DIABETES MANAGEMENT

in Long-Term Care Facilities: A Practical Guide

Fifth Edition

A collaborative effort of

Hennepin County Medical Center
Minneapolis-St. Paul Diabetes Educators
Minnesota Department of Health

Hennepin County Medical Center

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Diabetes Management in Long-term Care Facilities: A Practical Guide
5th Edition

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Purpose

The purpose of this document is to provide guidance for the care and management of the resident with diabetes in the long-term care setting. It is intended for use by direct care clinicians, especially nurses and nursing assistants who care for residents with diabetes.

Most diabetes control guidelines emphasize tight blood sugar control to prevent complications. But for elderly long-term care residents, these types of guidelines do not apply because the burdens of tight control outweigh the benefits. For residents who are younger, or those who are in sub-acute or transitional care, tight diabetes control may be an appropriate goal. Blood sugar goals could differ with every resident and may need occasional adjustments as their health status changes.

Essential aspects of caring for a resident with diabetes in a long-term care facility are:

- ✓ Setting goals for care
- ✓ Weighing the burdens and benefits of the treatment plan
- ✓ Respecting the resident's preferences

How to use this guide

The Guide incorporates information from recent research and diabetes care guidelines. We have kept the Guide brief for quick and easy review. The text has been kept simple to aid those with limited English reading skills. Words that are underlined are defined in the Tool Kit Glossary (section D). Some definitions are provided in shaded boxes within the text.

More detailed information can be found in the companion Tool Kit. The Tool Kit has practice- and evidence-based diabetes resources, including

- Staff training materials
- Educational handouts for residents
- An extensive listing of diabetes medicines and insulins
- A list of references and resources for further information

NOTE: This publication is intended for informational purposes only and cannot serve as a substitute for the care provided by a licensed clinician or health care professional. Users are advised to seek medical guidance before making changes in healthcare regimens.

About diabetes

1. What Is diabetes?

Diabetes is a serious disease in which the body does not produce or properly use insulin resulting in high blood sugar (hyperglycemia).

> **Insulin** is a hormone that is necessary to convert sugars, starches and other food into energy needed for daily life.

Having untreated high blood sugar can lead to long-term damage to various organs, including the eyes, kidneys, heart, blood vessels and nerves. There is no cure for diabetes, but it can be treated to prevent these complications.

> Hypoglycemia = Low blood sugar [typically below 70 mg/dL]
> Hyperglycemia = High blood sugar [typically above 200 mg/dL]

Type 1 Diabetes was previously known as "insulin-dependent diabetes (IDDM)" or "juvenile diabetes." Type 1 diabetes is a life-long condition in which the pancreas stops making insulin. Without insulin, the body is not able to use the sugar glucose for energy. A person with type 1 diabetes who does not get enough insulin will suffer blood sugars high enough to cause life-threatening ketoacidosis.

> **Ketoacidosis** is an emergency condition that can lead to diabetic coma or death. It occurs when dangerously high levels of ketones build up in the blood when the body must burn body fat for energy rather than blood sugars. A **ketone** is a poisonous chemical produced by the body when it burns fat.

To treat type 1 diabetes, a person must take insulin injections each day.

> **Type 1 Diabetes** = always treated with insulin.

Type 2 Diabetes was previously known as "non-insulin-dependent diabetes (NIDDM)" or "adult onset diabetes." People with type 2 diabetes produce insulin, but less than what their body needs. Type 2 diabetes may not have many symptoms. It typically develops 5 to 10 years before it is diagnosed.

Type 2 diabetes is the most common type of diabetes for residents of long-term facilities. They may also need to take pills and/or insulin. The different treatment plans can include:

> Type 2 diabetes = diet alone
> Type 2 diabetes = diet and pills
> Type 2 diabetes = diet pills and insulin
> Type 2 diabetes = diet and insulin

2. What Is pre-diabetes?

Pre-Diabetes is a term used to describe a condition where a person has impaired glucose tolerance (IGT) or impaired fasting glucose (IFG).

> NOTE: The term "borderline diabetes" is no longer used.

With pre-diabetes, the blood sugar levels are higher that normal but not yet high enough to be diagnosed as diabetes. People with pre-diabetes are at very high risk for type 2 diabetes, so it is important to diagnose and treat this condition before it develops into type 2 diabetes. The treatment can include:

> Pre-diabetes = diet alone
> Pre-diabetes = diet and pills

3. Symptoms of diabetes and pre-diabetes

Symptoms of diabetes typically include the following, although some people may not notice that they have symptoms:

- Having to urinate often
- Being thirsty or hungry all the time
- Being easily tired
- Losing weight for no reason

People with pre-diabetes usually have no symptoms. However, 1 in 5 adults has pre-diabetes, and the condition is even more common in older people.

4. How diabetes is diagnosed

There are 3 different ways to diagnose type 2 diabetes:

1. Fasting plasma glucose (FPG) level is **126 mg/dL or higher**.
    a. Fasting is defined as having no caloric intake for at least 8 hours before the test.
    b. Verify the findings by repeating the test on another day.

2. A two-hour plasma glucose level is **200 mg/dL or higher**.
    a. This is tested using a 75-gram oral glucose tolerance test (OGTT).
    b. Verify the findings by repeating the test on another day.

3. Symptoms of diabetes are present plus a random plasma glucose (blood sugar) level of **200 mg/dL of higher**. Random means any time of day regardless of when the resident last ate.

NOTE: Elderly people may not show any symptoms typically found with diabetes.

5. How pre-diabetes is diagnosed

Pre-diabetes is usually diagnosed when testing for type 2 diabetes, but with lower plasma glucose (blood sugar) levels:

1. Fasting plasma glucose (FPG) level is **100-125 mg/dL**.
    a. Fasting is defined as having no caloric intake for at least 8 hours before the test.
    b. Verify the findings by repeating the test on another day.

2. A two-hour plasma glucose level is **140-199 mg/dL**.
    a. This is tested using a 75-gram oral glucose tolerance test (OGTT).
    b. Verify the findings by repeating the test on another day.

Admitting the resident with diabetes

1. What to look for at admission

It is important to assess the resident with diabetes when he or she is being admitted to the long-term care facility in order to make a care plan for the resident with diabetes.

Diabetes can lead to serious complications such as heart disease, stroke, nerve damage, kidney disease, circulation problems and eye disease. Residents with diabetes are at an increase risk for urine infections, skin infections, foot ulcers and mouth or dental problems. They are also more likely to die if they get pneumonia or the flu, so vaccination against these infections is important.

Use a checklist, such as the *Diabetes Assessment Work Sheet* in Section A of the **Tool Kit**, along with the Minimum Data Set to make your assessment. Some of the key areas to ask about are:

- ✓ The resident's diabetes treatment plan and medication list
- ✓ Their blood sugar testing plan and blood sugar levels for the past week
- ✓ Their nutrition needs and any dietary problems
- ✓ Their blood pressure while lying down and standing
- ✓ Any complications (cardiovascular, eye, kidney, nerve or dental disease)
- ✓ Resident's awareness of the signs and symptoms of high and low blood sugars
- ✓ A complete foot assessment, looking for existing or potential problems

2. Transferring care from the hospital

When a person with diabetes is discharged from a hospital directly to a long-term care facility, it is important to keep several things in mind:

- Often, diabetes care in hospitals is aimed at strict blood sugar control. However, once off intravenous insulin, acutely ill people may not remain under good blood sugar control when transferred to a long-term care facility. If the insulin dose isn't adjusted after admission, the resident may get low blood sugar (see pp. 13-15).

  > In the hospital, people are under stress and may need MORE insulin. As they recover in the long-term care facility, they may need LESS insulin.

- Hospitalized patients generally do not eat as much as people who are not hospitalized. Once in the long-term care facility, an increase in appetite can help to offset any changes in insulin dosage as noted above.

- Sick people may not eat regularly, which makes it hard to match the insulin dose to their food intake. Until they are eating consistently, more frequent checking of their blood sugar levels is recommended.

Managing diabetes for the resident

1. When to check blood sugars

Blood sugar testing is necessary:
- To detect high or low blood sugar levels
- To see patterns of high and low readings outside of the goal range
- To evaluate the effectiveness of the treatment plan
- As part of a comprehensive assessment of a resident experiencing a changing condition (illness, new medicines, etc.)

How often to test blood sugar (encourage that a testing schedule be ordered by the clinician for every resident with diabetes):

1. First week of admission:
   - Residents treated with insulin — Test 4 times daily, before meals and at bedtime
   - Residents treated with oral medicines — Test 2 times daily (rotating times before meals and at bedtime)
2. Ongoing testing once stabilized, as ordered by the clinician. Guidelines suggest the testing be done less often, but at least as follows:
   - Residents treated with insulin — Test 2 times daily (rotating times before meals and at bedtime)
   - Residents treated with oral medicines — Test 2 times weekly (rotating times before meals and at bedtime)
   - Residents treated with medical nutrition therapy (diet) only — Test at least once a month (rotating times before meals and at bedtime)
3. Increase how often testing is done during illness, surgery, stress or when the resident may be having too high or low a blood sugar (see pp. 11-15). Some individuals have low blood sugar with no symptoms, which is more difficult to diagnose unless blood sugar testing is done regularly.
4. For the resident's comfort, rotate testing sites on all fingers.

Using the test results

1. When blood sugar is less than **70 mg/dL** or the resident has low blood sugar symptoms, treat according to recommendations in the Low Blood Sugar section (pp. 13-15).

> **Symptoms** of low blood sugar include hunger, nervousness, shakiness, perspiration, dizziness and lightheadedness.
>
> **Treating** for low blood sugar when the level is less than 70 mg/dL is appropriate for most elderly.
>
> Symptoms alone are not a reliable indicator of low blood sugar. Some will have no symptoms while others may begin having symptoms at blood sugar levels much higher than 70 mg/dL.
>
> Older residents with diabetes are at higher risk for falling, especially when experiencing low blood sugar.

2. Notify the clinician when blood sugar levels are repeatedly high or low (according to the resident's treatment goals), or if patterns indicate that the treatment is no longer working as desired.

3. Ask the registered dietitian to develop a diet plan that will help the resident get better blood sugar control if needed.

What is a hemoglobin A1C?

Hemoglobin A1C is an important indicator of blood sugar control and is recommended to be tested every 3 to 6 months as directed by the clinician.

> **Hemoglobin A1C** is a test that measures a person's average blood sugar level over the past 2 to 3 months.

Each resident with diabetes may have a different A1C goal. An A1C value in the normal range will help prevent diabetic eye disease, heart disease, nerve damage, kidney disease, and stroke.

A higher number may be acceptable depending on the resident's age and medical condition. A resident's A1C goal will depend on whether the treatment plan is designed to prevent complications or simply to reduce symptoms or lower the risk of having low blood sugar.

Managing diabetes

2. High blood sugar (hyperglycemia)

High blood sugar means that the resident's diabetes treatment is not working. This can happen for many reasons, such as having an infection, a change in health status or starting a new medicine. The clinician should be made aware if the resident's blood sugar is often above the goal.

High blood sugar may cause dehydration, increased urination, problems with incontinence, more frequent infections, blurry vision or discomfort. Treating this early can help avoid the dangers of very high blood sugar, including insulin septicemia, hyperosmolar hyperglycemic nonketotic syndrome and diabetic ketoacidosis, in addition to long-term complications of diabetes.

- **Septicemia** is a dangerous infection of the blood system.
- **Hyperosmolar hyperglycemic nonketotic syndrome** is an emergency condition in which one's blood glucose level is very high. If not treated, it can lead to coma or death.
- **Long-term complications** of diabetes include eye disease, heart and circulation problems, kidney disease and nerve disease.

How to assess high blood sugar

A. **Signs or symptoms** usually come on slowly over hours or days. Watch residents with cognitive impairment closely. A change in mental status or behavior may be related to high blood sugar. Symptoms may include:

- Blurred vision
- Flushed dry skin
- Frequent urination
- Incontinence
- Increased thirst
- Lethargy (sluggish, drowsy)
- Signs of dehydration
- Vomiting
- Weakness
- Weight loss
- Change in behavior or ability to think

A person with **cognitive impairment** is less able to remember, organize their thoughts or make decisions.

B. **Possible causes** of high blood sugar:

1. Physical stress
   - Illness
   - Vomiting or diarrhea
   - Infection
   - Surgery
   - Fever
2. Emotional stress
3. Too much food or overeating
4. Other medicines

It is usually very helpful to the clinician if the cause of the resident's high blood sugar can be identified.

How to treat high blood sugar

A. Check blood sugars **Test blood sugars regularly to find any patterns and possible causes.** and update the clinician

1. Test blood sugar before meals, at bedtime and as needed. Continue to check blood sugar before meals and at bedtime for at least 48 hours.
2. Test urine for ketones, if ordered.
3. Check vital signs (temperature, pulse and respiration, blood pressure).
4. Check food intake and output.

B. Encourage the resident to drink sugar-free fluids or water whenever possible -approximately 6 to 8 ounces per hour.

C. If the resident is unable to eat, follow the sick day guidelines.

D. If resident has a change in condition, becomes sick or is suddenly unable to eat or drink, test their blood sugar and update the clinician.

Managing diabetes

3. Low blood sugar (hypoglycemia)

When a person's blood sugar or blood sugar falls below normal or the goal range set by the primary care clinician. When blood sugar (glucose) drops to less than 70 mg/dL, the body may not have enough energy to sustain normal activities.

What causes low blood sugar

Low blood sugar is not a disease itself and will only occur in those people with diabetes being treated with insulin or certain oral medicines. Taking too much of insulin or oral medicine can cause blood sugars to drop too low. These treatments can also pre-dispose a person to have low blood sugar if they are also:

- Skipping a meal, delaying meals, or not eating enough at meals
- Increasing their physical activity
- Drinking alcohol without eating
- Taking rapid acting insulin too long before a meal
- Experiencing an adverse drug interactions
- Vomiting or having acute diarrhea

How to assess for low blood sugar

The best way to identify low blood sugar is to test the resident's blood sugar level. If you regularly test blood sugars, you may be able to identify patterns when the resident's blood sugars tend to run high or low. Signs and symptoms alone are a poor indicator of low blood sugar and will vary from person to person. When in doubt, always test the blood sugar level.

People who lack early warning signs and symptoms may have "hypoglycemia unawareness" and are even less likely to know when their blood sugar is too low. These residents may need to have their goals and treatment plans modified. It is especially important to regularly test their blood sugar and to look for patterns when blood sugars tend to get low.

Elderly residents may require changes to their blood sugar goals and testing protocols due to safety concerns to prevent low blood sugars.

> Low blood sugar is a **leading cause of falls and injuries** in elderly people with diabetes.

Nighttime low blood sugar can be a concern, especially for residents with dementia, a recent infection or a change in their oral medicine or insulin.

> **If not promptly treated**, low blood sugar can result in long-term disability, causing seizures, coma cognitive impairment, or death. Frequent, severe or nighttime lows are the most dangerous and require treatment change.

Look for any of the following symptoms of low blood sugar, but be aware that the resident may not show any symptoms. The frail elderly may feel only confusion or lethargy, making their symptoms harder to recognize.

- Confusion or lethargy
- Poor concentration and coordination
- Hallucinations
- Generalized weakness
- Aggression or irritability
- Blurred vision
- Nausea
- Falling
- Hunger
- Seizures or coma
- Shakiness/tremors
- Sweating
- Tachycardia (racing heart)
- Tingling in extremities
- Numbness around lips
- Slurred speech
- Dizziness

How to prevent low blood sugar

1. Test blood sugars regularly to find any patterns and possible causes.
2. Discuss a treatment plan with the primary clinician when two to three episodes occur in a week, or as directed by the individualized plan.
3. Try to keep meals consistent for the time they are served and amount of food, especially the amount of carbohydrates.
4. If lows occur at night, provide a bedtime snack as late as comfortably possible for the resident.
5. When the resident isn't able to eat as usual, provide some source of carbohydrate.
6. Educate the resident and family members about symptoms of low blood sugar and how to recognize and treat them.

How to treat low blood sugar

NOTE: This can be used as a standing order for nurses.

Mild reactions

For a **mild reaction** when the resident has signs or symptoms of low blood sugar ***or*** has a blood sugar level less than 70 mg/dL without signs and symptoms:

Rule of 15

- Give a 15 gram carbohydrate oral feeding of one of the following:
    - 1 tube of glucose gel
    - 3 glucose tablets
    - 4 oz of any juice without sugar added
    - 4 oz of regular soda pop
    - 8 oz of low fat/non-fat milk
- Wait 15 minutes and recheck the blood sugar. If the resident continues to have low blood sugar symptoms or has a blood sugar level below 70 mg/dL, repeat the 15 gram carbohydrate oral feeding.
- Recheck the blood sugar every 15 minutes and repeat the "Rule of 15" until there are no longer symptoms, or the blood sugar level rises above 70 mg/dL

Moderate reactions

For a **moderate reaction** where the resident's blood sugar is less than 45 mg/dL, give 30 gm of carbohydrate orally by using two of the items listed above and continue the "Rule of 15."

Severe reactions

For a **severe reaction** where the resident cannot drink or swallow, is unconscious, or is having seizures:

- Administer **1 mg of glucagon** intramuscularly. The resident should awaken within minutes. If not, administer an additional dose of 1 mg glucagon intramuscularly and call for emergency assistance.
- Once fully awake and not vomiting, the resident should eat.

Managing diabetes

4. Medicines for diabetes

Residents with diabetes will probably be prescribed medicines and/or insulin to manage their disease. The following is a list of those commonly used for diabetes (see the Tool Kit, section C, "Medications and Insulins," for more detailed information and a more complete list of diabetes medicines).

Most commonly used diabetes medicines

These come in pill form. Each medicine may have several different strengths.

generic name	brand name®	how it works
acarbose	Precose®	Blocks carbohydrate absorption
glimepiride	Amaryl®	Stimulates pancreas to make more insulin
glipizide	Glucotrol®, Glucotrol XL®	Stimulates pancreas to make more insulin
glyburide	Micronase® Diabeta®	Stimulates pancreas to make more insulin
metformin	Glucophage®	Decreases insulin resistance and liver glucose production, improves muscle glucose uptake
miglitol	Glyset®	Blocks carbohydrate absorption
nateglinide	Starlix®	Stimulates pancreas to make more insulin (short acting)
pioglitazone	Actos®	Decreases insulin resistance and liver glucose production, improves muscle glucose uptake
repaglinide	Prandin®	Stimulates pancreas to make more insulin (short acting)
rosiglitazone	Avandia®	Decreases insulin resistance and liver glucose production, improves muscle glucose uptake

Combination Pills

Some pills have 2 medicines in them that work differently to control blood sugars.

generic name	brand name®	brand name/generic combination
pioglitazone / metformin	Actoplusmet®	Actos® and metformin
rosiglitazone / glimepiride	Avandaryl®	Avandia® and Amaryl®
rosiglitazone / metformin	Avandamet®	Avandia® and metformin
metformin / glyburide	Glucovance®	Glucophage® and glyburide
metformin / glipizide	Metaglip®	----------

Insulins

Insulin is a hormone that converts the sugars found in starches and other food into the energy needed for daily life. All insulins are now man-made. They differ in how long they work in the body.

generic name	brand name®	type of insulin
aspart	Novolog®	Rapid acting mealtime insulin, starts working in 10 minutes
glulisine	Apidra®	Rapid acting mealtime insulin, starts working in 10 minutes
lispro	Humalog®	Rapid acting mealtime insulin, starts working in 10 minutes
regular	Novolin R®, Humulin R®	Short acting mealtime insulin, starts working in 30 minutes
NPH	Novolin N®, Humulin N®	Background insulin, intermediate acting, usually BID
detemir	Levemir®	Basal background insulin, given QD or BID
glargine	Lantus®	Basal background insulin, given QD or BID

Combination Insulins

Some products have 2 types of insulin that have been pre-mixed for easier administration.

generic name	brand name®	how it works
aspart / NPL	Novolog Mix 70/30®	30% Novolog® and 70% intermediate acting insulin, usually given BID
regular / NPH	Novolin 70/30®	30% regular and 70% NPH, usually given BID
lispro / NPH	Humalog 75/25®	25% Humalog® and 75% NPH, usually given BID

Other

These medicines are classified as "incretin mimetics," which act like (mimic) natural hormones in the body that lower blood sugar.

generic name	brand name®	how it works
exenatide	Byetta®	SubQ BID injectable gut hormone mimic, stimulates insulin secretion, supresses liver glucose
pramlintide	Symlin®	SubQ TID injectable pancreas hormone mimic, suppresses liver glucose, slows food passage
sitagliptin	Januvia®	QD tablet, gut hormone mimic, preserves the action of glucagon-like peptide 1 (GLP-1)

Managing diabetes

5. Eye care

Retinopathy is one of the most common eye problems for people with diabetes and is the leading cause of blindness in the United States.

Diabetes also increases the risk for glaucoma and cataracts.

- **Retinopathy** is a condition where the retina of the eye is damaged and can lead to vision loss or blindness.
- **Glaucoma** is increased fluid pressure in the eye
- **Cataracts** are cloudy lenses in the eye.

Good blood sugar control and blood pressure management can reduce these complications.

1) Regular dilated eye exams by an eye care specialist experienced in diabetic retinopathy are recommended once a year for most residents. This is important because people with diabetes **may have no symptoms** until it is too late to treat the problem.

2) Look for eye symptoms or complaints of:
    - Blurry vision
    - Symptoms of retina detachment (like a curtain going up or down)
    - Reduced field of vision
    - Dark spots
    - Flashing lights
    - Sensitivity to light
    - Pain or pressure in eyes

3) Consider referring residents with vision loss to occupational therapy, which can help them take care of themselves and be independent. An occupational therapist will give the resident exercises based on their vision problems and needs.

Managing diabetes

6. Foot care

High blood sugar from diabetes can cause nerve damage (neuropathy) and poor blood flow (peripheral vascular disease - PVD) that can harm feet. Common foot problems such as calluses, blisters, and athlete's foot can lead to infections, especially if blood sugars are high. Untreated infections can lead to gangrene and amputation. This is why residents should have their feet checked often and problems treated immediately.

Nerve damage (Neuropathy)

Nerve damage causes two problems:

- **Pain**. Pain from nerve disease (neuropathy) is often described as burning, stinging, tingling, or like pins and needles.
- **Loss of feeling, especially in the feet**. This lack of feeling makes the person more likely to injure a foot. Nerve damage may also result in deformities in the structure of the foot, such as claw toes, hammer-toes, bunions, prominent metatarsal heads (the medial metatarsal head is the "ball" of the foot) and flat foot (pes cavum).

A **bunion, or prominent metatarsal head,** is a protruding bone on the side of the foot caused by the big toe slanting toward the smaller toes

Claw toe and h**ammer-toe** are similar conditions that they cause the toe to bend and the joint buckle upwards

Charcot foot is a serious condition in which the joints and soft tissue in the foot are destroyed due to nerve damage

Flat foot is a condition that occurs when the arch or instep collapses and the bottom of the foot becomes flat

Poor blood flow (peripheral vascular disease)

Peripheral vascular disease (PVD) is caused by clogged arteries that reduce the blood flow to the foot, arms or legs. PVD can result in foot ulcers and poor wound healing. Older individuals without diabetes can also develop PVD with similar symptoms and risk injury to their arms, legs and feet.

> Peripheral vascular disease (PVD) is a disease of the blood vessels of the arms, legs, and feet. The signs of PVD are aching pains and slow-healing sores.

Common foot problems

Diabetes can cause common foot problems to become dangerous conditions.

Dry, cracked skin, blisters, corns and calluses, athletes foot and other problems can lead to sores (ulcers) and infections. Sores heal slowly with diabetes, and high blood sugar feeds infections. This is why people with diabetes are at high risk for gangrene and lower limb amputations.

Assessing the feet

An assessment of the legs and feet are important at admission. Repeat this exam periodically (see the Tool Kit, sec. B1, "Admission Assessment Worksheet" for the *Lower Extremity and Foot Exam Checklist* and B10 "How to Do a Simple Foot Exam").

The purpose of this assessment of the legs and feet is to:

- Document pressure areas shown by redness and calluses
- Document skin problems
- Describe any problems caused by foot deformities
- Document the status of the toenails

It is recommended that nursing assistants' training include how to assess the feet of residents with diabetes. Daily foot checks include:

- Redness, calluses or bleeding under calluses
- Skin problems such as open areas or injuries
- Moist, peeling skin, especially between the toes
- Dry, cracked skin

Residents with diabetes need to:

- Keep feet clean and dry. Socks should also be clean and dry.
- Wear shoes to prevent injuring the feet.
- Keep skin soft and free of dryness, flakiness or cracks.
- Apply lotion as necessary, but never between toes where it may create a moist environment for fungus.

Because residents with diabetes are at such high risk for foot problems, routine foot care is important and includes:

- Toenail trimming, unless the nails are too thick and more specialized care is needed from a podiatrist or foot care nurse
- Gentle removal of calluses using a pumice stone or file

Consider referral to a foot specialist for special shoes if one or more of the following are present:

- History of a previous foot ulcer
- History of a partial foot amputation due to a foot ulcer
- Calluses that are large enough to cause a foot ulcer, especially any that are painful or reddened
- A foot deformity, such as hammer toes, claw toes, bunions or prominent metatarsal heads
- Having both foot pain (neuropathy) and calluses
- Poor circulation is evident

Managing diabetes

7. Nutrition

Good nutrition is not only eating the right foods, it is an important way of treating diabetes. The goals of nutrition therapy are to keep the resident well nourished, at a healthy weight and good blood sugar levels.

To meet nutrition goals, notice:

- The resident's teeth and bite
- Can the resident chew?
- Can the resident swallow? (see Swallowing Problems, p. 26)
- If the resident has pain or discomfort, especially in the mouth, stomach or other parts of the gastrointestinal tract
- If the resident is depressed
- If the resident is able to feed him or herself

Offer an individualized meal plan

Plan a well-balanced meal plan designed by the registered dietitian within the first 21 days of admission. The current recommendation by the American Diabetes Association is to use the regular resident menu with the same amount of carbohydrate at each meal. This can be done several ways:

- Adjust the portion size to keep the carbohydrate amount the same with each meal.
- Offer sugar-free choices like sugar-free syrup and sugar substitute.
- Have the resident skip the dinner roll or dessert.
- Offer a lower carbohydrate item like fruit or a low-sugar dessert (see the Tool Kit A4 for "Lower Carbohydrate Meal Choices").
- Create a menu of carbohydrate choices available at the meal and let the resident pick carbohydrate items.
- Find out what the resident likes to eat, preferred food consistency and their eating habits.
- If the resident does not eat their meal, offer food or drink with similar carbohydrate content (see the Tool Kit A3 for "Carbohydrate counting").

Match the resident's food needs and preferences to the available services of the dietary department.

> **Diabetes does not mean that sugar must be removed from the diet.** Desserts can be part of the carbohydrate-controlled meal.

Offer snacks the resident likes and that help to control blood sugar:

- Snacks can be put into the meal plan if it is part of the resident's lifestyle.
- Snacks are not necessary if the resident has good blood sugar control.
- Snacks can cause weight gain because of the extra calories.
- Snacks may overwhelm a resident who has a poor appetite.
- Scheduled snacks should offer lower carbohydrate food options (see the Tool Kit A4 for "Lower Carbohydrate Meal Choices" and A5 for "Examples of Low Carbohydrate Meal Choices").
- If a resident goes to bed right after dinner, consider adding an extra carbohydrate choice at dinner in place of bedtime snack.
- Educate the resident and their family on the benefits of following the meal plan and problems that can happen when not following one.

The resident has the right to refuse medical treatment. Document if the resident refuses to eat the recommended diet.

Ask family members to help encourage the resident to follow the prescribed meal plan.

Assess & watch the resident's food intake, output

- Monitor food intake daily.
- Check intake and output more closely whenever blood sugars fluctuate or if medicines are modified.
- Report inadequate intake or change in the usual intake to the nurse and dietitian.
- Add a carbohydrate replacement to the diet if resident is not eating as usual (see the Tool Kit A3 for "Carbohydrate counting").
- Look for weight changes monthly or more frequently if there are major changes in the resident's condition. Weight changes can indicate problems in blood sugar control. Refer to the dietitian and primary care clinician if there is more than a 5% change in weight within 30 days, a 7.5% change within 90 days, or a 10% change within 180 days.
- Consider swallowing problems if symptoms are observed with eating or drinking and if intake continues to be poor (see Swallowing Problems, p. 26).
- Report repeated problems in nutritional intake to the dietitian and the resident's clinician.
- Assess and document the resident's general nutrition status at least quarterly or when major changes happen with the resident's condition or treatment.

Swallowing problems (Dysphagia)

Symptoms of swallowing problems include:

- Pocketing food in the cheeks
- Taking a long time to swallow or eat meals
- Coughing or clearing the throat when eating or drinking

Report any of these symptoms to the dietitian and primary care clinician. The resident's clinician may consider further evaluation with imaging studies or speech therapy.

If a modified (dysphagia) diet is ordered, be aware that it may contain more carbohydrate than usual. Diabetes medicines may need to be changed as well.

- Pre-thickened juices and liquids have more carbohydrates than the same beverages without thickening and may increase blood sugar.
- Powder and thickening agents vary in their carbohydrate content.

Managing diabetes

8. Sick days

When a resident with diabetes is sick, blood sugar levels can fluctuate quickly, even with a minor illness or infection. Watch more closely for severe high blood sugar (see pp. 11-12) testing before meals and at bedtime.

How to manage diabetes when the resident is sick

Continue insulin and oral medicines, even when the resident is sick. Stopping medicines can lead to dangerously high blood sugars and ketosis.

If a resident is sick and unable to eat and drink, test the blood sugar and report it to the resident's clinician for advice on how to check the diabetes and if the medicines should be changed.

Watch the resident's fluid intake

Residents who continue to eat meals should drink about 8 ounces (or 240 ml) of calorie-free liquids each hour to prevent dehydration.

> Examples of calorie free liquids include water, sugar-free Kool-aid, diet pop or broth.

Look for beverages that are 10 calories or less per 8-ounce serving. It is best to use a mixture of these fluids, not just water alone – water alone in very high volumes can dilute the resident's blood and cause hyponatremia, a condition that can lead to confusion, coma or death.

> Eight ounces of liquid that has sodium (salt) and electrolytes should be given every three hours. Bullion, consommé, and clear canned broth have sodium and electrolytes.

Follow a sick day diet

If a resident is unable or unwilling to eat their regular meals, carbohydrate liquids should be used. Give 45-60 grams of carbohydrate over a 3-4 hours period (about 15 grams every hour). See the Tool Kit, sec. B8 for "Sick Day Care" for examples of sick day foods in 15 gram portion sizes.

Check vital signs often

Check vital signs every shift, including temperature, blood pressure, and cognition or behavior changes.

Sick Day Sample Menu

Breakfast

1/2 cup juice
1/2 cup cooked cereal with milk or yogurt

Mid-morning Snack

1/2 cup juice and/or 1 slice toast

Lunch

1 cup cream soup
1/2 cup fruit sauce

Mid-afternoon Snack

1/2 cup regular soda pop or juice
6 crackers

Supper

1 cup cream soup or 1 cup noodles or rice in broth
1 cup milk

Bedtime Snack (as late as possible)

1/2 cup pudding, ice cream, sherbet, or juice

9. Trends and emerging topics

Diabetes is a good focus for training and discussion in long-term care facilities because it involves so many aspects of daily life for the resident with the disease. New trends in diabetes management present good topics for nursing facility staff to talk about as they seek to find a balance between meeting residents' medical and social needs. Facilities will need to determine how to balance medical needs, resident and family satisfaction, cost and work flow.

The following are examples of trends that can have an impact on diabetes management.

Checking residents at high risk of developing diabetes

Trend: **Screening at-risk residents regularly for diabetes**

Benefits: Studies show that undetected diabetes can lead to many problems for a resident, particularly with those recovering from an illness of injury.

Considerations: People with pre-diabetes or those taking certain medicines (such as neuroleptics and some steroids) are at high risk of developing diabetes. Diabetes can also be brought on by stress such as infections, tube feedings, surgeries and serious illnesses. Age is also a risk factor for diabetes. The American Diabetes Association recommends annual screening for people age 45 and older. However, for people without any risk factors or symptoms, routine screening for diabetes is not recommended.

Meal plans and diets

Trend: **Modified regular diets rather than therapeutic diets**

Benefits:

- It generally saves the facility money and makes meal planning much simpler to reduce the number of therapeutic diets offered to residents.
- Often, residents refuse the therapeutic diet foods, not only putting them at risk for malnutrition, but also affecting their quality of life.

Considerations:

- It may make more sense to offer every resident a diet that has smaller portions of higher carbohydrate items and lower levels of salt (sodium).
- Some facilities report that residents with diabetes are happier and eat better when they have the same food choices as everyone else.

Trend: **Flexible meal programs –** some with true flexibility on a day by day basis, such as "room service" plans, or five meals a day plans

Benefits: It is not known what impact this will have on diabetes management, especially insulin scheduling and blood sugar checks.

Considerations: A 5 meal plan with a "continental" breakfast is often very high in carbohydrates. This can be a problem if the administration of short acting insulin is not scheduled until later in the morning. Flexible meal plans may not be appropriate for every resident.

Carbohydrate counting

Trend: **Matching insulin amounts to the carbohydrates consumed**

Benefits: Better blood sugar control

Considerations: May be difficult to do in a facility setting. Some residents may be able to do this themselves (see the resident's individual plan of care). Refer to the dietitian for training if this is needed.

Special circumstances

1. Tube feedings

Tube feeding in residents with diabetes presents challenges for blood sugar control. Care must be taken to match the insulin amount and action time to the resident's nutritional intake.

Tube feeding may be given over a full 24-hour period (around the clock) or may be given over a shorter period of time, such as 8, 12 or even 18 hours. Tube feeding may also be given as a bolus feeding periodically throughout the day.

> **Bolus** means a large amount given at one time.

Checking blood sugar and administering insulin will be different for each situation. Try to match the insulin action to the timing of nutritional intake.

For 24 hour tube feeding:

If basal insulin is used and the tube feeding is stopped, other means of nutrition must be given to the resident to avoid low blood sugar.

2. Nothing by mouth (NPO)

When a resident has been ordered NPO for a test or procedure, diabetes medicines need to be adjusted. Typically, oral medicines are not given and insulin may be withheld or given at a lower dose. Each situation is different and should be discussed with the clinician.

Special circumstances

3. Diabetes management when the resident is dying

Managing diabetes for dying patients requires setting goals for care and modifying the treatment plan to meet the goals as the underlying disease progresses. The overriding rule is to reduce the symptoms of diabetes while making the monitoring and treatment less burdensome to the resident.

Counseling and educating the resident and family are important. The resident and family members may think that caregivers are not paying attention or have "given up" when blood sugar monitoring and control are less aggressive. Talk to them about an approach that considers the balance between the benefits, burdens and risks of tighter blood sugar control.

The key is to be flexible when providing care to a dying resident. If the goal is to avoid high blood sugar symptoms (excessive thirst and frequent urination), but the resident is not tolerating food and medicines, using insulin might be best option even if this was not part of the treatment plan before.

In the very last stages of dying, it is acceptable to stop injections, medicines and blood sugar checks. Often, the resident's clinician may have no alternative but to stop all diabetes care at this point.

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