Meds: Metformin 1000 mg bid, Glargine 12 units daily, SSI Aspart 1:50>150 before meals/ bedtime, Esomeprazole 20 mg daily, Lisinopril 10 mg daily, Hydrocodone/APAP prn pain
- Retinal Exam: none
- Foot exam: low risk foot
- Glucose log averages:
  - B 182  L 264  S 248  BT 323


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