



## SECTION 6 – ENDOCRINOLOGY

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- [Diabetes Mellitus](#)
- [Gestational Diabetes Mellitus](#)

## DIABETES MELLITUS

### Background

This case definition was developed by the Armed Forces Health Surveillance Center (AFHSC) for the purpose of epidemiological surveillance of a condition important to military-associated populations.

### Clinical Description

Diabetes mellitus (DM) refers to a group of common metabolic disorders that share the characteristic of abnormally high levels of glucose in the blood (hyperglycemia). Factors contributing to the hyperglycemia include insufficient insulin secretion by the pancreas, decreased glucose utilization, increased glucose production, and insulin resistance. The metabolic effects associated with DM causes changes in multiple organ systems that impose a tremendous burden on the individual with diabetes and on the health care system.<sup>1</sup>

### Case Definition and Incidence Rules

For surveillance purposes, a case of diabetes mellitus is defined as:

- *One inpatient medical encounter* with any of the defining diagnoses of diabetes mellitus (see ICD9 code list below) in the *primary* diagnostic position; or
- *Two or more outpatient medical encounters*, occurring *within 90 days* of each other, with any of the defining diagnoses of diabetes mellitus (see ICD9 code list below) in the *primary* diagnostic position.
  - Type 1 Diabetes: A primary diagnosis specific to type 1 diabetes (ICD9 fifth digit is 1 or 3) on the first and *all* subsequent diabetes encounters in an individual's entire record.
  - Type 2 Diabetes: A primary diagnosis specific to type 2 diabetes (ICD9 fifth digit is 0 or 2) on the first and *all* subsequent diabetes encounters in an individual's entire record.

#### **Incidence rules:**

For individuals who meet the case definition:

- The incidence date is considered the date of the first inpatient or outpatient medical encounter that includes a diagnosis of diabetes mellitus.
- An individual is considered an incident case only once.

#### **Exclusions:**

- Females who have an inpatient visit for labor and delivery (ICD9 codes: 650-669, V27) in any diagnostic position within 6 months after their incident diabetes diagnosis (see *Development and Revisions* section below).

<sup>1</sup> Braunwald, E., Fauci, A., Longo, D. et al. 2008. *Harrison's Principles of Internal Medicine*. 17<sup>th</sup> ed. United States: McGraw-Hill Professional.



## Codes

The following ICD9 codes are included in the case definition:

Condition	ICD-9-CM codes	CPT Codes
Diabetes Mellitus	250.00-250.03 (diabetes mellitus without mention of complication) 250.10-250.13 (diabetes with ketoacidosis) 250.20-250.23 (diabetes with hyperosmolarity) 250.30-250.33 (diabetes with other coma) 250.40-250.43 (diabetes with renal manifestations) 250.50-250.53 (diabetes with ophthalmic manifestations) 250.60-250.63 (diabetes with neurological manifestations) 250.70-250.73 (diabetes with peripheral circulatory disorders) 250.80-250.83 (diabetes with other specified manifestations) 250.90-250.93 (diabetes with unspecified complication)	NA

## Development and Revisions

The case definition was originally developed by the AFHSC Medical Surveillance Monthly Report (MSMR) staff for the MSMR article referenced below.<sup>2</sup>

### Code Set Determination and Rationale

- ICD9 code 249 (secondary diabetes mellitus) is not included in this case definition because it was added to the ICD9 code list after this case definition was originally developed.
- Females who have any of the following ICD9 codes for labor and delivery in any diagnostic position within 6 months after their incident diabetes diagnosis are excluded from the analysis due to assumption of gestational diabetes:
  - 650 – 659 (normal delivery, and other indications for care in pregnancy, labor, and delivery)
  - 660 – 669 (complications occurring mainly in the course of labor and delivery)
  - V27 (outcome of delivery)

## Reports

None.

<sup>2</sup> Armed Forces Health Surveillance Center. *Diabetes Mellitus, Active Component, U.S. Armed Forces, 1997-2007*. Medical Surveillance Monthly Report (MSMR). 2009 Feb; Vol 16(2): 7-9.



**Review**

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Apr 2011	Case definition reviewed and adopted by Surveillance Methods and Standards (SMS) working group.
Feb 2009	Case definition developed and reviewed by AFHSC MSMR staff.

**Comments**

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None.



## GESTATIONAL DIABETES MELLITUS

### Background

This case definition was developed by the Armed Forces Health Surveillance Center (AFHSC) for the purpose of epidemiological surveillance of a condition important to military-associated populations.

### Clinical Description

Gestational Diabetes Mellitus (GDM) complicates up to 5% of all pregnancies in the United States. GDM is defined as carbohydrate intolerance first recognized during pregnancy. It is manifested by elevated blood levels of glucose (hyperglycemia). Although some insulin resistance is part of normal pregnancy, gestational diabetes occurs when the mother's capacity for insulin secretion is insufficient to meet the increased insulin demands of pregnancy. High fetal glucose levels cause excessive fetal insulin secretion, which can cause fetal macrosomia (abnormally large fetal weight and size), as well as neonatal hypoglycemia. Following delivery, a mother's carbohydrate tolerance may return to normal, but up to 30% of women with GDM develop diabetes mellitus within 5 years of pregnancy.<sup>1,2,3</sup>

### Case Definition and Incidence Rules

For surveillance purposes, a case of gestational diabetes mellitus is defined as:

- *One inpatient medical encounter* with any documentation of a live birth (see ICD9 code list below) *and* one of the following:
  - *One inpatient or outpatient medical encounter* with any of the defining diagnoses of gestational diabetes mellitus (ICD9 codes 648.00 – 648.04) in *any* diagnostic position; or
  - *One inpatient medical encounter* with a diagnosis of abnormal glucose tolerance (ICD9 codes 648.80 – 648.84) in *any* diagnostic position; or
  - *Two or more outpatient medical encounters*, at least 7 days apart, with a diagnosis of abnormal glucose tolerance (ICD9 codes 648.80 – 648.84) in *any* diagnostic position.

#### **Incidence rules:**

For individuals who meet the case definition:

- The incidence date is considered the date of the first inpatient or outpatient medical encounter that includes a diagnosis of GDM or abnormal glucose tolerance.

#### **Exclusions:**

- Any female with a prior diagnosis of “diabetes mellitus” (ICD9 code 250) in any diagnostic

<sup>1</sup> Gibbs, R.S., Karlan, B.Y., Haney, A.F., Nygaard, I.E. 2008. *Danforth's Obstetrics and Gynecology*. 10<sup>th</sup> ed. Lippincott Williams & Wilkins.

<sup>2</sup> Braunwald, E., Fauci, A., Longo, D. et al. 2008. *Harrison's Principles of Internal Medicine*. 17<sup>th</sup> ed. United States: McGraw-Hill Professional.



## Codes

The following ICD9 codes are included in the case definition:

Condition	ICD-9-CM codes	CPT Codes
Live Birth	V27.0 (single liveborn) V27.2 (twins, both liveborn) V27.3 (twins, one liveborn and one stillborn) V27.5 (other multiple birth, all liveborn) V27.6 (other multiple birth, some liveborn) 650 or 651-669 with 5 <sup>th</sup> digit of 1 or 2 indicating “delivered” (normal delivery, and other indications for care in pregnancy, labor, and delivery)	NA
Gestational Diabetes Mellitus	<i>Diabetes mellitus</i> 648.00 – 648.04 (other current conditions in the mother classifiable elsewhere, but complicating pregnancy, childbirth, or the puerperium) <i>Abnormal glucose tolerance</i> 648.80 – 648.84 (other current conditions in the mother classifiable elsewhere, but complicating pregnancy, childbirth, or the puerperium – Abnormal glucose tolerance)	NA

## Development and Revisions

The case definition was originally developed by the AFHSC Medical Surveillance Monthly Report (MSMR) staff for the MSMR article referenced below.<sup>3</sup>

## Reports

None.

## Review

April 2011	Case definition reviewed and adopted by AFHSC Surveillance Methods and Standards (SMS) working group.
May 2008	Case definition developed for MSMR.

## Comments

None

<sup>3</sup> Armed Forces Health Surveillance Center. *Gestational Diabetes among Female Service Members in Relation to Body Mass Index Prior to Service, Active Components, U.S. Armed Forces, 1998-2007*. Medical Surveillance Monthly Report (MSMR). 2008 May; Vol 15(4): 2-5.

