

## PHYSICIAN EVALUATION FORM FOR FIRE FIGHTERS WITH DIABETES MELLITUS

You are being asked to evaluate an individual for a position as a fire fighter (FF). It is essential that the FF undergo an individualized assessment of his or her diabetes to determine whether the individual's condition permits safe and effective job performance. This evaluation is based on the guidance established by the NFPA Technical Committee on Occupational Safety and Health in consultation with representatives of the American Diabetes Association. The relevant sections of these guidelines are listed below in bold, followed by the information needed to assess whether the individual meets these guidelines.

### I. Introduction

The educated and motivated FF or FF applicant with well-managed diabetes mellitus can be capable of safe and effective job performance. An individualized assessment of the FF's or FF applicant's diabetes should be performed, including an assessment of the following:

- History of blood glucose control
- Current stability of blood glucose
- Risk for significant hypoglycemia or hyperglycemia
- Presence of diabetic complications
- Knowledge of diabetes and its management

Risk of hypoglycemia remains the major concern in regard to those with diabetes being or becoming a FF. This risk occurs primarily in those taking insulin, particularly those with type 1 diabetes, although it may also occur in those with type 2 diabetes who take insulin and/or sulfonylureas and other secretagogues.

Fire fighting entails a unique set of conditions that need to be considered in regard to those with diabetes and the risks of either hypo or hyperglycemia. These may include (depending upon the duties of the particular FF position):

- unpredictable periods of maximal physical exertion (e.g., climbing stairs with over 50 pounds of PPE and 20 to 40 pounds of equipment);
- use of encapsulating and insulated personal protective equipment (PPE) that can result in significant fluid loss and dehydration;
- exposure to extreme environmental temperatures;
- during emergency responses with limited access to food, water, and medications for prolonged periods of time;
- emergency response driving with the responsibility for others in the vehicle;
- critical, time-sensitive complex problem solving in hazardous environments;
- unpredictable meal schedules;
- control of one's emotions under stress;
- functioning as a team where sudden incapacitation can result in mission failure or risk of injury or death to civilians or other team members.

**FIGURE E.1 Physician Evaluation Form.**

**II. Assessment**

1. FF has been under the care of an endocrinologist or other physician knowledgeable about diabetes management. Outpatient and in-patient medical record(s) of the last three years or since date of diagnosis (whichever is shorter) should be reviewed by the treating physician and provided to the fire department physician.

*My credentials as a physician knowledgeable about diabetes management are as follows (or attach CV):*

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

*This person has*     *type 1 diabetes*     *type 2 diabetes*

**Date of diagnosis:** \_\_\_\_ / \_\_\_\_ / \_\_\_\_

*Attach records for prior 3 years or since onset of diabetes whichever is shorter for*  
 *out-patient treatment*     *in-patient treatment*

2. If type 1 diabetes, has been on a basal/holus regimen or an insulin pump using analogue insulins for the six (6) months prior to evaluation<sup>1,2</sup>

Current insulin regimen:

**Insulin pump brand and model:** \_\_\_\_\_

Pump settings:

Start Time					
Basal Rate					
Start Time					
Basal Rate					

Usual Bolus doses:

Breakfast \_\_\_\_\_

Lunch \_\_\_\_\_

Supper \_\_\_\_\_

Other \_\_\_\_\_

Correction factor:

*Multiple dose insulin (specify regimen)*

*Basal:* \_\_\_\_\_

*Bolus:* \_\_\_\_\_

**Starting date on current regimen:** \_\_\_\_ / \_\_\_\_ / \_\_\_\_

**FIGURE E.1** *Continued*

3. If type 2 diabetes on insulin, has been on a stable medication regimen for the three (3) months prior to evaluation.<sup>3</sup> If on oral agents alone, should be on a stable medication regimen for one month prior to evaluation.<sup>4</sup>

Current medication regimen:

oral agents	insulin
_____	_____
_____	_____
_____	_____
_____	_____

Starting date on current regimen: \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_

4. Has documentation of ongoing self-monitoring of blood glucose. This must be done with a glucose meter that stores every reading, records date and time of reading and from which data can be downloaded. Monitoring records must be available covering the time periods (1, 3, or 6 months), as described in Sections 2 and 3, following a schedule acceptable to the fire department physician.<sup>5</sup>

The individual has been asked to test glucose \_\_\_\_\_ times a day, and

- IS adhering to my recommended schedule for testing.
- is NOT adhering to my recommended schedule for testing.

Glucose logs

- are attached for review
- are not attached for review (please explain)

5. Has been educated in diabetes and its management and thoroughly informed of and understands the procedures that must be followed to monitor and manage his/her diabetes and what procedures should be followed if complications arise.<sup>6</sup>

The individual has completed the following diabetes education (include year of completion):

\_\_\_\_\_

\_\_\_\_\_

6. If an insulin pump user, documents

- proper understanding and education in the use of the insulin pump
- start date for the use of the pump
- history of insulin site infections
- history of pump cessation and pump malfunction
- backup plan for pump malfunction, including use of injectable insulin
- frequency of infusion set changes

The individual as completed the following education in the use of a continuous insulin infusion pump (indicate year of completion):

\_\_\_\_\_

\_\_\_\_\_

**FIGURE E.1** Continued

*The individual routinely carries appropriate supplies to compensate for pump malfunction, including syringes and insulin vials or insulin pens.*

Yes     No — please explain

*The individual has had more than one pump site infection that caused him / her to miss work or usual daily activities in the preceding six months.*

Yes — please explain     No

7. Has had hemoglobin A1C measured at least four times (intervals of two to three months) over the 12 months prior to evaluation if diagnosis has been present over a year.<sup>7,8</sup>

<i>Date</i>	<i>HbA1C</i>
_____	_____
_____	_____
_____	_____
_____	_____

8. If the individual's A1C was found to be 8% or above on one or more occasions, has the validity of that level been confirmed by a second determination?

Yes     No (please explain)

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

9. If the second determination specified above was done, is there reason to suspect that the original A1C level(s) overestimates average blood glucose?

Yes     No

10. Incapacitating events — Has not had any within the past one (1) year and no more than two (2) episodes in the past three (3) years, or since diagnosis of diabetes (whichever is shorter) of

- a. severe hypoglycemia (loss of consciousness, seizures or coma, requiring the assistance of others or needing urgent treatment [glucose injection or IV glucose]) or
- b. a blood sugar < 60 mg/dl with unawareness<sup>9</sup> demonstrated in current glucose logs.

*Has this individual had an episode of hypoglycemia as described above?*

Yes     No

*If the individual has had such episode(s), please describe episodes and provide dates or episodes*

\_\_\_\_\_  
\_\_\_\_\_

11. Has had a complete eye exam by a qualified ophthalmologist or optometrist, including a dilated retinal exam, demonstrating no more than mild background diabetic retinopathy.<sup>10</sup>

*Copy of ophthalmology or optometry report is attached*

Yes     No (please explain)

**FIGURE E.1** *Continued*

12. Has normal vibratory testing with 128 Hz tuning fork, has normal testing with 10 gram Semmes-Weinstein monofilament<sup>11</sup> and normal orthostatic blood pressure and pulse testing.<sup>12</sup>

Vibration sensation: \_\_\_\_\_

Monofilament: \_\_\_\_\_

BP supine: \_\_\_\_\_

Pulse supine: \_\_\_\_\_

BP standing: \_\_\_\_\_

Pulse standing: \_\_\_\_\_

13. Has normal cardiac physical exam and normal cardiac stress testing to at least 12 METS. Annual cardiac stress testing<sup>13</sup> should begin when any of the following criteria are met:

- age greater than 35 years
- Type 1 DM greater than 15 years duration
- Type 2 DM greater than 10 years duration
- signs of target organ damage (eyes, kidney, autonomic, cardiac)
- any other coronary artery disease risk factors

Copy of stress test report performed within the last 12 months is attached:

- Yes     No (please explain)

14. Has normal renal function based on albumin/creatinine ratio  $\leq$  30:1, and measured or calculated creatinine clearance  $>$  60 ml/min.<sup>14</sup>

Serum Creatinine: \_\_\_\_\_

Calculated creatinine clearance (Specify method): \_\_\_\_\_

- Cockcroft Gault or  
 MDRD

Urine microalbumin/creatinine ratio: \_\_\_\_\_

### III. Treating Physician Statement

The above-named individual meets all of the criteria provided on this form:

Yes — It is my opinion that the above-named individual is well-educated and well-motivated in diabetes self-management and has achieved a level of diabetes management to be capable of safe and effective job performance as a fire fighter.

I have reached this opinion after careful review of the above criteria.

No — not recommended for position

No, but IS recommended for position (letter of explanation attached)

\_\_\_\_\_  
Signature of Physician

\_\_\_\_\_  
Date

\_\_\_\_\_  
Printer or Typed Name of Physician

\_\_\_\_\_  
Phone Number

FIGURE E.1 Continued

**References**

- <sup>1</sup> Times cited for durations of stable treatment regimen or stability of management are in reference to the date of current evaluation for a fire fighter position.
- <sup>2</sup> Date sought is when patient first began current insulin regimen (pump or injection) using current types of insulin (long acting, intermediate acting, short or rapid acting). A stable insulin regimen is defined as maintaining the same types of insulin (long acting, intermediate acting, short or rapid acting). Changes in insulin amount are part of the appropriate self-management of diabetes and do not disqualify an applicant or incumbent under this section.
- <sup>3</sup> Date sought is when patient first began current insulin or oral agent regimen defined as when patient began using current types of insulin or classes of oral medication. A stable insulin regimen is defined as maintaining the same types of insulin (long acting, intermediate acting, short or rapid acting). Changes in insulin amount are part of the appropriate self-management of diabetes and do not disqualify an applicant or incumbent under this section.
- <sup>4</sup> Changes in dose within the evaluation period will be allowed but addition of a new class of medications or insulin should result in a new period of observation:
  - one month for addition of a sulfonylurea or metformin
  - two months for addition of a thiazolidinedione to insulin or a sulfonylurea
  - three months for the addition of insulin.
- <sup>5</sup> Testing schedules are individual. What follows is a common pattern. Individual patterns may differ.

Therapeutic Regimen	Glucose Testing Schedule
Diet alone	Once or twice a week
Metformin, Thiazolidinediones, or Alpha Glucosidase inhibitors alone or in combination	Once or twice a week
Sulfonylureas, meglitinides, nateglinide — alone or in combination with the above group	Twice a day — AM and at supper; with any suspected hypoglycemic episodes
Insulin — one shot in combination with orals	Twice a day AM and at supper, with any suspected hypoglycemic episodes. 2–3 AM once a week
Insulin — two or more shots, Insulin pump	3 to 4 times a day — at meals and bedtime. 2–3 AM once a week; with any suspected hypoglycemic episodes

- <sup>6</sup> See [http://care.diabetesjournals.org/cgi/content/full/28/suppl\\_1/s72](http://care.diabetesjournals.org/cgi/content/full/28/suppl_1/s72)
- <sup>7</sup> See [http://care.diabetesjournals.org/cgi/content/full/27/suppl\\_1/s91](http://care.diabetesjournals.org/cgi/content/full/27/suppl_1/s91)
- <sup>8</sup> If Hemoglobin A1C > 8% this may signal a problem with diabetes management that warrants further assessment.
- <sup>9</sup> See [http://care.diabetesjournals.org/cgi/content/full/28/suppl\\_1/s61](http://care.diabetesjournals.org/cgi/content/full/28/suppl_1/s61)
- <sup>10</sup> No more than one dot, blot, or flame-shaped hemorrhages or microaneurysm in all four fundus quadrants. [http://www.jceh.co.uk/journal/46\\_04.asp](http://www.jceh.co.uk/journal/46_04.asp)
- <sup>11</sup> See [www.med.umich.edu/mdrtc/textonly/educmats/MNSI\\_howto.doc](http://www.med.umich.edu/mdrtc/textonly/educmats/MNSI_howto.doc)
- <sup>12</sup> Orthostatic hypotension is a physical finding defined by the American Autonomic Society and the American Academy of Neurology as a systolic blood pressure decrease of at least 20 mm Hg or a diastolic blood pressure decrease of at least 10 mm Hg within three minutes of standing. <http://www.aafb.org/afp/20031215/2393.html>
- <sup>13</sup> See Gibbons, et al. [2002]. ACC/AHA 2002 guideline update for exercise testing: a report of the American College of Cardiology/American Heart Association Task Force on Practice Guidelines. *Circulation* 106(14):1883–1892.
- <sup>14</sup> See [http://care.diabetesjournals.org/cgi/content/full/27/suppl\\_1/s79](http://care.diabetesjournals.org/cgi/content/full/27/suppl_1/s79). GFR calculator: [www.nephron.com/mdrd/default.html](http://www.nephron.com/mdrd/default.html).

**FIGURE E.1** *Continued*