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Diabetes Care News

FOR FRONTLINE DIABETES EDUCATORS

Diabetes and Celiac Disease

By Shelley Case, B.Sc., RD

Shelley Case is a Consulting Dietitian from Regina who specializes in food allergies, celiac disease and diabetes. A member of the Canadian Celiac Association Professional Advisory Board, she has co-authored the celiac section in the Manual of Clinical Dietetics (American Dietetic Association/Dietitians of Canada), as well as other publications. Ms Case was formerly a diabetes educator at the Metabolic & Diabetes Education Centre in Regina for 12 years.

The co-existence of type 1 diabetes (DM) and celiac disease (CD) in both children and adults has been reported in many studies around the world. The reported prevalence of CD in type 1 diabetes ranges between **1- 9%** with several Canadian studies reporting 5-8%. The odds of having both diseases were reported as high as 9.2% in people with diabetes who also had a sibling with diabetes. Clinical observations indicate that in most persons with combined disease, diabetes precedes CD or both are diagnosed at the same time.

The relationship between DM and CD is not completely understood but implicates genetic factors. It appears that a yet unidentified gene within the region of the HLA complex, probably DR3, is common in both diabetes and CD. It is interesting to note that a number of other autoimmune disorders are found not only in people with diabetes but also in those with CD as well (e.g., autoimmune thyroid disease, Addison's disease and Sjögrens syndrome).

Many people with DM and CD are asymptomatic for CD or have atypical or subtle symptoms. Untreated CD may contribute to poor or erratic glycemic control. Other risk/ complications of untreated CD can include:

1) poor linear growth
2) delayed puberty
3) anemia
4) dental enamel hypoplasia
5) osteopenia (low bone mineral density)
6) osteoporosis
7) thyroid disease
8) miscarriage and infertility
9) lymphoma and other cancers
10) development of other autoimmune disorders

There are several reliable serological screening tests for CD, but the gold standard for diagnosis of CD is the small intestinal biopsy. However, there continues to be great debate in the medical community regarding routine screening for CD in people with type 1 diabetes, especially since the majority of people with diabetes are asymptomatic for CD.

Some clinicians feel that the dietary challenges are so great that it is too difficult to ask people with diabetes with asymptomatic CD to follow a gluten-free diet. The problems are compounded by the high cost of the gluten-free diet and the cost of diabetes supplies, as well as the limitation of carbohydrate choice and availability in the combined diet. However, many others recommend that all children with type 1 diabetes be routinely screened and those positive for CD be treated with a gluten-free diet because of the long-term risks of untreated CD. Those in favor of routine screening recommend that initial screening should begin 1-2 years after the diagnosis of type 1 diabetes. Further studies are needed to assess the appropriate interval to follow-up seropostive patients with a normal biopsy as some of these patients may subsequently develop celiac disease.

CELIAC DISEASE

Celiac Disease (CD) is a genetically based, life-long autoimmune disorder in which the absorptive surface of the small intestine is damaged by a substance called gluten. Specific protein fractions called prolamins in wheat, barley and rye set off a chain of events that lead to tissue damage. A wide range of symptoms may be present which can vary greatly in

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number and severity from one person to another, making diagnosis difficult. Also, some people are asymptomatic in spite of gluten-sensitivity and CD can be found in overweight and non-Caucasian persons. Classic symptoms include: bloating, gas, diarrhea, vomiting, weight loss, anemia, chronic fatigue, weakness, bone pain and muscle cramps. Other symptoms can include constipation, constipation alternating with diarrhea, balance problems, migraine headaches, seizures or other neurological complaints, behavior, memory and learning challenges, growth and maturation problems, mouth ulcers, dental enamel defects, infertility and bone disease.

There are specific blood screening tests including IgA endomysial and IgA issue transglutaminase antibodies. Total serum IgA levels must also be measured as there is an increased prevalence of IgA deficiency in celiac disease. Patients with IgA deficiency will have false negative screening test results. However, the only definitive test for diagnosis of CD is the small intestinal biopsy. **A gluten-free diet should never be started before the blood test and biopsy are done as this can interfere with making the correct diagnosis.**

New research indicates that CD is one of the most under-diagnosed common disease today, affecting **1** in every **150-250** people in North America.

GLUTEN-FREE DIET

The treatment for CD is a strict gluten-free diet (GFD) for life. While the presence of gluten is evident in baked goods (e.g., breads, cakes, cookies) and pasta, it is often a"hidden ingredient" in many other items such as luncheon meats, frozen hamburger patties, sauces, seasonings, salad dressings, soups, bouillon cubes, soy sauce, soy beverages, baking powder, candy and occasionally in some vitamin/mineral supplements and pharmaceuticals.

Gluten-containing foods to avoid include:

- Barley
- Oats**
- Bran
- Bulgur
- Couscous
- Durum
- Einkorn*
- Emmer*
- Farro*
- Kamut*
- Oat bran**
- Rye
- Semolina
- Spelt*
- Triticale
- Wheat
- Wheat germ
- Wheat starch
- Malt, malt extract and malt flavoring

* Types of wheat

** Many recent studies have shown that oats are safe for people with CD, however, the main concern is the issue of cross contamination of oats with wheat, therefore, oats are not recommended in North America at this time.

INGREDIENTS TO QUESTION

It is important to confirm the source of the components in the following ingredients as they may contain gluten:

- Flavorings
- Hydrolyzed plant or vegetable protein
- Starch and modified food starch
- Seasonings

NUTRITIONAL MANAGEMENT OF CELIAC DISEASE AND DIABETES MELLITUS

People with CD and DM not only have to **avoid gluten** but also must balance what and when they eat with their insulin and activity levels. Monitoring blood glucose levels and maintaining a food diary are very important to assess the effect of various gluten-free foods on diabetes control. Frequent changes in the insulin dosage may be necessary for up to 6-12 months after the gluten-free diet is initiated. The following key nutritional strategies can help prevent wide fluctuations in blood glucose levels:

1. Carbohydrate counting is essential for people with CD/DM as many gluten-free(GF) products are higher in carbohydrate than their gluten-containing counterparts.

Wheat Bagel	47 g. CHO
Tapioca Rice Bagel*	57 g. CHO

Diabetes Care News is published quarterly by Sampling Canada for inclusion in the Canadian Diabetes Care Guide Professional Pack

Wheat Hot Dog Bun	22 g. CHO
Tapioca Rice Hot Dog Bun*	40 g. CHO
All Purpose Wheat Flour (1 cup/250mL)	95 g. CHO
Rice Flour (1 cup/250mL)	127 g. CHO
Potato Flour (1 cup/250mL)	133 g. CHO

* Kinnikinnick Foods, Edmonton, AB.

2. Glycemic response to many GF carbohydrate foods tends to be higher and faster than similar gluten-containing foods, as they are often higher in starch, lower in fibre and higher in sugar, therefore it is important to:

- incorporate a solid protein choice* at each meal and the evening snack as this allows for a mixture of food to slow digestion.
- choose more fibre-rich*gluten-free foods such as amaranth, corn bran, flax seed meal, garbanzo flour, garfava flour (garbanzo and fava beans), quinoa, rice bran, brown rice, soy flour, legumes, nuts, seeds, fruits and vegetables.
- choose higher protein gluten-free flours such as amaranth, bean, buckwheat, quinoa, soy and teff.

* Protein, fat and dietary fibre can slow down the rate of digestion and release of glucose from carbohydrate containing foods.

There are other nutritional concerns for people with DM and CD:

1. Early bone disease is an issue for people with CD so it is critical to ensure adequate amounts of calcium and Vitamin D.

- Encourage regular consumption of milk and milk products such as yogurt and cheese as they are excellent sources of available calcium. Other foods contain calcium (e.g., canned salmon or sardines with bones, fortified orange juice and soy beverages) but most contain smaller amounts and/or the calcium is in a form that is poorly absorbed by the body (e.g., almonds, broccoli, spinach, sesame seeds, legumes).
- The practice of substituting milk choices for other carbohydrate foods can be done occasionally but it is prudent to regularly consume milk choices in order to meet the dietary reference intake (DRI) for calcium and vitamin D.
- For those people who do not consume adequate amounts of calcium from milk products and other foods, a gluten-free calcium and Vitamin D supplement is recommended.

2. Iron deficiency, with or without anemia is often seen in CD, therefore recommend to:

- Eat more iron-rich gluten-free foods such as meat, fish, poultry, legumes, nuts, seeds, dried fruit, amaranth, flax, quinoa, rice bran and soy flour.
- Include heme sources of iron (e.g., red meat, fish and poultry) on a regular basis as they are more readily absorbed by the body (23%) compared to non-heme sources (e.g., grains, fruits, vegetables and eggs) from which only 3-8% of the iron is absorbed.
- Consume a vitamin C-rich food (citrus fruits, kiwi, berries, broccoli, tomatoes, green and red peppers and cabbage) with non-heme iron sources and/or an iron supplement to enhance iron absorption.

GLUTEN-FREE PRODUCTS

There are a wide variety of gluten-free specialty products available from companies in Canada and the USA. Examples include ready-to-eat baked products (e.g., breads, buns, bagels, muffins, cakes, cookies, pies, pizza crusts), baking mixes and specialty flours, hot and cold cereals, crackers, snack foods, entrees, pastas (corn, quinoa, rice and legumes), and other products such as bread crumbs, coating mixes, gravy mixes, sauces, communion wafers, ice cream cones and granola bars.

GLUTEN-FREE RESOURCES

1. **Canadian Celiac Association**
5170 Dixie Road, Suite 204, Mississauga, ON L4W 1E3 1-800-363-7296
website: www.celiac.ca email: celiac@look.ca
Many pamphlets, books, cookbooks, videos and other resources, including diabetes and celiac disease publications are available for patients and health care professionals. There are also local celiac chapters across Canada that provide support for people with celiac disease.

2. **Gluten-Free Diet: A Comprehensive Resource Guide** by Shelley Case, B.Sc., RD
Available from specialty food stores, celiac associations and Case Nutrition Consulting at 1940 Angley Court, Regina, SK. S4V 2V2
website: www.glutenfreediet.ca
email: info@glutenfreediet.ca
This 176 page book contains a wealth of practical information on all aspects of the gluten-free diet for patients and health care professionals who counsel them. Includes:

- Over 1600 gluten-free specialty foods listed by company and product name
- Directory of more than 130 Canadian, American and international companies
- Gluten-free diet by food groups
- Nutrition information
- Labeling regulations
- Shopping guidelines
- Creative ideas for meals and snacks
- Recipes and baking tips
- Resources- cookbooks, books, magazines, newsletters, web sites and more

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SMUCKER'S No Sugar Added Fruit Spreads

Here's a tasty treat for people who follow a sugar-reduced or carbohydrate-reduced diet. J.M. Smucker's delicious line of No Sugar Added Fruit Spreads is sweetened with Sucralose, the only sweetener that's actually derived from sugar.

"The advantage of Sucralose over other artificial sweeteners is that it delivers a similar taste 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."

Sucralose has other advantages for people with diabetes. The body does not recognize it as a sugar or carbohydrate, so it does not influence carbohydrate metabolism, insulin secretion, fructose absorption, glucose absorption, glucose utilization and short- or long-term blood glucose control.

The Smucker's line of No Sugar Added Fruit Spreads includes everyone's favourite fruit flavours – Strawberry, Raspberry, Apricot, Orange and Blueberry. 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.

"People with diabetes and consumers with low sugar needs can spread our No Sugar Added Fruit Spreads on thick, just 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.

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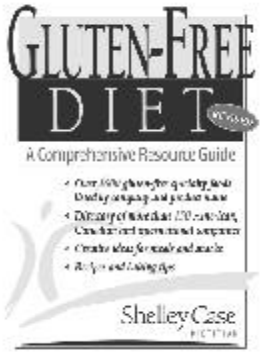

Gluten-Free Diet: A Comprehensive Resource Guide by Shelley Case, B.Sc., RD
Available from specialty food stores, celiac associations and Case Nutrition Consulting at 1940 Angley Court, Regina, SK. S4V 2V2

Helping People with Diabetes Change: Stages of Change

By Julie Devlin, RN, CDE

The Stages of Change model, also known as the Transtheoretical Model of Change (TTM), has become the focus of a unique program for diabetes educators in Canada. A small group of educators were motivated to pursue the development of this theory in their diabetes practice, after attending a 1994 seminar introducing James Prochaska and his original TTM work in smoking cessation.

The central hypothesis of the TTM is that not all individuals are prepared to take action to change their behavior at a given point in time. Further, individuals pass through stages varying in their characteristics related to self-efficacy and decisional balance. By knowing the individual's stage, helping professionals can design/select the strategy that is "The right thing for that person at that time".

Contemporary diabetes management is based on an implicit assumption that all those attending a diabetes education program are prepared to change. Many diabetes education/ management programs have little to offer those individuals currently unwilling to attend diabetes education programs or to follow through on self-care behavioural recommendations. TTM offers these individuals and their care providers a new approach in addressing changing behaviours for diabetes care.

By studying how people changed behaviours, with or without help, a pattern of five stages has emerged, each defined by the person's intention to change within a given timeframe, along with descriptors or characteristics common to each of these stages.

The Stages of Change

Change of any kind comes in stages. Success is movement from one stage to the next. The stages are:

Precontemplation

When someone has no intention of changing a particular behavior.

Contemplation

When they are thinking about change but the barriers to change still outweigh the benefits.

Preparation

When the reason to change begins to outweigh the barriers and the subject starts making a plan to begin change in the next 30 days.

Action

The slipperiest stage, when the subject has changed the behavior but is at most risk of sliding back or recycling into an earlier stage. Support and encouragement can help keep the subject from losing confidence and slipping back.

Maintenance

When the new behavior has been successfully in place for six months or more. Here again support reduces the risk of recycling.

The Stages of Change Model may be used to guide any therapeutic intervention, whether it be an individual encounter, a one-page poster or an entire program of learning. With individuals, it may be used to guide the content, pace and style of your assessment process and individuals plan of care. With group classes, it may be used to develop stage-based objectives and plan appropriate teaching strategies to accomplish them. It may be used to develop teaching tools or handout materials that are appropriate for different learning objectives. In fact, the LifeScan Education Institute used the Stages of Change as a platform to developed the Test For Success teaching tool, which assists Diabetes Nurse Educators in teaching blood glucose management to their patients. In addition, the LifeScan Education Institute developed the poster "What Happens To Your Blood Sugars When?" that assists people in the precontemplation stage of the Stages of Change.

The TTM does not replace guidelines for good communication/education skills – it suggests that we could use them more effectively through a stages of change approach to assessment and planning. The programs have been a great success with over 30 workshops held in various provinces across Canada. The next Stages of Change workshop is being held in late April/early May, 2002 in Lindsey, Ontario. For more information about this workshop or how to organize a workshop in your area, please contact the LifeScan Education Institute Coordinators at (604) 320-2908. To find out more about the Test For Success teaching tool or the precontemplation poster please contact your local sales representative.

ERECTILE DYSFUNCTION:
A Common Concern for Men With Diabetes

Diabetes, a medical condition that affects more than two million Canadians can also cause erectile difficulties (ED). About half of diabetic men between the ages of 40 and 50 have some degree of ED. By age 70, this figure is closer to 95 per cent. For these men and their sexual partners, loss of self-esteem, embarrassment and relationship difficulties are not uncommon – ED can cause significant personal and emotional stress that affects all aspects of their lives.

Yet, many men are still uncomfortable discussing ED with their physicians, and in some cases, their partners. It may surprise them to learn that the majority of Canadian family physicians have prescribed an ED treatment, reflecting their willingness and ability to diagnose and treat this condition. It also shows that men are not alone in their concern about ED.

"There is an increased incidence of ED among men with diabetes, which may be seen as a complication," said Dr. Brewer Auld, urologist and Chair of the Canadian Male Sexual Health Council. "These men, however, can manage both their diabetes and their ED effectively – leading to a striking improvement in their well-being. With effective treatments readily available for ED, all men – including men with diabetes – are encouraged to talk to their doctor about their ED." For most Canadian adults, sexual health is an important part of their overall well-being. In fact, most men and women expect to enjoy a healthy sexual relationship, including the option of sexual intercourse, well into their older years. Men who receive effective treatment for ED are usually thrilled with their improved sexual activity.

What Is ED?

ED is typically defined as the persistent inability to attain and/or maintain an erection that is satisfactory for sexual performance. The easiest to recognize, of course is complete ED, which is the inability to achieve an erection in any circumstance. But ED is more precisely a condition that occurs in various degrees. In fact, the majority of men with ED (82 per cent) have mild to moderate ED, which can be defined as intermittent and/or increasing loss of penile rigidity with an associated impact on sexual activity.

Regardless of its degree of severity, men should consider ED a legitimate medical concern deserving of treatment. ED is not an inevitable result of aging.

How Is ED Associated With Diabetes?

For men with diabetes, the blood vessel problems and nerve damage that may be present with diabetes can also cause a slow and progressive deterioration of erection quality over time.

ED may also be caused by factors such as smoking, obesity, excess alcohol use and stress. Scientists believe that these factors may also be associated with type 2 diabetes, the kind that affects 90 per cent of Canadians with diabetes. Removal of these contributing factors could be important in preventing or minimizing the physical and emotional impact of both diabetes and ED.

Can ED be Treated in Men with Diabetes?

The good news is that regardless of the cause, the majority of cases of ED are treatable. ED doesn't need to be a difficult subject to discuss, especially since today's treatment options can give new hope for restoring sexual functioning. It is encouraging for men and their partners to know that there are safe and effective treatments now available. Your doctor can help you to decide whether or not to treat your erectile dysfunction and identify the best treatment option for you.

For more information on ED in men with diabetes or ED in general, call 1-800-951-2033 (an ED information line answered by a nurse) or visit www.yoursexualhealth.com.

Sexual Health Inventory for Men (SHIM) questionnaires have been included in this package to facilitate self diagnosis of erectile dysfunction within individuals that consult with you.

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LIPID MANAGEMENT

In May 2000, a working group of Canadian experts updated the Canadian guidelines on the management and treatment of dyslipidemia[1]. They made numerous changes from the previous guidelines that are important. The most significant, however, affects people with diabetes.

In these 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 into a new category. They are now considered to be at "very high risk" for CAD — placing them at the same risk level as people who have had a heart attack or stroke.

A recent study published in the U.K. has also shown that in diabetic patients, lipid management is even more important than glucose management for the reduction of cardiovascular risk[2]. It was found that intensive blood glucose control in patients with type 2 diabetes reduced the incidence of retinopathy and nephro-pathy, but had less of an impact on CAD risk. It has been shown in a study published in the *New England Journal of Medicine* that type 2 diabetes increases the risk of CAD by a factor of two to four[3]. 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 4.0.

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 trying diet and lifestyle changes alone. This change underlines the need for aggressive lipid management in these very high-risk patients.

For patients with elevated LDL cholesterol levels, with or without abnormal triglyceride levels, the class of drugs called "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[4]. These drugs cause relatively few side effects and are all available in once-a-day tablet forms.

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