

Diabetes Mellitus Prepregnancy/Gestational

This disorder of carbohydrate metabolism of variable severity may be preexisting (pregestational insulin-dependent diabetes mellitus [IDDM] or non-insulin-dependent diabetes mellitus [NIDDM]), or may develop during pregnancy (gestational diabetes mellitus [GDM]).

(This plan of care is to be used in conjunction with the Trimesters and the High-Risk Pregnancy.)

CLIENT ASSESSMENT DATA BASE

Circulation

Pedal pulse and capillary refill of extremities may be diminished or slowed (with diabetes of long duration).
Edema, elevated BP (PIH).

Elimination

May have history of pyelonephritis, recurrent UTI, nephropathy
Polyuria

Food/Fluid

Polydipsia, polyphagia.
Nausea and vomiting.
Obesity; excessive or inadequate weight gain (client with GDM is usually obese; client with IDDM is not usually obese before pregnancy).
Abdominal tenderness.
May report episodes of hypoglycemia, glycosuria.

Safety

Skin integrity/sensation of arms, thighs, buttocks, and abdomen may be altered from frequent injections of insulin.
Visual impairment/retinopathy may be present.
History of symptoms of infection and/or positive cultures for infection, especially urinary or vaginal.

Sexuality

Fundal height may be higher or lower than normal for gestational age (hydramnios, inappropriate fetal growth).
History of large for gestational age (LGA) neonate, hydramnios, congenital anomalies, unexplained stillbirth.

Social Interaction

Socioeconomic concerns/factors can increase risk of complications.
Inadequate or lack of committed support system (may adversely affect diabetic control).

Teaching/Learning

Client's own birth weight may have been 9 lb or more.
May report recent problems/change in stability of diabetic control.
Family history of diabetes, GDM, PIH, infertility problem; LGA infant, history of neonatal death(s), stillbirth, congenital anomalies, spontaneous abortion, hydramnios, macrosomia (greater than 4000 g or 9 lb at birth).

DIAGNOSTIC STUDIES

Glucose Tolerance Test (GTT): Elevated above 140 mg/dL at 24–28 weeks' gestation. Clients with specific risk factors are screened at first prenatal visit. (If screening result is positive, 3-hr glucose challenge or oral glucose tolerance test [OGTT] test done to make diagnosis.)

Glycosylated Hemoglobin (HbA_{1c}): Reveals glucose control over previous 4–8 wk. Levels greater than 8.5%, especially before pregnancy, puts the fetus at risk for congenital anomalies.

Random Serum Glucose Level: Determines immediate diabetic control.

Urine Ketone Levels: Determines nutritional state.
Glycosylated Albumin: Reflects glucose control over last several days as possible screening test for GDM.
Urine Culture: Identifies asymptomatic UTI.
Vaginal Culture: May be positive for *Candida albicans* (Monilia infection).
Protein and Creatinine Clearance (24 hr): Verify level of kidney function, especially in diabetes of long duration.
Thyroid Function Tests: Establish baseline and/or identify coexisting hypothyroidism or hyperthyroidism.
Hemoglobin (Hb)/Hematocrit (Hct): May reveal anemia.
Triglycerides and Cholesterol Levels: May be elevated.
Estriol Level: Indicates level of placental function.
Electrocardiogram (ECG): May reveal altered cardiovascular function in diabetes of long duration.
Nonstress Test (NST): May demonstrate reduced fetal response to maternal activity.
Serial Ultrasonography: Determines presence of macrosomia or IUGR.
Contraction Stress Test (CST), Oxytocin Challenge Test (OCT): Positive results indicate placental insufficiency.
Amniocentesis: Ascertain fetal lung maturity using lecithin to sphingomyelin (L/S) ratio or presence of phosphatidylglycerol (PG).
BPP Criteria: Assesses fetal well-being/maturity.

NURSING PRIORITIES

1. Determine immediate and previous 8-wk diabetic control.
2. Evaluate ongoing client/fetal well-being.
3. Achieve and maintain normoglycemia (euglycemia).
4. Provide client/couple with appropriate information.

NURSING DIAGNOSIS:

Nutrition: altered, risk for less than body requirements

Risk Factors May Include:

Inability to ingest/utilize nutrients appropriately

Possibly Evidenced By:

[Not applicable; presence of signs/symptoms establishes an *actual* diagnosis]

DESIRED OUTCOMES/EVALUATION CRITERIA—CLIENT WILL:

Gain 24–30 lb prenatally, or as appropriate for prepregnancy weight.

Maintain fasting serum glucose levels between 60–100 mg/dL and 1 hr postprandial no higher than 140 mg/dL.

Be free of signs/symptoms of ketoacidosis.

Verbalize understanding of individual treatment regimen and need for frequent self-monitoring.

ACTIONS/INTERVENTIONS

RATIONALE

Independent

Weigh client each prenatal visit. Encourage client to periodically monitor weight at home between visits.

Weight gain is the key index for deciding caloric adjustments.

Assess caloric intake and dietary pattern using 24-hr recall.

Aids in evaluating client's understanding of and/or adherence to dietary regimen.

Review/provide information regarding any required changes in diabetic management; e.g., switch from oral agents to insulin, use of Humulin insulin only, self-monitoring of serum glucose levels at least 4 times/day (e.g., before breakfast and 2 hr after each meal), and reducing/changing time for ingesting carbohydrates.

Review importance of regularity of meals and snacks (e.g., 3 meals/3 or 4 snacks) when taking insulin.

Note presence of nausea and vomiting, especially in first trimester.

Assess understanding of the effect of stress on diabetes. Provide information about stress management and relaxation. (Refer to CP: The High-Risk Pregnancy.)

Teach client finger-stick method for self-monitoring of glucose. Have client demonstrate procedure.

Recommend monitoring urine for ketones on awakening and when a planned meal or snack is delayed.

Metabolism and fetal/maternal needs change greatly during gestation, requiring close monitoring and adaptation. Research suggests antibodies against insulin may cross the placenta, causing inappropriate fetal weight gain. The use of human insulin decreases the development of these antibodies. Reducing carbohydrates to less than 40% of the calories ingested decreases the degree of the postprandial glucose peak of hyperglycemia. Because pregnancy produces severe morning carbohydrate intolerance, the first meal of the day should be small, with minimal carbohydrates.

Small, frequent meals avoid postprandial hyperglycemia and fasting/starvation ketosis. Note: Bedtime snack should contain both protein and complex carbohydrates to prevent nighttime hypoglycemia.

Nausea and vomiting may result in carbohydrate deficiency, which may lead to metabolism of fats and development of ketosis.

Stress can elevate serum glucose levels, creating fluctuations in insulin needs.

Insulin needs for the day can be adjusted based on periodic serum glucose readings. Note: Values obtained by reflectance meters may be 10%–15% lower/higher than plasma values.

Insufficient caloric intake is reflected by ketonuria, indicating need for an increase of carbohydrates or addition of an extra snack in the dietary plan (e.g., recurrent presence of ketonuria on awakening may be eliminated by a 3 AM glass of milk). Presence of ketones during second half of pregnancy may reflect “accelerated starvation” as diminished effectiveness of insulin results in a catabolic state during fasting periods (e.g., skipping meals), causing maternal metabolism of fat. Adjustment of insulin frequency/dosage/type must then be considered.

Review/discuss signs and symptoms and significance of hypoglycemia or hyperglycemia.

Instruct client to treat symptomatic hypoglycemia, if it occurs, with an 8-oz glass of milk and to repeat in 15 min if serum glucose levels remains below 70 mg/dL.

Collaborative

Participate in/coordinate multispecialty care conference as appropriate.

Discuss dosage, schedule, and type of insulin (e.g., usually 4 times/day: 7:30 AM—NPH; 10 AM—regular; 4 PM—NPH; 6 PM—regular).

Adjust diet or insulin regimen to meet individual needs.

Refer to registered dietitian to individualize diet and counsel regarding dietary questions.

Hypoglycemia may be more sudden or severe in first trimester, owing to increased usage of glucose and glycogen by client and developing fetus, as well as low levels of the insulin antagonist human placental lactogen (HPL). Ketoacidosis occurs more frequently in second and third trimesters because of the increased resistance to insulin and elevated HPL levels. Sustained or intermittent pulses of hyperglycemia are mutagenic and teratogenic for the fetus during the first trimester; may also cause fetal hyperinsulinemia, macrosomia, inhibition of lung maturity, cardiac dysrhythmias, neonatal hypoglycemia, and risk of permanent neurological damage. Maternal effects of hyperglycemia can include hydramnios, UTI and/or vaginal infections, hypertension, and spontaneous termination of pregnancy.

Using large amounts of simple carbohydrates to treat hypoglycemia causes serum glucose values to overshoot. A combination of complex carbohydrates and protein maintains normoglycemia longer and helps maintain stability of serum glucose throughout the day.

Provides opportunity to review management of both pregnancy *and* diabetic condition, and to plan for special needs during intrapartum and postpartum periods.

Division of insulin dosage considers maternal basal needs and mealtime insulin-to-food ratio, and allows more freedom in meal scheduling. Total daily dosage is based on gestational age, current maternal body weight, and serum glucose levels. A mix of NPH and regular human insulin helps mimic the normal insulin release pattern of the pancreas, minimizing “peak/valley” effect of serum glucose level. Note: Although some providers may choose to manage clients with GDM with oral agents, insulin is still the drug of choice.

Prenatal metabolic needs change throughout the trimesters, and adjustment is determined by weight gain and laboratory test results. Insulin needs in the first trimester are 0.7 unit/kg of body weight. Between 18 and 24 weeks’ gestation, it increases to 0.8 unit/kg; at 34 weeks’ gestation, 0.9 unit/kg, and 1.0 unit/kg by 36 weeks’ gestation.

Diet specific to the individual is necessary to maintain normoglycemia and to obtain desired weight gain. In-depth teaching promotes understanding of own needs and clarifies misconceptions, especially for client with GDM. Note: New recommendations (Peterson & Peterson, 1992) set dietary needs at 25 kcal/kg dependent on the client’s current pregnant weight.

Monitor serum glucose levels (FBS, preprandial, 1 and 2 hr postprandial) on initial visit, then as indicated by client's condition.

Ascertain results of HbA_{1c} every 2–4 wk.

Prepare for hospitalization if diabetes is not controlled.

Incidence of fetal and newborn abnormalities is decreased when FBS levels range between 60 and 100 mg/dL, preprandial levels between 60 and 105 mg/dL, 1-hr postprandial remains below 140 mg/dL, and 2-hr postprandial is less than 120 mg/dL.

Provides accurate picture of average serum glucose control during the preceding 60 days. Serum glucose control takes 6 wk to stabilize.

Infant morbidity is linked to maternal hyperglycemia-induced fetal hyperinsulinemia.

NURSING DIAGNOSIS:

Risk Factors May Include:

Possibly Evidenced By:

**DESIRED OUTCOMES/EVALUATION
CRITERIA—FETUS WILL:**

Injury, risk for fetal

Elevated maternal serum glucose levels, changes in circulation

[Not applicable; presence of signs/symptoms establishes an *actual* diagnosis]

Display normally reactive NST and negative OCT and/or CST.

Be full-term, with size appropriate for gestational age.

ACTIONS/INTERVENTIONS

RATIONALE

Independent

Determine White's classification for diabetes; explain classification and significance to client/couple.

Fetus is at less risk if White's classification is A, B, or C. The client with classification D, E, or F who develops kidney or acidotic problems or PIH is at high risk. As a means of determining prognosis for perinatal outcome, White's classification has been used in conjunction with (1) evaluation of diabetic control or lack of control and (2) presence or absence of Pederson's prognostically bad signs of pregnancy (PBSP), which include acidosis, mild/severe toxemia, and pyelonephritis. The National Diabetes Data Group Classification, which includes diabetes mellitus (type I, insulin-dependent; type II, non-insulin-dependent), impaired glucose tolerance, and gestational diabetes mellitus, has not yet had prognostic significance in predicting perinatal outcomes.

Note client's diabetic control before conception.

Strict control (normal HbA_{1c} levels) before conception helps reduce the risk of fetal mortality and congenital anomalies.

Assess fetal movement and FHR each visit as indicated. (Refer to CP: Third Trimester, ND: Injury, risk for fetal.) Encourage client to

Fetal movement and FHR may be negatively affected when placental insufficiency and maternal ketosis occur.

periodically count/record fetal movements beginning about 18 weeks' gestation, then daily from 34 weeks' gestation on.

Monitor fundal height each visit.

Monitor urine for ketones. Note fruity breath.

Provide information and reinforce procedure for home blood glucose monitoring and diabetic management. (Refer to NDs: Knowledge Deficit [Learning Need]; Nutrition: altered, risk for less than body requirements.)

Monitor for signs of PIH (edema, proteinuria, increased blood pressure).

Provide information about possible effect of diabetes on fetal growth and development.

Review procedure and rationale for periodic NSTs (e.g., weekly NST after 30 weeks' gestation, twice-weekly NST after 36 weeks' gestation).

Discuss rationale/procedure for carrying out periodic OCT/CST beginning at 30–32 weeks' gestation, depending on diagnosis of IDDM or GDM. (Refer to CP: Third Trimester; ND: Injury, risk for fetal.)

Review procedure and rationale for amniocentesis using L/S ratio and presence of PG. (Refer to CP: Second Trimester; ND: Injury, risk for fetal.)

Collaborative

Assess HbA_{1c} every 2–4 wk, as indicated.

Assess glycolysated albumin level at 24–28 weeks' gestation, especially for client in high-risk category (history of macrosomic infants, previous GDM, or positive family history of GDM). Follow with OGTT if test results are positive.

Verify AFP levels are obtained at 14–16 weeks' gestation.

Useful in identifying abnormal growth pattern (macrosomia or IUGR, small or large for gestational age [SGA/LGA]).

Irreparable CNS damage or fetal death can occur as result of maternal ketonemia, especially in the third trimester.

Decreased fetal/newborn mortality and morbidity complications and congenital anomalies are associated with optimal FBS levels between 70 and 96 mg/dL, and 2-hr postprandial glucose level of less than 120 mg/dL. Frequent monitoring is necessary to maintain this tight range and to reduce incidence of fetal hypoglycemia or hyperglycemia.

About 12%–13% of diabetic individuals develop hypertensive disorders owing to cardiovascular changes associated with diabetes. These disorders negatively affect placental perfusion and fetal status.

Helps client to make informed decisions about managing regimen and may increase cooperation.

Fetal activity and movement are good predictors of fetal wellness. Activity level decreases before alterations in FHR occur.

CST assesses placental perfusion of oxygen and nutrients to fetus. Positive results indicate placental insufficiency, in which case fetus may need to be delivered surgically.

When maternal/placental functioning is impaired before term, fetal lung maturity is criterion used to determine whether survival is possible. Hyperinsulinemia inhibits and interferes with surfactant production; therefore, in the diabetic client, testing for presence of PG is more accurate than using L/S ratio.

Incidence of congenitally malformed infants is increased in women with high HbA_{1c} level (greater than 8.5%) early in pregnancy or before conception. Note: HbA_{1c} is not sensitive enough as a screening tool for GDM.

Serum test for glycolysated albumin reflects glycemia over several days and may gain acceptance as screening tool for GDM because it does not involve potentially harmful glucose loading as does OGTT.

Although AFP screen is recommended for all clients, it is especially important in this population because the incidence of neural tube defects is greater in diabetic clients than in nondiabetic clients, particularly if poor control existed before pregnancy.

Prepare for ultrasonography at 8, 12, 18, 28, and 36–38 weeks' gestation, as indicated.

Perform NST and OCT/CST, as appropriate.

Review periodic creatinine clearance levels.

Obtain sequential serum or 24-hr urinary specimen for estriol levels after 30 weeks' gestation.

Assist as necessary with BPP assessment.

Assist with preparation for delivery of fetus vaginally or surgically if test results indicate placental aging and insufficiency.

Ultrasonography is useful in confirming gestation date and helps to evaluate IUGR.

Assesses fetal well-being and adequacy of placental perfusion.

There is a slight parallel between renal vascular damage and impaired uterine blood flow.

Although estriol levels are not used as often now, falling levels may indicate decreased placental functioning, leading to possibility of IUGR and stillbirth.

Provides a score to assess fetal well-being/risk. The criteria include NST results, fetal breathing movements, amniotic fluid volume, fetal tone, and fetal body movements. For each criterion met, a score of 2 is given. A total score of 8–10 is reassuring, a score of 4–7 indicates need for further evaluation and retesting, and a score of 0–3 is ominous.

Helps ensure positive outcome for neonate.

Incidence of stillbirths increases significantly with gestation more than 36 wk. Macrosomia often causes dystocia with cephalopelvic disproportion (CPD).

NURSING DIAGNOSIS:**Risk Factors May Include:****Possibly Evidenced By:****DESIRED OUTCOMES/EVALUATION CRITERIA—CLIENT WILL:**

Injury, risk for maternal

Changes in diabetic control, abnormal blood profile/anemia, tissue hypoxia, altered immune response

[Not applicable; presence of signs/symptoms establishes in *actual* diagnosis]

Remain normotensive.

Maintain normoglycemia, free of signs/symptoms of ketoacidosis.

Be free of complications (e.g., infection, placental separation).

ACTIONS/INTERVENTIONS

RATIONALE**Independent**

Note White's classification for diabetes. Assess degree of diabetic control (Pederson's criteria). (Refer to ND: Injury, risk for fetal.)

Assess client for vaginal bleeding and abdominal tenderness.

Monitor for signs and symptoms of preterm labor. predispose client to early labor.

Assist client in learning home monitoring of blood glucose, to be done a minimum of 4 times/day. (Refer to NDs: Nutrition: altered, risk for less than body requirements; Knowledge deficit [Learning Need].)

Client classified as D, E, or F is at higher risk for complications, as is client with PBSP.

Vascular changes associated with diabetes place client at risk for abruptio placentae.

Overdistension of uterus caused by macrosomia or hydramnios may

Allows greater accuracy than urine testing because renal threshold for glucose is lowered during pregnancy. Facilitates tighter control of serum glucose levels.

Request that client check urine for ketones daily.

Identify for hypoglycemic episodes occurring at home.

Identify for episodes of hyperglycemia.

Assess for and/or monitor presence of edema.
(Refer to CP: Pregnancy-Induced Hypertension;
ND: Fluid Volume deficit.)

Determine fundal height; check for edema of
extremities and dyspnea.

Assess for, and review with client, signs and
symptoms if UTI.

Determine nature of any vaginal discharge.

Monitor client closely if tocolytic drugs are
used to arrest labor.

Collaborative

Monitor serum glucose levels each visit.

Obtain HbA_{1c} every 2–4 wk, as indicated.

Assess Hb/Hct on initial visit, then during second
trimester and at term.

Instruct in insulin administration, as required.
Ensure that client is adept at self-administration,
either subcutaneously (SC) or with pump,
depending on client's needs or care setting.

Obtain urinalysis and urine culture; administer
antibiotic as indicated.

Obtain culture of vaginal discharge, if present.

Ketonuria indicates presence of starvation state,
which may negatively affect the developing fetus.

Hypoglycemic episodes occur most frequently in the
first trimester, owing to continuous fetal drain on
serum glucose and amino acids, and to low levels of
HPL. In the presence of hypoglycemia, vomiting may
lead to ketosis.

Diet/insulin regulation is necessary for
normoglycemia, especially in second and third
trimesters, when insulin requirements often double
(may quadruple in third trimester).

Because of vascular changes, the diabetic client is
prone to excess fluid retention and PIH. The
severity of the vascular changes before pregnancy
influences the extent and time of onset of PIH.

Hydramnios occurs in 6%–25% of pregnant
diabetic clients; may possibly be associated with
increased fetal contribution to amniotic fluid, because
hyperglycemia increases fetal urine output.

Early detection of UTI may prevent pyelonephritis,
which is thought to contribute to premature labor.

If glycosuria is present, client is more likely to develop
monilial vulvovaginitis, which is caused by *Candida
albicans* and may result in oral thrush in newborn.

Tocolytic drugs may elevate serum glucose and
insulin levels.

Detects impending ketoacidosis; helps determine
times of day during which client is prone to
hypoglycemia.

Allows accurate assessment of glucose control for
past 60 days.

Anemia may be present in client with vascular
involvement.

Insulin requirements are decreased in first
trimester, then double and may even quadruple as
the pregnancy progresses. Highly motivated and
capable clients may do well with a continuous
subcutaneous insulin infusion pump to more
naturally meet insulin needs.

Helps prevent or treat pyelonephritis. Note: Some
antibiotics might be contraindicated because of
danger of teratogenic effects.

Candida vulvovaginitis can cause oral thrush in the
newborn.

Collect specimens for total protein excretion, creatinine clearance, BUN, and uric acid levels.

Schedule ophthalmologic examination during first trimester for all clients, and in second and third trimesters if client is class D, E, F.

Prepare client for ultrasonography at 8, 12, 18, 26, and 36–38 weeks' gestation as indicated.

Start IV therapy with 5% dextrose; administer glucagon SC if client is hospitalized with insulin shock and is unconscious. Follow with protein-containing fluids/foods, e.g., 8 oz skim milk when client is able to swallow.

Progressive vascular changes may impair renal function in clients with severe or long-standing diabetes.

Owing to severe vascular involvement, background retinopathy may progress during pregnancy. Laser coagulation therapy may improve client's condition and reduce optic fibrosis.

Determines fetal size using biparietal diameter, femur length, and estimated fetal weight. Client is at increased risk for CPD and dystocia due to macrosomia.

Glucagon is a naturally occurring substance that acts on liver glycogen and converts it to glucose, which corrects hypoglycemic state. (Note: Hypertonic glucose [D₅₀] administered IV may have negative effects on fetal brain tissue because of its hypertonic action.) Protein helps sustain normoglycemia over a longer period of time.

NURSING DIAGNOSIS:**May Be Related To:****Possibly Evidenced By:****DESIRED OUTCOMES/EVALUATION CRITERIA—CLIENT WILL:**

Knowledge deficit [Learning Need], regarding diabetic condition, prognosis, and self care treatment needs

Lack of exposure to information, misinformation, lack of recall, unfamiliarity with information resources

Questions, statement of misconception, inaccurate follow-through of instructions, development of preventable complications

Participate in the management of diabetes during pregnancy.

Verbalize understanding of the procedures, laboratory tests, and activities involved in controlling diabetes.

Demonstrate proficiency in self-monitoring and insulin administration.

ACTIONS/INTERVENTIONS

RATIONALE**Independent**

Assess client's/couple's knowledge of disease process and treatment, including relationships between diet, exercise, illness, stress, and insulin requirements.

Clients with either preexisting diabetes or GDM are at risk for ineffective glucose uptake within the cells, excess utilization of fats/proteins for energy, and cellular dehydration as water is drawn from the cell by a hypertonic concentration of glucose within the serum. Pregnancy alters insulin requirements drastically and necessitates more intense control, requiring the client/couple to take a very active role. Informed decisions can be made only when there is a clear understanding of both the disease process and the rationale for management.

Discuss importance of home serum glucose monitoring using reflectance meter, and the need for frequent readings (at least 4 times/day), as indicated. Demonstrate procedure, then observe return demonstration by the client.

Review reasons why oral hypoglycemic medications should be avoided, even though they may have been used by the class A client, to control diabetes before pregnancy.

Provide information about action and adverse effects of insulin. Assist client to learn administration by injection, insulin pump, or nasal spray (experimental technique) as indicated.

Explain normal weight gain to client. Encourage home monitoring between visits.

Provide information about need for regular daily mild exercise program (regularly, 20 min after meals). Warn against exercising if glucose exceeds 300 mg/dL.

Provide information regarding the impact of pregnancy on the diabetic condition and future expectations.

Discuss how client can recognize signs of infection. Caution client not to treat self with OTC vaginal creams.

Recommend client maintain a diary of home assessment of serum glucose levels, insulin dosage, diet, exercise, reactions, general feelings of well-being, and any other pertinent thoughts.

Provide contact numbers for health team members.

Review Hb/Hct levels. Provide dietary information about sources of iron and the need for iron supplements.

Frequent blood glucose measurements allow client to recognize the impact of her diet and exercise on serum glucose levels and promote tighter control of glucose levels.

Although insulin does not cross the placenta, oral hypoglycemic agents do and are potentially harmful to the fetus, necessitating a change in diabetic management. Although some clinical sources report use of oral agents in clients with GDM, this is not recommended during pregnancy.

Prenatal metabolic changes cause insulin requirements to change. In the first trimester, insulin requirements are lower, but they double and then may quadruple during second and third trimesters.

Total gain in the first trimester should be 2.5–4.5 lb, then 0.8–0.9 lb/wk thereafter. Caloric restriction with resulting ketonemia may cause fetal damage and inhibit optimal protein utilization. (Refer to ND: Injury, risk for fetal.)

Regular exercise may decrease insulin requirements, while radical fluctuations in physical activity can adversely affect glucose control. Client should exercise after meals to help prevent hypoglycemia and to stabilize glucose excursion, unless excessive elevation of glucose is present, in which case exercise promotes ketoacidosis.

Increased knowledge may decrease fear of the unknown, may increase likelihood of participation, and may help reduce fetal/maternal complications. About 70% of clients diagnosed with GDM will develop NIDDM within 15 yr.

Important to seek medical help early to avoid complications. Choice of self-treatment may be inappropriate/mask infection.

When reviewed by healthcare practitioner(s), client's diary can assist with evaluation and alteration of therapy.

Client needs to be assured that questions will be answered and problems dealt with immediately on a 24-hr–day basis.

Anemias are of greater concern in clients with pre-existing diabetes because elevated glucose levels replace oxygen in the Hb molecule, resulting in reduced oxygen-carrying capacity.

Assist client/family to learn glucagon administration.
Instruct client to follow with protein source, such as 8 oz of milk, then recheck glucose level in 15 min.

Presence of symptoms of hypoglycemia (diaphoresis, tingling sensation, palpitations) with a serum glucose level under 70 mg/dL requires prompt intervention. Use of glucagon in combination with milk can increase the serum glucose level without the risk of rebound hyperglycemia. Glucagon is also useful during periods of morning sickness/vomiting when food intake is curtailed and serum glucose levels fall.