



CANADIAN DIABETES CARE GUIDE

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Inside this Issue

- Gestational Diabetes Mellitus
- Equal — Aspartame
- Smucker's
- Crystal Light Recipe
- Lifescan Less painful blood testing
- Dr. Scholl's
- Colgate Total*
* TM reg'd Colgate-Palmolive Canada Inc.
- Fibre 1*
- Lipid Management
- Contact Us

Gestational Diabetes Mellitus

Gestational Diabetes information was one of the many topics you asked us to cover. We are pleased to present the following in depth article by Leslie Harden, RD CDE and Beryl Schultz RN CDE of the Diabetes and Endocrine Program, St. Joseph's Health Care, London, Ontario.

Gestational diabetes is best described as glucose intolerance of variable degrees with onset or first recognition during pregnancy. There is some controversy surrounding the existence of gestational diabetes but the general feeling is that the cost of diagnosis and treatment outweighs the cost of poor outcomes with no treatment. Association between maternal glucose intolerance and poor fetal outcomes has been recognized so the diagnosis should not be taken lightly¹²³. Gestational diabetes occurs in 3-5% of pregnancies (1 in 20) in the general population. Risk assessment for gestational diabetes should be done at first prenatal visit.

Risk Factors for Gestational Diabetes¹²³:

- Strong family history of diabetes
- Previous still birth
- Previous large-for-dates baby (9 pounds or 4 kilograms)
- Maternal obesity (BMI greater than 29)
- Previous gestational diabetes
- Maternal age greater than 30
- Ethnic populations: First Nation, African-American, Spanish or Asian

Risk to Mother:

- Possibility of delivery by C-section
- Increased risk of birth trauma
- Increased urinary tract infection
- Development of pregnancy induced hypertension

Risk to Baby:

- Macrosomia (large, fat baby)
- Shoulder dystocia
- Neonatal hypoglycemia (low blood sugar in newborn).

- Prolonged new born jaundice
- Low blood calcium
- Respiratory risk syndrome
- Increased risk of obesity, glucose intolerance or Type 2 diabetes later in life

Screening⁴:

- Done at 24 - 28 weeks of gestation (earlier if risk factors present)
- Screening is a two step approach
- Done with nonfasting 50 gram glucose challenge measuring venous glucose at one hour
- 1 hour value ≥ 7.8 mmol/L, need to have a 75 gram oral glucose tolerance test.
- 1 hour value > 10.3 mmol/L, start treatment, no further testing needed.
- 1 hour value < 7.8 mmol/L, may repeat test at a later date.
- 75 Gram Oral Glucose Tolerance Test:
 - fasting ≥ 5.3 mmol/L
 - 1 hour value ≥ 10.6 mmol/L
 - 2 hour value ≥ 8.9 mmol/L

If one value is above target, impaired glucose tolerance of pregnancy is diagnosed.

If two values are above target, gestational diabetes is diagnosed.

Patients diagnosed with Gestational Diabetes are referred to the Endocrine Pregnancy Clinic at St. Joseph's Health Care (SJHC), London (SJHC). Gestational Diabetes management includes ongoing assessment by the Endocrinologist at the clinic. The patient receives instruction regarding monitoring urinary ketones, self blood glucose monitoring, insulin (if needed), diet and exercise from the Diabetes Nurse Educator and Registered Dietitian CDE.

continued on page 2

**Aspartame,
A Consultative Approach**

For 6 years I have been specialising in diabetic consultations with patients at the pharmacy level advising my patients with diabetes on a vast array of topics ranging from drug to drug-disease interactions, blood glucose monitoring, insulin administration, and nutritional information. I find diet is the area in which the patient feels most vulnerable, and seeks information to satisfy their nutritional anxiety.

When first approached by patients with diabetes, I find that their initial concerns revolve around diet and nutrition. They fear they will no longer be able to indulge in the foods they love, specifically sweets. We now counsel our patients on moderation and flexibility in the diet. They are taught how to balance their intake of carbohydrates, fats, and proteins. By recommending a sweetener like Equal®, your patients can enjoy their favourite sweets without concerning themselves with the potential for added sugars; thus, allowing for even greater modification in other areas of the diet, if desired. Thanks to products like Equal®, people with diabetes have the freedom to indulge in a variety and quantity of desired foods and desserts.

I am pleased with the reactions I get from patients when I inform them that

continued from page 1

Gestational Diabetes Mellitus

Monitoring of urinary ketones:

A positive ketone test is a result of break down of body fat stores.

- Check urine first thing every morning
- If positive, may need adjustment to meal plan and/or increase in bedtime insulin dose.
- If always negative, may decrease frequency of testing to 1-2 times per week

Patients are encouraged to call the Dietitian and/or the Nurse Educator if ketone test results show greater than trace amounts of ketones.

Self Monitoring of Blood Glucose (SMBG):

- Normal glycemia values are lower in pregnancy than in the non pregnant state.
- Testing of blood sugars are done 4-5 times daily
- Test fasting blood sugar every morning and 1 hour after starting to eat breakfast, lunch and dinner and at bedtime
- Target values are: fasting <5.3 mmol/L and < 7.8 mmol/L 1 hour after meals⁴.

If fasting values are >5.3 mmol/L, NPH insulin is started at bedtime. If one hour values are higher than target 50% of the time, use of fast acting (Humalog or Regular) insulin is reviewed by the Endocrinologist. Patients are encouraged to contact the Nurse Educator for assistance in interpreting blood glucose monitoring results. This contact is invaluable. Decisions to make treatment change can be made quickly.

Exercise

Exercise is an important tool for maintaining normal glycemia. Insulin resistance and glucose uptake are improved with regular exercise. The frequency, amount and type of exercise needs to be addressed on an individual basis. The Clinical Practice Guidelines promotes regular and moderate exercise particularly of the upper body⁴. Risks associated with increased activity such as hypoglycemia (if on insulin) or uterine contractions, should be included in the discussion.

Nutrition

The nutritional care of the woman with Gestational Diabetes presents the challenge of achieving diabetes management goals while meeting the nutrient needs of pregnancy. All women with Gestational Diabetes attending the Endocrine Pregnancy Clinic at SJHC, receive individual diet assessment and counselling from a Registered Dietitian.

The goals of diet counselling include:

- **Teaching the patient the role of diet in controlling blood sugar and preventing ketones.**

Carbohydrate should be distributed through the day in meals and snacks. Carbohydrate tolerance may be reduced in the morning due to decreased insulin sensitivity. The quantity of carbohydrate at breakfast may need to be limited in patients managed on diet only (ie 25gm carbohydrate at breakfast meal). A snack at bedtime may be of assistance in preventing overnight ketone formation. Carbohydrate regimen may require adjustment if insulin therapy is initiated.

- **Promoting food choices which meet recommended nutrient intake in pregnancy.**

Nutrient needs increase significantly during pregnancy. It is important to ensure that intake of energy, protein and nutrients are adequate on the diabetic meal plan. Total protein requirements increase 20 gm/day above maintenance level in the second trimester, 24g/day in the third trimester. Energy needs are an additional 1,300 kilojoules (kj) above maintenance during the second and third trimesters of pregnancy. Calcium, Vitamin D, folate and iron intake should be assessed carefully⁴⁵. Requirements of energy, protein and many nutrients will be further increased in adolescent and multiple pregnancies.

- **Individualizing the meal plan with sensitivity to food availability, literacy, cultural preferences and lifestyle.**

A diet history will allow the dietitian to assess current eating patterns and food preferences. Counselling may be provided as needed for other therapeutic diet issues including heartburn, hyperemesis or food allergies/ intolerances. Referral to community programs may be appropriate if food availability is an issue.

- **Achieving appropriate weight gain in pregnancy.**

The goals for weight gain are based on the patient's Body Mass Index(BMI) prior to pregnancy. Weight should be checked at each visit. The dietitian should review food intake with the patient at clinic visits. Unexpected weight gain or loss may indicate a need for further diet review or revision of the meal plan. Patients may inappropriately restrict food intake to levels less than recommended on their meal plan in an effort to control PC blood glucose values and avoid insulin therapy.

Equal (from page 2)

one packet of Equal® can be substituted for two teaspoons of sugar in their coffee or tea. With less than 4 calories per packet this results in an 87% reduction compared to sugar. Also, the consumers who enjoy cooking and baking are happy to realise that Equal® Spoonful can be substituted 1 to 1 for sugar. I remind them that Equal® is metabolized just like food, and unlike sugar, does not interfere with glucose or insulin levels. Equal offers an excellent consumer program with Club Equal. Membership includes a free newsletter "EqualTime" that provides diabetes management information, recipes, and promotional offers. For more information or to become a member of Club Equal, call 1-800-323-5316, or visit their web site at www.equal.com. Equal® also provides resources for professionals, including patient support materials, samples, recipes and information kits. This service is available by telephone or fax order at 1-888-313-6802.

When discussing Equal® with my patients, inevitably, questions concerning the safety of sweeteners arise. Clearly, I have no difficulty at all in supporting Equal® 100%. Study after study and countless professional bodies stand behind the safety and efficacy of aspartame (brand name NutraSweet). All reports in the literature support the fact that aspartame does not have any negative effect towards cancer, headaches, epilepsy, allergic reactions,

continued on page 4

SMUCKER'S serves up four No Sugar Added Fruit Spreads.

People following a sugar-reduced or carbohydrate-reduced diet will toast this tasty new product introduction. The J.M. Smucker company has just launched a line of No Sugar Added Fruit Spreads sweetened with Sucralose, the only sweetener that's actually derived from sugar.

1 "The advantage of Sucralose over other artificial sweeteners is that it delivers a taste similar to that of sugar," Product Manager Peter Saikali points out. "So our No Sugar Added Fruit Spreads really match the tasty, wholesome fruit flavour that makes our regular brand the best loved jams in Canada and the U.S."

2 Sucralose has other advantages for diabetics. The body does not recognize it as a sugar or carbohydrate, so it does not influence carbohydrate

metabolism, insulin secretion, fructose absorption or glucose absorption, utilization and control.

3 The Smucker's line of No Sugar Added Fruit Spreads includes everyone's favourite fruit flavours - Strawberry, Raspberry, Apricot and Orange. Each 15 mL serving (1 tbsp) has just 20 calories, 0 g fat and 5.4 g of carbohydrate. In Canadian Diabetes Association food value terms, that represents a 1/2 Fruits & Vegetables Choice rating.

4 "Diabetics or dieters can spread our new Fruit Spreads on thick, just like the way they used to enjoy their jam, but without the added sugar," adds Mr. Saikali. For anyone who is sacrificing sugar, that's sweet news indeed.


CRYSTAL LIGHT

CRYSTAL LIGHT FOOLISH SMOOTHIE

Just follow our 2 simple steps:

- **EMPTY** 1 pouch CRYSTAL LIGHT Strawberry Orange Banana Low Calorie Drink Mix in blender container
- **ADD** 3 cups cold water, 1 cup cold skim milk, 2 Tbsp plain yogurt and 6 ice cubes, cover. Blend until frothy. Makes 5 (1cup) servings.

Per Serving
Calories 26 Protein 2.6 g Fat .26 g Carbohydrate 3.1 g

Canadian Diabetes Association Food Choice Value
1 serving = 1/2  Skim



continued from page 2

Gestational Diabetes Mellitus

Guidelines for Gestational Weight Gain Ranges- (adapted from the IOM)⁶

Body Mass Index (BMI) (kg/m ²)	Recommended Total Weight Gain in Pregnancy	Expected Weekly Weight Gain During 2nd and 3rd Trimesters
BMI <20	12.5-18 kg (28-40 lbs.)	>0.5 kg/week
BMI 20-27	11.5-16 kg (25-35 lbs.)	0.45 kg/week
BMI >27	7.0-11.5 kg (15-25 lbs.)	0.3 kg/week

Post Partum:

- Check fasting blood glucose within 48 hrs postpartum, assess if BG >6.0.
- Promote healthy eating, discuss food choices to meet nutrient needs when breastfeeding.
- Advise patient regarding weight reduction strategies as needed to reach BMI 20-25 and encourage a program of regular exercise.
- An OGTT (75g, 2-h) should be performed 6 weeks to 6 months postpartum to rule out glucose intolerance or diabetes⁴.

Beryl Schultz RN CDE, Leslie Harden RD CDE, Diabetes and Endocrine Program, St. Joseph's Health Care, London.

St. Joseph's Health Care is the SW Ontario Tertiary Care Centre for Perinatal and Women's Health Services and is also where the London Diabetes Management Cooperative is located.

Beryl and Leslie are both members of the interdisciplinary team at the Endocrine Pregnancy Clinic. The clinic focuses on continuity of care through pregnancy and the postpartum period for women with Type 1, 2 and Gestational Diabetes. Program successes include the development of a Clinical Pathway for Gestational Diabetes and a poster presentation reporting a study of client satisfaction with care processes (1998 CDA- Professional/Scientific Section).

1. Jovanovic, L. Editor in Chief, Medical Management of Pregnancy Complicated by Diabetes. American Diabetes Association, Inc., Alexandria, VA, 1993, revised 1995.
2. Jovanovic-Peterson, L. Managing Your Gestational Diabetes. Chronimed Publishing, Inc. 1994
3. Dunbar, M. Gestational Diabetes: Special Delivery. http://www.diabetes.ca/about_diabetes/gestational
4. Meltzer, Sara, et al. 1998 Clinical Practice Guidelines for the management of diabetes in Canada CMAJ 1998; 159 (8 suppl.)
5. Manual of Clinical Dietetic American Dietetic Association, Chicago Dietetic Association, The South Suburban Dietetic Association and Dietitians of Canada Sixth Edition, 2000
6. Health Canada, Nutrition for a Healthy Pregnancy. National Guidelines for the Childbearing Years: Minister of Public Works and Government Services Canada, 1999

vision, weight gain or any other anecdotal complaint that has been voiced. Furthermore, aspartame is so safe that pregnant and lactating women may use it without risk. Even children may safely use aspartame. Of note, one must remember that young children do require lots of calories for growth. Being low-calorie, aspartame may not provide sufficient energy for children. The only people for which aspartame is not recommended are those with the rare disease phenylketonuria or PKU. People with PKU are unable to properly metabolize the amino acid, phenylalanine. For people with this condition, it is suggested that they avoid phenylalanine-containing foods, such as chicken, ground beef, milk, certain vegetables, and aspartame.

To leave a solid impression, I like to remind my patients that the following organizations support the general use of aspartame:

- Canada's Health Protection Branch (HPB)
- United States Food and Drug Administration (FDA)
- World Health Organization (WHO)
- American Cancer Society
- American Council on Science and Health
- American Diabetes Association
- American Dietetic Association
- American Heart Association
- American Food Information Center (AFIC)
- Calorie Control Council

continued on page 5

LifeScan

Alternate Site Testing - More Choice, Less Pain

The newest development in blood glucose monitoring may have overcome the biggest barrier to frequent testing: pain.

The development is alternate site testing (AST), a regime that describes the sampling of blood from a location other than the ultra-sensitive fingertips. This breakthrough – nearly painless and effective for many people with diabetes – has been approved for the first time by Health Canada, but only for the One Touch® FastTake Meter or the new One Touch® Ultra Meter from LifeScan when used in conjunction with FastDraw™ test strips.

The key to this breakthrough is sample size. Conventional meter/strip combinations require blood samples of between two and nine microlitres. While this is not a huge amount of blood, it is still significant. Thus, the only test site where you are guaranteed to get a sufficient sample is in the fingertips. This is bad news for two reasons. Number one, blood vessels and nerve endings tend to congregate in the same places, so the handy fingertip test sites are also among the most sensitive parts in the body. Number two, fingertips have many other uses, which can be compromised if you are forever poking them full of holes.

The Ultra/FastDraw combination can generate an accurate blood glucose measurement in 5 seconds with a sample of only 1.0 microlitre, an amount so small that many people can harvest enough blood for an accurate test from a prick in their forearm or upper arm.

This has multiple benefits. Number one, there are fewer nerve endings in these locations, reducing the pain of testing so dramatically that some people experience no discomfort whatsoever. These skin surfaces also offer a much greater expanse from which to reap a sample. If a patient is fingertip testing four times a day, they would have to prick every finger on either hand as many as three times each week. This constant irritation causes a buildup of scar tissue that, over time, can make the testing even more uncomfortable. With AST, there is more available skin surface to choose from on one forearm than on all 10 fingertips combined.

Penny Wilkinson, a diabetes nurse-educator who conducted trials with the FastDraw strip in a clinic in Port Moody, B.C., says the AST breakthrough offers “a terrific advantage” to her patients. Wilkinson works mostly with children and teens. “Some of these kids have had diabetes since they were very

young; they haven't had a lot of choices in their life,” she says. Many are also testing up to six times a day – a great pattern that they are tempted to abandon if their fingers are sore. And with kids, Wilkinson adds, there is often a concern about cleanliness when they are taking blood samples from their fingertips. AST addresses all these issues, giving testers more flexibility and greater comfort, and steering them to a sample site that is apt to be cleaner on almost every occasion.

If there is a drawback to the new technology, it is that AST may not work for everyone. Even though the 1.0 microlitre sample is small, some people will still have difficulty getting an adequate amount from their arm. Fortunately, the FastDraw strip has a confirmation window, so testers will always be sure whether the sample is large enough to give an accurate reading.

In the diabetes field, “everyone has been waiting for the big breakthrough, the cure,” says Wilkinson. The truth, however, is that we have – in the last quarter century – revolutionized the treatment of diabetes in small increments, proving the efficacy of testing and fine-tuning our understanding of the effects of diet and exercise. In that context, Wilkinson concludes, “everything that makes day-to-day management easier is important – and this is just a great step forward.”

How alternate site testing works

To conduct an alternate site test, a patient should:

1. Select a clean, soft, fleshy area, (away from the bone) that is free of visible veins or excess hair.
2. Massage the area to bring blood to the surface.
3. Set the Penlet® Plus sampler for a deeper puncture.
4. Press and hold the sampler to the site for a few seconds before triggering the puncture; then hold for a few seconds more.
5. Allow enough time for an adequate drop of blood to develop before applying the test strip. The capillary action of the FastDraw strip will draw the blood in until the confirmation window is completely filled.

About LifeScan Canada

LifeScan Canada is a member of the Johnson & Johnson Family of Companies. For more information on our products and services or the LifeScan Education Institute, call the LifeScan Customer Care Line toll-free at 1 800 663-5521. You can also visit our Web site at www.lifescanCanada.com.

- Centers for Disease Control & Prevention (CDC)
- Cornell University
- European Food Information Council
- International Life Sciences Institute
- Massachusetts Institute of Technology
- Mayo Clinic
- Multiple Sclerosis Foundation
- U.K. Ministry of Agriculture, Fisheries, and Food (MAFF)
- U.S. FDA's Center for Food Safety and Applied Nutrition

Additional scientific literature can be obtained by visiting www.aspartame.org/science.html.

Please remember, when approached by patients regarding their concerns with aspartame, it is essential to address the fact that the scientific literature has supported the use of aspartame. As with any product, anecdotal hearsay can sway public opinion. In science, only clinical evidence is used to determine the safety and efficacy of any drug / product. Overwhelmingly, aspartame has received abundant scientific support. Thus, these facts should leave the health care professional feeling extremely confident in recommending Equal® for nearly all patients who require a sugar substitute.

Mitchell D. Silverman B.Sc. Phm.



New StepWell™ Insoles for Arthritis/Diabetes

Most people take healthy feet for granted, but for individuals with diabetes, pain-free walking may be a constant challenge. Poor circulation and nerve damage associated with diabetes increases muscle spasms, ulcers, and, in severe cases, amputation. Combine these challenges with pressure from ill-fitting shoes or poorly designed insoles, and staying active can seem difficult.

Affordable, over-the-counter foot products are now available to help individuals with diabetes 'stay on their feet'. The people at Dr. Scholl's®, leaders in foot healthcare, are proud to introduce their innovative StepWell™ Insoles that offer a unique combination of features to meet the special needs of people with diabetes.

The dual-layer foam insoles distribute pressure evenly on the bottom of the foot to relieve pressure points and friction that can lead to serious problems such as calluses, sores, and even ulcers for people with diabetes. The top layer accommodates high pressure spots. The springy and resilient bottom layer provides essential cushioning. These new insoles are clinically proven to absorb shock and prevent lateral movement to help reduce arthritis pain in feet, ankles, knees, hips and back.

StepWell™ insoles mold to the foot to improve localized circulation and to promote even distribution of pressure. They are available in sizes for men and women.

To help people with diabetes 'stay on their feet,' StepWell™ insoles are available at local pharmacies.

For more information on foot health, please visit The Scholl Institute website at www.schollinstitute.com

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Colgate Total*

As Diabetes Educators, alerting your clients to the special care that people with diabetes need to take is all part of their diabetes management program. It's particularly important for them to take proper care of teeth and gums since studies have shown that people with diabetes tend to be three times more susceptible to gum disease.

Colgate Total® Toothpaste is the only toothpaste clinically proven to go beyond cavity protection to fight plaque, tartar, and gingivitis, the first stage of gum disease. Therefore, brushing with **Colgate Total®** flossing, eating a balanced diet, and making regular visits to your dentist are all important things to remember for proper oral health.

* TM reg'd Colgate-Palmolive Canada Inc.

FIBRE 1*

General Mills has included a full sized sample of their *Fibre 1** cereal. *Fibre 1** currently offers the highest source of dietary fibre among high fibre cereals (Source: Survey, Chatelaine, June 2000). *Fibre 1** is also low in fat, and cholesterol free. As you teach your clients to be label savvy you will probably want to point out that a half cup serving of *Fibre 1** has 13 grams of fibre and, although it has no sugar added, aspartame gives it a palatable sweetness. The half cup (30g) serving has a Canadian Diabetes Association Food Choice Value of 1 Starch Choice. The two separately sealed packs guarantee freshness and crunch.

Lipid Management

Last May, a working group of Canadian experts published updated Guidelines on the management of hypercholesterolemia and other dyslipidemias. They made numerous changes from the previous guidelines, but one of the most significant affects people with diabetes.

In the 2000 guidelines, individuals over the age of 30 who have diabetes mellitus (defined as a fasting blood glucose level of ≥ 7.0 mmol/L) have been moved to the highest risk category. They are now considered to be at "very high risk" for coronary artery disease (CAD) placing them at the same risk level as people who have had a heart attack or stroke.

A recent study has also shown that in diabetic patients, lipid management is even more important than glucose management for the reduction of cardiovascular risk. It was found that intensive blood glucose control in patients with type 2 diabetes reduced the incidence of retinopathy and nephropathy, but had less of an impact on CAD risk. It has been shown elsewhere that type 2 diabetes increases the risk of CAD by a factor of two to four. For this reason, the Canadian Working Group described lipid lowering and blood pressure control as "major priorities" for these patients.

The Guidelines also recommend target lipid levels for people in various risk groups. They suggest that very high risk patients, including people with diabetes, aim to keep LDL cholesterol levels below 2.5 mmol/L, triglyceride levels below 2.0 mmol/L and the ratio of total cholesterol to HDL cholesterol below four.

The Guidelines also now recommend that people with diabetes whose lipid levels are above their targets immediately begin drug treatment in conjunction with diet and lifestyle changes, rather than first doing a trial of diet and lifestyle changes alone. This change underscores the need for aggressive lipid management in these high-risk patients.

For people with elevated LDL cholesterol levels, with or without abnormal triglyceride levels, the statins are recommended as the drugs of choice. Research has shown that in people with diabetes, a statin drug can reduce the likelihood of a cardiovascular event and may increase survival. These drugs cause relatively few side effects and are all available in once-a-day tablet forms.

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