

Tikrit University

College of Nursing

Clinical Nursing Sciences



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Child Health Nursing



Diabetes Mellitus Part 2

by:

Professor of Pediatrics Ashoor R Sarhat

DKA require intensive nursing care.

1. Observe and record vital signs frequently.
2. Hypotension due to dehydrated state may cause decreased peripheral blood flow, which can be particularly hazardous to the heart, lungs, and kidneys.
3. Maintain careful and accurate records, including
 - vital signs (pulse, respiration, temperature, and blood pressure),
 - weight,
 - IV fluids,
 - electrolytes,
 - insulin,
 - blood glucose level,
 - intake and output
 - Use a urine collection device or retention catheter to obtain the urine measurements, which include**
 1. Volume
 2. specific gravity,
 3. glucose
 4. ketone values.
- Diabetic flow sheet maintained at the bedside provides an ongoing record of the vital signs, urine and blood tests, amount of insulin given, and intake and output.
- Assess and record the level of consciousness at frequent intervals.
- When the critical period is over, the task of regulating insulin dosage to diet and activity is begun.

FBS

- This test checks your fasting blood glucose levels. Fasting means after not having anything to eat or drink (except water) for at least 8 hours before the test. This test is usually done first thing in the morning, before breakfast.
- **Diabetes is diagnosed at fasting blood glucose of greater than or equal to 126 mg/dl**

Result	Fasting Plasma Glucose (FPG)
Normal	less than 100 mg/dl
Prediabetes	100 mg/dl to 125 mg/dl
Diabetes	126 mg/dl or higher

Hb A1C

The A1C test measures your average blood glucose for the past two to three months. The advantages of being diagnosed this way are that you don't have to fast or drink anything.

- **Diabetes is diagnosed at an A1C of greater than or equal to 6.5%**

Result	A1C
Normal	less than 5.7%
Prediabetes	5.7% to 6.4%
Diabetes	6.5% or higher

Oral Glucose Tolerance Test (OGTT)

Two-hour test of blood glucose levels **before & two hours after you drink** a special sweet drink.

It tells the doctor how your body processes sugar.

Diabetes is diagnosed at two-hour blood glucose of greater than or equal to 200 mg/dl

Result	Oral Glucose Tolerance Test (OGTT)
Normal	less than 140 mg/dl
Prediabetes	140 to 199 mg/dl
Diabetes	200 mg/dl or higher

Random Plasma Glucose Test

This test is a blood check at any time of the day when you have severe diabetes symptoms.

- **Diabetes is diagnosed at blood glucose of greater than or equal to 200 mg/dl**

What is Pre-diabetes?

Before people develop **DM type 2**, they almost always have pre-diabetes—blood glucose levels that are higher than normal but not yet high enough to be diagnosed as diabetes.

Ketoacidosis

Insulin is absent or insulin sensitivity is altered, glucose is unavailable for cellular metabolism, and body chooses alternate sources of energy, principally **fat**.

Fats break down into fatty acids, and glycerol in the fat cells is converted by the liver to ketone bodies.

•**DKA diabetes ketoacidosis is a state of**

1. insulin insufficiency
2. Hyperglycemia (blood glucose level ≥ 200 mg/dl),
3. Acidosis (pH < 7.30, bicarbonate < 15 mmol/L),
4. Glycosuria
5. Ketonuria
6. Ketones are organic acids that readily produce excessive quantities of free hydrogen ions, causing a fall in plasma pH. **Kussmaul respirations, or the hyperventilation.**
7. Alteration in serum and tissue potassium can lead to cardiac arrest.
8. If these conditions are not reversed by insulin therapy in combination with correction of the fluid deficiency and electrolyte imbalance, progressive deterioration occurs, with dehydration, electrolyte imbalance, acidosis, coma, and death.

DISORDERS OF THYROID FUNCTION

1. The thyroid gland secretes two types of hormones: thyroid hormone (TH) and calcitonin.
2. TH is made up of the hormones thyroxine(T4) and triiodothyronine(T3).
3. The anterior pituitary hormone TSH controls the secretion of TH.
4. Hypothyroidism or hyperthyroidism may result from a defect in the thyroid or from a disturbance in the secretion of TSH.

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•Effects of Thyroid Hormone

- Regulates metabolic rate
- Regulates body heat production
- Increases gluconeogenesis and peripheral utilization of glucose
- Maintains calcium mobilization
- Stimulates cholesterol synthesis
- Maintains growth hormone secretion
- Maintains cardiac rate and output
- Affects respiratory rate, depth of oxygen utilization
- Maintains sensitivity to insulin and insulin degradation

•**Congenital Hypothyroidism (cretinism)**, results from malformation or malfunction of the thyroid gland that leads to insufficient production of the thyroid hormones

1. low concentrations of thyroid hormones (triiodothyronine [T3] and thyroxine[T4]
2. Congenital hypothyroidism occurs in 1 in 4,000 live births.

Clinical signs includes health history include

1. sensitivity to cold
2. constipation
3. feeding problems
4. observation a lethargic baby or a child with hypotonia, hypoactivity, and a dull expression.
5. Measurements of weight and height may reveal delayed growth, coarse faces with short neck and limbs, periorbital puffiness, enlarged tongue, and poor sucking response .
6. The skin may appear pale with mottling from prolonged jaundice, sparse hair development, bradycardia. evidence of an umbilical hernia or a mass due to constipation.

Complications include

1. intellectual disability if untreated,
2. short stature,
3. growth failure,
4. delayed physical maturation and development.

Therapeutic Management

1. Thyroid hormone replacement with (sodium L-thyroxine) given.
2. Recommended starting dosage is 10 to 15 mcg/kg per day; infants and younger children typically require a higher dosage per unit of body weight
3. There are no adverse effects with physiologic doses, but thyroid function tests are performed initially every 2 weeks to closely monitor for effects and to ensure proper dosing.

Nursing Management

1. Promoting Appropriate Growth Measure and record growth at regular intervals.
2. Monitor for signs of hypo-or hyperfunction, including changes in vital signs, thermoregulation, and activity level. Provide adequate rest periods and meet thermoregulation needs.
3. If the infant's tongue is unusually large, observe feeding ability, prevent airway obstruction, and position the infant on the side.
4. Fluid restrictions or a low-salt diet may be ordered.
5. Take Note! Observe for signs of thyroid hormone overdose (irritability, rapid pulse, dyspnea, sweating, and fever) or ineffective treatment (fatigue, constipation, and decreased appetite).

Before meals at other times of the day



Too low
(Hypoglycaemia)



**Healthy
target**



High
(Hyperglycaemia)

Blood sugar (mmol/l)

1 2 3 **4** 5 6 **7** 8 9+

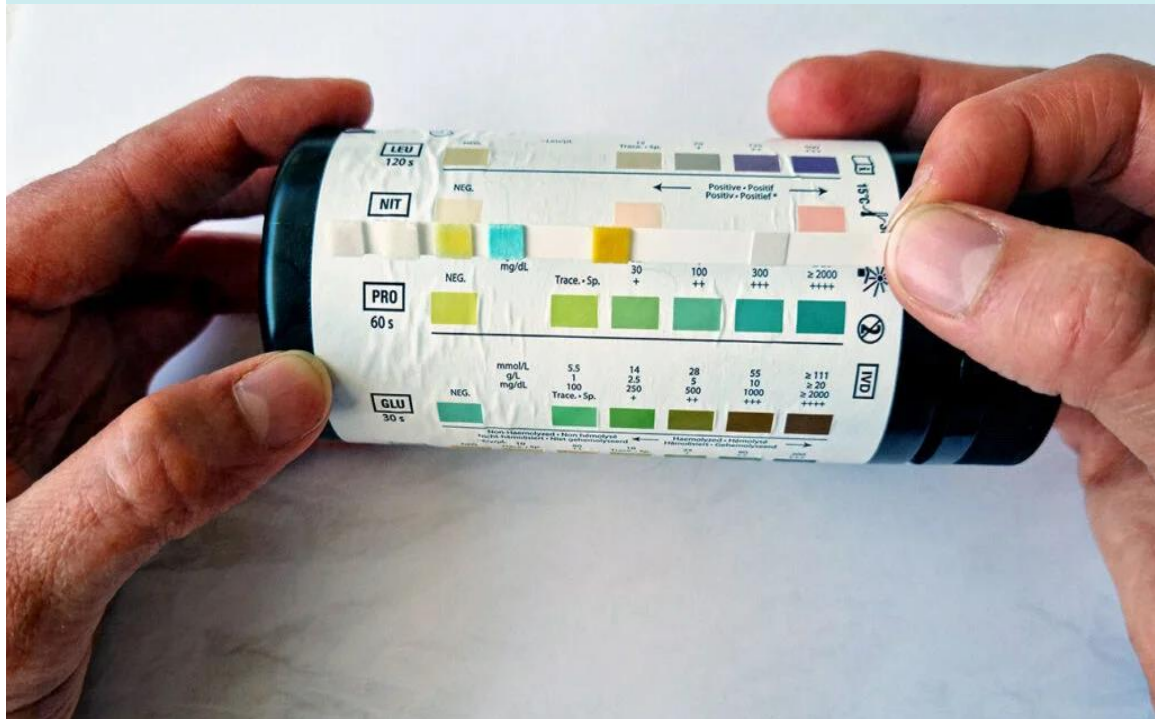
Daily Diabetes Log

Week of: _____

Day	Breakfast		Lunch		Dinner		Bedtime		Other/Snack		Comments Diet, exercise, ketones, illness, stress
	Pre Post	Carbs Insulin	Pre Post	Carbs Insulin	Pre Post	Carbs Insulin	Pre Post	Carbs Insulin	Pre Post	Carbs Insulin	
Mon		/		/		/		/		/	
Tue		/		/		/		/		/	
Wed		/		/		/		/		/	
Thu		/		/		/		/		/	
Fri		/		/		/		/		/	
Sat		/		/		/		/		/	
Sun		/		/		/		/		/	
Avg.											

How to Prevent Hyperglycemia

- Decrease carbohydrate intake
- Quit smoking
- Maintain a healthy weight
- Get 150 minutes of moderate-intensity exercise weekly
- Increase green vegetable intake
- Limit or eliminate alcohol consumption



Potential Causes of High Sugar Levels in Urine

Hyperglycemia

Prediabetes, diabetes, or gestational diabetes

Diabetic medications like empagliflozin

Kidney disease

Genetic (Renal glycosuria)

