# Nursing Care of the Resident with Diabetes Mellitus

## Definitions

Diabetes is a disorder in which there is relative or absolute lack of insulin. Among other things, glucose (sugar) from food cannot be taken up by the cells, which results in elevated blood sugar (hyperglycemia) and lack of energy for cellular function.

There are two types of Diabetes Mellitus:

1. **Type I (Insulin-Dependent Diabetes Mellitus)** – the body does not produce any significant amounts of insulin.
2. **Type II (Non-Insulin-Dependent Diabetes Mellitus)** – In type 2 diabetes (the most common form of diabetes), either the body does not produce enough insulin or the cells cannot effectively use the insulin that is available.

## Purpose

The purposes of this guideline are:

1. To review the most common and serious conditions and complications associated with diabetes;
2. To help the resident control his/her diabetes with diet, exercise, and insulin (as ordered);
3. Prevent recurrent hyperglycemia/hypoglycemia;
4. Recognize, manage, and document the treatment of complications commonly associated with diabetes; and
5. Individualize teaching according to carefully assessed resident and family needs.

## Conditions Associated with Diabetes

The following complications are associated with diabetes:

1. **Hyperglycemia** (blood sugar above target levels). Early signs and symptoms of hyperglycemia may include the following:
   
   a. polydipsia (increased thirst);
   b. dry mouth;
   c. polyuria (increased urination);
   d. headache;
   e. lethargy;
   f. restlessness; and
   g. anorexia (loss of appetite).

2. **Diabetic Ketoacidosis (DKA)** or Hyperosmolar (Nonketotic), Coma includes the following symptoms (Note: Diabetic ketoacidosis is a life-threatening emergency that needs immediate medical attention.):
   
   a. high blood sugar;
   b. ketones in the urine (DKA only);
   c. nausea and/or vomiting;
   d. lethargy (drowsiness);
   e. weakness;
   f. short, labored, rapid respirations;
   g. abdominal pain;
   h. dehydration;

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Conditions Associated with Diabetes (continued)

i. oliguria (diminished urine);

j. sweet or fruity odor of breath;

k. dry and/or flushed skin;

l. decreased awareness/senses;

m. loss of consciousness; and/or

n. coma.

3. **Hypoglycemia** (blood sugar below reference ranges). Signs and symptoms of hypoglycemia usually have a sudden onset and may include the following:

   a. weakness, dizziness, or faintness;
   b. restlessness and/or muscle twitching;
   c. tachycardia (increased heart rate);
   d. pale, cool, moist skin;
   e. excessive perspiration;
   f. irritability or bizarre changes in behavior;
   g. blurred or impaired vision;
   h. headaches;
   i. numbness of the tongue and lips/thick speech;
   j. (more severe) stupor, unconsciousness and/or convulsions; and
   k. (more severe) coma.

If these, or other abnormal conditions exist, notify the physician (for hypoglycemia, follow steps in Management of Hypoglycemia below).

(Note: Many of these symptoms can also be caused by other conditions, for example, adverse consequences due to medications or fluid and electrolyte imbalance. Therefore, it should not just be assumed that these symptoms are related to the individual’s diabetes, without carefully investigating and reporting other potential causes.)

Complications Associated with Diabetes

1. Cardiovascular and cerebrovascular disease, including heart disease and stroke;

2. Kidney disease;

3. Glaucoma, cataracts, retinopathy, blindness;

4. Nerve damage (diabetic neuropathy);

5. Foot complications – neuropathy, dry skin, calluses, poor circulation, ulcers;

6. Skin problems – fungal/bacterial infections, itching, diabetic dermopathy;

7. Gastroparesis (delayed stomach emptying).

Glucose Monitoring

1. The management of individuals with diabetes mellitus should follow relevant protocols and guidelines.

2. The physician will order the frequency of glucose monitoring.

3. Residents whose blood sugar is poorly controlled or those taking insulin may require more frequent monitoring, depending on the situation.

4. “Finger sticks” (capillary blood samples) measure current blood glucose levels.
   a. The reference ranges for normal blood glucose vary with different laboratories.
   b. Normal ranges are approximately 90-130 mg/dl before meals and <180 mg/dl after meals.
   c. Hyperglycemia is considered anything above target reference ranges.
   d. Having hyperglycemia is not the same as having diabetes.
Glucose Monitoring (continued)

5. Approximate reference ranges for hypoglycemia are:
   a. Mild hypoglycemia 55-70 mg/dl
   b. Moderate hypoglycemia 40-55 mg/dl
   c. Severe hypoglycemia <40 mg/dl

6. Hemoglobin A1c (glycosylated hemoglobin) is a blood test that measures the average blood glucose over time (two to three months) and therefore may be a better estimate of treatment efficacy than blood sugar readings.

7. Percentage of glycosylated hemoglobin should be <7% in a diabetic individual.

8. Measure ketones in the urine as ordered, as a marker of the body’s glucose utilization.

9. Severity of hypoglycemia is determined by a combination of blood sugar results and clinical symptoms.
   a. For example, an individual with significant clinical symptoms may be problematic even at marginally low normal blood sugar levels, while someone with a blood sugar of 35 who is not markedly symptomatic may be less problematic.

10. For asymptomatic and responsive residents with hypoglycemia (<70 mg/dl or less than the physician-ordered parameter):
    a. give the resident an oral form of rapidly absorbed glucose (4 oz juice or 5-6 ounces of soda);
    b. recheck blood glucose in 15 minutes;
    c. if blood sugar is >130 mg/dl (rebound hyperglycemia) administer diabetic medications;
    d. if blood sugar is <70 mg/dl repeat oral glucose and recheck blood glucose in 15 minutes;
    e. if no improvement, notify physician for further orders.

11. For symptomatic (lethargic, drowsy) but responsive (conscious) residents with hypoglycemia (<70 mg/dl or less than the physician-ordered parameter):
    a. if he/she is able to swallow:
       (1) immediately give the resident an oral form of rapidly absorbed glucose (4 oz juice or 5-6 ounces of soda);
       (2) recheck blood glucose in 15 minutes;
       (3) repeat juice if indicated, recheck blood glucose in 15 minutes.
    b. if he/she is unable to swallow:
       (1) immediately administer oral glucose paste to the buccal mucosa, intramuscular glucagon, or IV 50% dextrose, per facility protocol;
       (2) recheck blood glucose in 15 minutes;
       (3) repeat protocol if indicated, recheck blood glucose in 15 minutes.
    c. remain with the resident;
    d. place resident in a comfortable and safe place (bed or chair);
    e. monitor vital signs;
    f. hold all diabetic medications;
    g. if no improvement, notify the physician for further orders.

12. For symptomatic and unresponsive residents with hypoglycemia (<70 mg/dl or less than the physician-ordered parameter):
    a. immediately administer oral glucose paste to the buccal mucosa, intramuscular glucagon, or IV 50% dextrose, per facility protocol and notify the physician for further orders;
    b. if resident remains unresponsive, call 911 (in accordance with resident’s advance directives);
    c. remain with the resident;
    d. monitor vital signs;
    e. hold all diabetic medications.
Medication Management

1. Insulin (injectable or inhaled) is required for individuals with type I diabetes.
2. Insulin (injectable) can be administered via syringe, pump, or pen.
3. Medication management of type II diabetes may include oral hypoglycemic agents with or without insulin.
4. Oral hypoglycemic agents include:
   a. sulfonylureas;
   b. meglitinides;
   c. biguanides;
   d. thiazolidinediones; and
   e. alpha-glucosidase inhibitors.
5. Other injectable agents that may be used in conjunction with insulin therapy in types I and II diabetes include:
   a. Exenatide
   b. Pramlintide (Note: pramlintide cannot be combined in the same vial or syringe as insulin)
6. Some residents are capable of self-monitoring blood glucose levels and self-administering insulin. Follow a facility protocol for self-administration of medications and safe storage of medications.
7. Assist the resident with his or her specific medication regimen, as ordered and as needed.

Nutritional Support

1. Dietary restrictions among diabetic residents in long-term care are no longer recommended as the cornerstone of diabetes management.
2. Monitor the resident for nutritional problems and unintended weight loss and notify the physician if this appears to be related to any dietary restrictions.

Exercise Considerations

1. Exercise often helps to improve blood sugar control.
2. The extent of allowable activity levels for any resident is based on his/her overall functioning and well-being, co-morbidities, cardiovascular and respiratory status, musculoskeletal function, and blood glucose control.
3. The physician and staff, in conjunction with the resident/family, shall determine appropriate levels of activity for the resident and whether exercise is a suitable intervention for that resident.

Skin and Foot Care

1. Skin should be kept as dry and clean as possible.
2. Apply lotion to dry skin as needed, unless contraindicated.
3. Use aseptic technique in caring for any lacerations, abrasions or breaks in skin integrity, and report the condition immediately to your supervisor.
4. Bathe feet in warm (not hot) water as necessary to keep clean.
5. Keep feet dry, especially between toes.
6. Encourage the use of non-constricting, well-fitting shoes, slippers and hose.
7. Keep feet warm without the use of external heat sources (e.g., heating pads).
8. Toenails should only be trimmed by personnel qualified to do so (this can be regular staff, and does not have to be a podiatrist), according to facility policy.
9. Care of corns and/or calluses should be referred to qualified individuals (which may require physician or podiatrist intervention).
Emotional and Teaching Considerations

1. Give the resident and family the chance to express feelings, discuss concerns, and ask questions about diabetes.
2. Assess the resident’s and family’s prior knowledge, willingness to learn, and potential ability to perform specific tasks of self-care.
3. Develop a teaching plan based on thorough physical and psychosocial assessment of the resident with communication and recommendations from the resident’s physician and the interdisciplinary team.

Documentation

Documentation should reflect the carefully assessed diabetic resident and include the following:

1. Vital signs as ordered;
2. Level of consciousness;
3. Assessment of the skin including the following:
   a. color, moisture, and temperature; and
   b. any redness, ulcers, irritation, abrasions, and/or pruritus (itching).
4. Accurate intake and output;
5. Percentage of meals consumed;
6. Emotional reactions, moods;
7. Careful assessment of pain (including symptoms such as discomfort and/or paresthesias (numbness, tingling) should include the following:
   a. location;
   b. intensity (0-10);
   c. description/type;
   d. duration; and
   e. aggravating and alleviating factors.
8. Motor weakness;
9. Urinary symptoms including retention and incontinence;
10. Bowel dysfunction including diarrhea and constipation;
11. Blood pressure problems including orthostatic hypotension;
12. Assessment of the feet should include the following:
   a. hygiene;
   b. temperature;
   c. color;
   d. circulation (e.g., pedal pulses, toe capillary refill);
   e. any abrasions, sores and/or injuries;
   f. any corns or calluses; and
   g. the condition of the toes and toenails.
13. Injection site rotation (if insulin is ordered);

References

MDS (RAPs) I1a; I3; (RAP #1; RAP #2; RAP #3; RAP #6; RAP #9; RAP #16)
Survey Tag Numbers F328
See also American Diabetes Association (ADA) website at www.diabetes.org
Related Documents Diabetes: Injectable and Inhaled Medications Clinical Reference Card (Appendix A); Insulin Administration; Obtaining a Fingerstick Glucose Level
Risk of Exposure Blood–Body Fluids–Hazardous Chemicals
Procedure Revised

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