submissions

From: standards.management@foodstandards.gov.au
Sent: Thursday, 22 January 2015 4:11 PM
To: standards management
Subject: FSANZ: Applications and Submissions - Submission [SEC=INCONFIDENCE]
Attachments: S20.full.pdf

Categories: [redacted]

FOOD STANDARDS
Australia New Zealand
Te Mana Kounga Kai - Ahitereiria me Aotearoa

FSANZ: Applications and Submissions - Submission

Thursday, 22 January, 2015

1. Assessment Report Number: Comments sought on simplification of the nutrition information panel

2. Assessment Report Title: Comments sought on simplification of the nutrition information panel

3. Organisation Name: Central Coast local Health District

4. Organisation Type: Individual

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12. Submission Text: This submission is on behalf of Nutrition Department, Central Coast Local Health District (CCLHD) Nutrition Department CCLHD employs 27 dietitians whose role it is to educate the public on appropriate nutrition. This extends beyond just healthy eating but a myriad of health conditions which can be helped by the choice of food and beverages which are consumed. For the thousands of foods available, the NIP is the starting point in helping the public understand what is in the food and drink they consume. On a daily basis, dietitians at CCLHD utilise nutrition information panels in their role educating inpatients, outpatients and community groups. Both parts of the NIP (per serve and per 100g) are required for all the scenarios which we are come across. At the team meeting of the Nutrition department in January 2015 a brainstorming session was held and the following issues were identified with removing the 'per serve' information. A number of specific examples follow. • A number of HEALTHY eating criterion are based on serving sizes not 100g, Examples of this include 'Fresh Tastes at School' healthy eating criteria for school canteens where serving size is required to be stated as products must be under a certain number of kJ, grams of fat, grams of sugar to be classified as a red, orange or green food. This canteen scheme has been operating in NSW for over 10 years and has been developed by the NSW MOH and DET. This has led to the development of many healthier alternatives in the area of school canteen foods and beverages. • Information on nutrients presented only per 100g makes life much more difficult for those with limited mathematical skills. This especially true for foods where the serving sizes are

small. For example if someone wanted to know how much protein was in 2 teaspoons of peanut butter, it would be impossible to know this if only given for the amounts for 100g. Say 2 teaspoons weighed 13g (Which would have to have weighed on sensitive kitchen scales if not written as the serving size). They then need to do the maths 13/100 of 25.1(g protein per 100g). Can you please do the maths and insert the answer here_____. No calculators allowed. (Answer below) • The serving sizes are vital for people who self-adjust insulin to their carbohydrate intake in order to manage their type 1 diabetes. So if the per serve column was not present these people would be required to weigh all packaged food they consume. Nearly 15,000 (1) people with type 1 diabetes are on an insulin pumps, over 2000 have completed DAFNE (2) or have completed a programme similar to DAFNE. These people calculate how much carbohydrate they have eaten at a meal so they can work how much insulin to administer at a meal. One of the main education tools to assess carbohydrate intake is to teach clients how to read labels. Clients are advised to focus on the carbohydrate per serve column of the NIP as their serves will be similar. This cannot be done if only 100g portions are on labels. No one eats 100g amounts of all foods. For these people with type 1 diabetes this could result in tragic consequences including death from hypoglycaemia if they overestimated the amount of carbohydrate or poor blood glucose levels leading to complications including diabetic keto –acidosis, diabetic neuropathy, nephropathy and blindness among many other problems if they underestimate their carbohydrate intake. Self-adjustment of insulin based on carbohydrate intake is evidenced based (Evidence Rating A). See reference (3) Thankyou Rudi Bartl on behalf of Nutrition Department, Central Coast Local Health District (CCLHD) (1) http://www.diabetesaustralia.com.au/PageFiles/20048/Insulin%20Pump%20Therapy%20Report.pdf (2) http://www.dafne.org.au/health-professionals/history-of-dafne http://care.diabetesjournals.org/content/38/Supplement_1/S20.full.pdf+html (3) Foundations of Care: Education, Nutrition, Physical Activity, Smoking Cessation, Psychosocial Care, and Immunization. Diabetes Care 2015;38 (Suppl. 1):S20–S30 | DOI: 10.2337/dc15-S007 3.3g protein in 13g peanut butter

4. Foundations of Care: Education, Nutrition, Physical Activity, Smoking Cessation, Psychosocial Care, and Immunization

American Diabetes Association

Diabetes Care 2015;38(Suppl. 1):S20–S30 | DOI: 10.2337/dc15-S007

POSITION STATEMENT

DIABETES SELF-MANAGEMENT EDUCATION AND SUPPORT

Recommendations

- People with diabetes should receive diabetes self-management education (DSME) and diabetes self-management support (DSMS) according to the national standards for DSME and DSMS when their diabetes is diagnosed and as needed thereafter. **B**
- Effective self-management and quality of life are the key outcomes of DSME and DSMS and should be measured and monitored as part of care. **C**
- DSME and DSMS should address psychosocial issues, as emotional well-being is associated with positive diabetes outcomes. **C**
- DSME and DSMS programs are appropriate venues for people with prediabetes to receive education and support to develop and maintain behaviors that can prevent or delay the onset of diabetes. **C**
- Because DSME and DSMS can result in cost-savings and improved outcomes **B**, DSME and DSMS should be adequately reimbursed by third-party payers. **E**

DSME and DSMS are the ongoing processes of facilitating the knowledge, skill, and ability necessary for diabetes self-care. This process incorporates the needs, goals, and life experiences of the person with diabetes. The overall objectives of DSME and DSMS are to support informed decision making, self-care behaviors, problem solving, and active collaboration with the health care team to improve clinical outcomes, health status, and quality of life in a cost-effective manner (1).

DSME and DSMS are essential elements of diabetes care (2,3), and the current national standards for DSME and DSMS (1) are based on evidence of their benefits. Education helps people with diabetes initiate effective self-management and cope with diabetes when they are first diagnosed. Ongoing DSME and DSMS also help people with diabetes maintain effective self-management throughout a lifetime of diabetes as they face new challenges and as treatment advances become available. DSME enables patients (including youth) to optimize metabolic control, prevent and manage complications, and maximize quality of life in a cost-effective manner (2,4).

Current best practice of DSME is a skill-based approach that focuses on helping those with diabetes make informed self-management choices (1,2). DSME has changed from a didactic approach focusing on providing information to empowerment models that focus on helping those with diabetes make informed self-management decisions (2). Diabetes care has shifted to an approach that is more patient centered and places the person with diabetes and his or her family at the center of the care model, working in collaboration with health care professionals. Patient-centered care is respectful of and responsive to individual patient preferences, needs, and values and ensures that patient values guide all decision making (5).

Evidence for the Benefits

Multiple studies have found that DSME is associated with improved diabetes knowledge, improved self-care behavior (1), improved clinical outcomes, such as lower

Suggested citation: American Diabetes Association. Foundations of care: education, nutrition, physical activity, smoking cessation, psychosocial care, and immunization. Sec. 4. In Standards of Medical Care in Diabetes—2015. *Diabetes Care 2015;38(Suppl. 1):S20–S30*

A1C (3,6–8), lower self-reported weight (9,10), improved quality of life (8,11), healthy coping (12,13), and lower costs (14,15). Better outcomes were reported for DSME interventions that were longer and included follow-up support (DSMS) (16–18), that were culturally (19,20) and age appropriate (21,22), that were tailored to individual needs and preferences, and that addressed psychosocial issues and incorporated behavioral strategies (2,12,23,24). Both individual and group approaches have been found effective (10,25). There is growing evidence for the role of community health workers (26), as well as peer (27–30) and lay leaders (31), in delivering DSME and DSMS (32).

Diabetes education is associated with increased use of primary and preventive services (14,33,34) and lower use of acute, inpatient hospital services (14). Patients who participate in diabetes education are more likely to follow best practice treatment recommendations, particularly among the Medicare population, and have lower Medicare and insurance claim costs (15,33).

National Standards

The national standards for DSME and DSMS are designed to define quality and to assist diabetes educators in a variety of settings to provide evidence-based education and self-management support (1). The standards are reviewed and updated every 5 years by a task force representing key organizations involved in diabetes education and care.

Reimbursement

DSME, when provided by a program that meets national standards for DSME and is recognized by the American Diabetes Association (ADA) or other approval bodies, is reimbursed as part of the Medicare program as overseen by the Centers for Medicare & Medicaid Services. DSME is also covered by most health insurance plans. Although DSMS has been shown to be instrumental for improving outcomes and can be provided via phone calls and telehealth, it currently has limited reimbursement as in-person follow-up to DSME.

MEDICAL NUTRITION THERAPY

For many individuals with diabetes, the most challenging part of the treatment plan is determining what to eat. It is the position of the ADA that there is not a one-size-fits-all eating pattern for individuals with diabetes. The ADA also recognizes the integral role of nutrition therapy in overall diabetes management and recommends that each person with diabetes be actively engaged in self-management, education, and treatment planning with his or her health care provider, which includes the collaborative development of an individualized eating plan (35,36). Therefore, it is important that all members of the health care team be knowledgeable about diabetes nutrition therapy and support its implementation. See **Table 4.1** for specific nutrition recommendations.

Goals of Nutrition Therapy for Adults With Diabetes

1. To promote and support healthful eating patterns, emphasizing a variety of nutrient-dense foods in appropriate portion sizes, in order to improve overall health and specifically to
   - Attain individualized glycemic, blood pressure, and lipid goals
   - Achieve and maintain body weight goals
   - Delay or prevent complications of diabetes
2. To address individual nutrition needs based on personal and cultural preferences, health literacy and numeracy, access to healthful food choices, willingness and ability to make behavioral changes, and barriers to change.
3. To maintain the pleasure of eating by providing positive messages about food choices while limiting food choices only when indicated by scientific evidence.
4. To provide the individual with diabetes with practical tools for day-to-day meal planning rather than focusing on individual macronutrients, micronutrients, or single foods.

Nutrition therapy is an integral component of diabetes prevention, management, and self-management education. All individuals with diabetes should receive individualized medical nutrition therapy (MNT), preferably provided by a registered dietitian who is knowledgeable and skilled in providing diabetes MNT. Comprehensive group diabetes education programs including nutrition therapy or individualized education sessions have reported A1C decreases of 0.3–1% for type 1 diabetes (37–41) and 0.5–2% for type 2 diabetes (42–49).

Carbohydrate Management

Individuals with type 1 diabetes should be offered intensive insulin therapy education using the carbohydrate-counting meal planning approach (37,39,40,43,50), which has been shown to improve glycemic control (50,51). Consistent carbohydrate intake with respect to time and amount can result in improved glycemic control for individuals using fixed daily insulin doses (36). A simple diabetes meal planning approach, such as portion control or healthful food choices, may be better suited for individuals with health literacy and numeracy concerns (36–40,42).

Weight Loss

Intensive lifestyle programs with frequent follow-up are required to achieve significant reductions in excess body weight and improve clinical indicators (52,53). Weight loss of 2–8 kg may provide clinical benefits in those with type 2 diabetes, especially early in the disease process (52,53). Although several studies resulted in improvements in A1C at 1 year (52,54–56), not all weight-loss interventions led to 1-year A1C improvements (45,57–60). The most consistently identified changes in cardiovascular risk factors were an increase in HDL cholesterol (52,54,56,59,61), decrease in triglycerides (52,61–63), and decrease in blood pressure (52,54,57,59,61).

Weight-loss studies have used a variety of energy-restricted eating patterns, with no clear evidence that one eating pattern or optimal macronutrient distribution was ideal, suggesting that macronutrient proportions should be individualized (64). Studies show that people with diabetes eat on average about 45% of their calories from carbohydrates, ~36–40% of calories from fat, and ~16–18% from protein (57–59). A variety of eating patterns have been shown to be effective in managing diabetes, including Mediterranean-style (53,65), Dietary Approaches to Stop Hypertension (DASH)-style (66), and plant-based (vegan or vegetarian) (67), lower-fat (68), and lower-carbohydrate patterns (68).

Table 4.1—Nutrition therapy recommendations

Topic	Recommendations	Evidence rating
Effectiveness of nutrition therapy	• Nutrition therapy is recommended for all people with type 1 and type 2 diabetes as an effective component of the overall treatment plan.	A
	• Individuals who have diabetes should receive individualized MNT to achieve treatment goals, preferably provided by a registered dietitian familiar with the components of diabetes MNT.	A
	• For individuals with type 1 diabetes, participation in an intensive, flexible insulin therapy education program using the carbohydrate-counting meal planning approach can result in improved glycemic control.	A
	• For individuals using fixed daily insulin doses, consistent carbohydrate intake with respect to time and amount can result in improved glycemic control and reduce hypoglycemia risk.	B
	• A simple diabetes meal planning approach, such as portion control or healthful food choices, may be better suited to individuals with type 2 diabetes with health and numeracy literacy concerns. This strategy also may be effective for older adults.	C
	• Because diabetes nutrition therapy can result in cost savings **B** and improved outcomes (e.g., A1C reduction) **A**, MNT should be adequately reimbursed by insurance and other payers. **E**	B, A, E
Energy balance	• For overweight or obese adults with type 2 diabetes or at risk for diabetes, reducing energy intake while maintaining a healthful eating pattern is recommended to promote weight loss.	A
	• Modest weight loss may provide clinical benefits in some individuals with diabetes, especially those early in the disease process. To achieve modest weight loss, intensive lifestyle interventions with ongoing support are recommended.	A
Eating patterns and macronutrient distribution	• Evidence suggests that there is not an ideal percentage of calories from carbohydrate, protein, and fat for all people with diabetes **B**; therefore, macronutrient distribution should be based on individualized assessment of current eating patterns, preferences, and metabolic goals. **E**	B, E
	• Carbohydrate amount and available insulin may be the most important factors influencing glycemic response after eating and should be considered when developing the eating plan.	A
	• Monitoring carbohydrate intake, whether by carbohydrate counting or experience-based estimation, remains critical in achieving glycemic control.	B
	• Carbohydrate intake from vegetables, fruits, whole grains, legumes, and dairy products should be advised over intake from other carbohydrate sources, especially those that contain added fats, sugars, or sodium.	B
	• Substituting low glycemic—load foods for higher glycemic—load foods may modestly improve glycemic control.	C
	• Individuals at high risk for type 2 diabetes should be encouraged to achieve the U.S. Department of Agriculture recommendation for dietary fiber (14 g fiber/1,000 kcal) and to consume foods containing whole grains (one-half of grain intake).	B
	• While substituting sucrose-containing foods for isocaloric amounts of other carbohydrates may have similar blood glucose effects, consumption should be minimized to avoid displacing nutrient-dense food choices.	A
	• People with diabetes and those at risk should limit or avoid intake of sugar-sweetened beverages to reduce risk for weight gain and worsening of cardiometabolic risk profile.	B
Protein	• In individuals with type 2 diabetes, ingested protein appears to increase insulin response without increasing plasma glucose concentrations. Therefore, carbohydrate sources high in protein should not be used to treat or prevent hypoglycemia.	B
	• Evidence is inconclusive regarding an ideal amount of total fat for people with diabetes; therefore, goals should be individualized. **C** Fat quality appears to be far more important than quantity. **B**	C, B
	• A Mediterranean-style eating pattern, rich in monounsaturated fatty acids, may benefit glycemic control and CVD risk factors and can therefore be recommended as an effective alternative to a lower-fat, higher-carbohydrate eating pattern.	B

Continued on p. S23

Table 4.1—Continued

Topic	Recommendations	Evidence rating
Dietary fat	• Increased consumption of foods containing long-chain omega-3 fatty acids (EPA and DHA), such as fatty fish, and omega-3 linolenic acid (ALA) is recommended.	B
	• The consumption of fish (particularly fatty fish) at least two times (two servings) per week is recommended.	B
	• The amount of dietary saturated fat, cholesterol, and *trans* fat recommended for people with diabetes is the same as that recommended for the general population.	C
	• Evidence does not support recommending omega-3 supplements for people with diabetes for the prevention or treatment of cardiovascular events.	A
Micronutrients and herbal supplements	• There is no clear evidence of benefit from vitamin or mineral supplementation in people with diabetes who do not have underlying deficiencies.	C
	• Routine supplementation with antioxidants, such as vitamins E and C and carotene, is not advised due to insufficient evidence of efficacy and concerns related to long-term safety.	C
	• There is insufficient evidence to support the routine use of micronutrients such as chromium, magnesium, and vitamin D to improve glycemic control in people with diabetes.	C
	• There is insufficient evidence to support the use of cinnamon or other herbs/supplements for the treatment of diabetes.	E
	• It is recommended that individualized meal planning include optimization of food choices to meet recommended dietary allowance/dietary reference intake for all micronutrients.	E
Alcohol	• If adults with diabetes choose to drink alcohol, they should be advised to do so in moderation (no more than one drink per day for adult women and no more than two drinks per day for adult men).	C
	• Alcohol consumption may place people with diabetes at an increased risk for delayed hypoglycemia, especially if taking insulin or insulin secretagogues. Education and awareness regarding the recognition and management of delayed hypoglycemia are warranted.	B
Sodium	• The recommendation for the general population to reduce sodium to less than 2,300 mg/day is also appropriate for people with diabetes.	B
	• For individuals with both diabetes and hypertension, further reduction in sodium intake should be individualized.	B

Macronutrients

Carbohydrates

Studies examining the ideal amount of carbohydrate intake for people with diabetes are inconclusive, although monitoring carbohydrate intake and considering the available insulin are key strategies for improving postprandial glucose control (37,69). The literature concerning glycemic index and glycemic load in individuals with diabetes is complex, although reductions in A1C of −0.2% to −0.5% have been demonstrated in some studies (64,70). A systematic review (64) found consumption of whole grains was not associated with improvements in glycemic control in people with type 2 diabetes, although it may reduce systemic inflammation. One study did find a potential benefit of whole-grain intake in reducing mortality and cardiovascular disease (CVD) (71).

Proteins

For people with diabetes and no evidence of diabetic kidney disease, the evidence is inconclusive about recommending an ideal amount of protein for optimizing glycemic control or for improving one or more CVD risk measures (64). Therefore, these goals should be individualized. For people with diabetes and diabetic kidney disease (with albuminuria), reducing the amount of dietary protein below usual intake is not recommended because it does not alter glycemic measures, cardiovascular risk measures, or the course of glomerular filtration rate decline (72,73). In individuals with type 2 diabetes, ingested protein appears to increase insulin response without increasing plasma glucose concentrations (74). Therefore, carbohydrate sources high in protein should not be used to treat or prevent hypoglycemia. Protein's effect on blood glucose levels in type 1 diabetes is less clear.

Fats

Limited research exists concerning the ideal amount of fat for individuals with diabetes. The Institute of Medicine has defined an acceptable macronutrient distribution range for all adults for total fat of 20–35% of energy with no tolerable upper intake level defined (75). The type of fatty acids consumed is more important than total amount of fat when looking at metabolic goals and risk of CVD (53,76,77). Multiple randomized controlled trials including patients with type 2 diabetes have reported improved glycemic control and/or blood lipids when a Mediterranean-style eating pattern, rich in monounsaturated fatty acid, was consumed (53,57,78,79). A systematic review (64) concluded that

supplementation with omega-3 fatty acids did not improve glycemic control but that higher dose supplementation decreased triglycerides in individuals with type 2 diabetes. Randomized controlled trials also do not support recommending omega-3 supplements for primary or secondary prevention of CVD (80–85). People with diabetes should be advised to follow the guidelines for the general population for the recommended intakes of saturated fat, dietary cholesterol, and *trans* fat (86).

Sodium

A review found that decreasing sodium intake reduces blood pressure in those with diabetes (87). Incrementally lowering sodium intake (i.e., to 1,500 mg/day) has shown beneficial effects on blood pressure (87–89). The American Heart Association recommends 1,500 mg/day for African Americans, people diagnosed with hypertension, diabetes, or chronic kidney disease, and those over 51 years of age (90). However, other studies (88,89) have warranted caution for universal sodium restriction to 1,500 mg in this population. For individuals with diabetes and hypertension, setting a sodium intake goal of <2,300 mg/day should be considered on an individual basis. Sodium intake recommendations should take into account palatability, availability, additional cost of specialty low-sodium products, and the difficulty of achieving both low-sodium recommendations and a nutritionally adequate diet (86).

For complete discussion and references of all recommendations, see the ADA position statement "Nutrition Therapy Recommendations for the Management of Adults With Diabetes" (36).

PHYSICAL ACTIVITY

Recommendations

- Children with diabetes or prediabetes should be encouraged to engage in at least 60 min of physical activity each day. **B**
- Adults with diabetes should be advised to perform at least 150 min/week of moderate-intensity aerobic physical activity (50–70% of maximum heart rate), spread over at least 3 days/week with no more than 2 consecutive days without exercise. **A**
- Evidence supports that all individuals, including those with diabetes, should be encouraged to reduce sedentary time, particularly by breaking up extended amounts of time (>90 min) spent sitting. **B**
- In the absence of contraindications, adults with type 2 diabetes should be encouraged to perform resistance training at least twice per week. **A**

Exercise is an important part of the diabetes management plan. Regular exercise has been shown to improve blood glucose control, reduce cardiovascular risk factors, contribute to weight loss, and improve well-being. Furthermore, regular exercise may prevent type 2 diabetes in high-risk individuals (91–93). Structured exercise interventions of at least 8 weeks' duration have been shown to lower A1C by an average of 0.66% in people with type 2 diabetes, even with no significant change in BMI (94). There are considerable data for the health benefits (e.g., increased cardiovascular fitness, muscle strength, improved insulin sensitivity, etc.) of regular physical activity for those with type 1 diabetes (95). Higher levels of exercise intensity are associated with greater improvements in A1C and in fitness (96). Other benefits include slowing the decline in mobility among overweight patients with diabetes (97). "Exercise and Type 2 Diabetes: The American College of Sports Medicine and the American Diabetes Association: Joint Position Statement Executive Summary" reviews the evidence for the benefits of exercise in people with type 2 diabetes (98).

Exercise and Children

As is recommended for all children, children with diabetes or prediabetes should be encouraged to engage in at least 60 min of physical activity each day. Included in the 60 min each day, children should engage in vigorous-intensity aerobic activity, muscle-strengthening activities, and bone-strengthening activities at least 3 of those days (99).

Frequency and Type of Exercise

The U.S. Department of Health and Human Services' physical activity guidelines for Americans (100) suggest that adults over age 18 years do 150 min/week of moderate-intensity or 75 min/week of vigorous-intensity aerobic physical activity, or an equivalent combination of the two. In addition, the guidelines suggest that adults also do muscle-strengthening activities that involve all major muscle groups 2 or more days/week. The guidelines suggest that adults over age 65 years, or those with disabilities, follow the adult guidelines if possible or, if this is not possible, be as physically active as they are able.

Recent evidence supports that all individuals, including those with diabetes, should be encouraged to reduce the amount of time spent being sedentary (e.g., working at a computer, watching TV) particularly by breaking up extended amounts of time (>90 min) spent sitting (101).

Exercise and Glycemic Control

Based on physical activity studies that include people with diabetes, it seems reasonable to recommend that people with diabetes follow the physical activity guidelines as for the general population. For example, studies included in the meta-analysis of effects of exercise interventions on glycemic control (94) had a mean of 3.4 sessions/week, with a mean of 49 min/session. Also, the Diabetes Prevention Program (DPP) lifestyle intervention included 150 min/week of moderate-intensity exercise and showed beneficial effect on glycemia in those with prediabetes (91).

Clinical trials have provided strong evidence for the A1C-lowering value of resistance training in older adults with type 2 diabetes (98) and for an additive benefit of combined aerobic and resistance exercise in adults with type 2 diabetes (102,103). If not contraindicated, patients with type 2 diabetes should be encouraged to do at least two weekly sessions of resistance exercise (exercise with free weights or weight machines), with each session consisting of at least one set of five or more different resistance exercises involving the large muscle groups (98).

Pre-exercise Evaluation

As discussed more fully in Section 8. Cardiovascular Disease and Risk Management, the best protocol for screening asymptomatic diabetic patients for coronary artery disease (CAD) remains unclear. The ADA consensus report "Screening for Coronary Artery Disease in Patients With Diabetes" (104) on this issue concluded that routine screening is not recommended. Providers should use clinical judgment in

this area. Certainly, high-risk patients should be encouraged to start with short periods of low-intensity exercise and slowly increase the intensity and duration. Providers should assess patients for conditions that might contraindicate certain types of exercise or predispose to injury, such as uncontrolled hypertension, severe autonomic neuropathy, severe peripheral neuropathy, a history of foot lesions, and unstable proliferative retinopathy. The patient's age and previous physical activity level should be considered. For type 1 diabetic patients, the provider should customize the exercise regimen to the individual's needs. Those with complications may require a more thorough evaluation (95).

Exercise in the Presence of Nonoptimal Glycemic Control

Hyperglycemia

When individuals with type 1 diabetes are deprived of insulin for 12–48 h and are ketotic, exercise can worsen hyperglycemia and ketosis (105); therefore, vigorous activity should be avoided with ketosis. However, it is not necessary to postpone exercise based simply on hyperglycemia, provided the patient feels well and urine and/or blood ketones are negative.

Hypoglycemia

In individuals taking insulin and/or insulin secretagogues, physical activity can cause hypoglycemia if medication dose or carbohydrate consumption is not altered. For individuals on these therapies, added carbohydrate should be ingested if pre-exercise glucose levels are <100 mg/dL (5.6 mmol/L). Hypoglycemia is less common in diabetic patients who are not treated with insulin or insulin secretagogues, and no preventive measures for hypoglycemia are usually advised in these cases.

Exercise in the Presence of Specific Long-Term Complications of Diabetes

Retinopathy

If proliferative diabetic retinopathy or severe nonproliferative diabetic retinopathy is present, then vigorous aerobic or resistance exercise may be contraindicated because of the risk of triggering vitreous hemorrhage or retinal detachment (106).

Peripheral Neuropathy

Decreased pain sensation and a higher pain threshold in the extremities result in an increased risk of skin breakdown and infection and of Charcot joint destruction with some forms of exercise. However, studies have shown that moderate-intensity walking may not lead to an increased risk of foot ulcers or reulceration in those with peripheral neuropathy (107). In addition, 150 min/week of moderate exercise was reported to improve outcomes in patients with milder forms of neuropathy (106). All individuals with peripheral neuropathy should wear proper footwear and examine their feet daily to detect lesions early. Anyone with a foot injury or open sore should be restricted to non–weight-bearing activities.

Autonomic Neuropathy

Autonomic neuropathy can increase the risk of exercise-induced injury or adverse event through decreased cardiac responsiveness to exercise, postural hypotension, impaired thermoregulation, impaired night vision due to impaired papillary reaction, and higher susceptibility to hypoglycemia (108). Cardiovascular autonomic neuropathy is also an independent risk factor for cardiovascular death and silent myocardial ischemia (109). Therefore, individuals with diabetic autonomic neuropathy should undergo cardiac investigation before beginning physical activity more intense than that to which they are accustomed.

Albuminuria and Nephropathy

Physical activity can acutely increase urinary protein excretion. However, there is no evidence that vigorous exercise increases the rate of progression of diabetic kidney disease, and there appears to be no need for specific exercise restrictions for people with diabetic kidney disease (106).

SMOKING CESSATION

Recommendations

- Advise all patients not to smoke or use tobacco products. **A**
- Include smoking cessation counseling and other forms of treatment as a routine component of diabetes care. **B**

Results from epidemiological, case-control, and cohort studies provide convincing evidence to support the causal link between cigarette smoking and health risks. Much of the work documenting the effect of smoking on health does not separately discuss results on subsets of individuals with diabetes, but it does suggest that the identified risks are at least equivalent to those found in the general population. Other studies of individuals with diabetes consistently demonstrate that smokers (and people exposed to secondhand smoke) have a heightened risk of CVD, premature death, and the microvascular complications of diabetes. Smoking may have a role in the development of type 2 diabetes (110). One study in smokers with newly diagnosed type 2 diabetes found that smoking cessation was associated with amelioration of metabolic parameters and reduced blood pressure and albuminuria at 1 year (111).

The routine and thorough assessment of tobacco use is essential to prevent smoking or encourage cessation. Numerous large randomized clinical trials have demonstrated the efficacy and cost-effectiveness of brief counseling in smoking cessation, including the use of quit lines, in reducing tobacco use. For the patient motivated to quit, the addition of pharmacological therapy to counseling is more effective than either treatment alone. Special considerations should include assessment of level of nicotine dependence, which is associated with difficulty in quitting and relapse (112). Although some patients may gain weight in the period shortly after smoking cessation, recent research has demonstrated that this weight gain does not diminish the substantial CVD risk benefit realized from smoking cessation (113).

There is no evidence that e-cigarettes are a healthier alternative to smoking or that e-cigarettes can facilitate smoking cessation. Rigorous study of their short- and long-term effects is needed in determining their safety and efficacy and their cardiopulmonary effects in comparison with smoking and standard approaches to smoking cessation (114).

PSYCHOSOCIAL ASSESSMENT AND CARE

Recommendations

- Include assessment of the patient's psychological and social situation as an ongoing part of the medical management of diabetes. **B**
- Psychosocial screening and follow-up may include, but are not limited

to, attitudes about the illness, expectations for medical management and outcomes, affect/mood, general and diabetes-related quality of life, resources (financial, social, and emotional), and psychiatric history. **E**
- Routinely screen for psychosocial problems such as depression, diabetes-related distress, anxiety, eating disorders, and cognitive impairment. **B**
- Older adults (aged ≥65 years) with diabetes should be considered a high-priority population for depression screening and treatment. **B**
- Patients with comorbid diabetes and depression should receive a stepwise collaborative care approach for the management of depression. **A**

Emotional well-being is an important part of diabetes care and self-management. Psychological and social problems can impair the individual's (115–117) or family's (118) ability to carry out diabetes care tasks and therefore compromise health status. There are opportunities for the clinician to routinely assess psychosocial status in a timely and efficient manner so that referral for appropriate services can be accomplished. A systematic review and meta-analysis showed that psychosocial interventions modestly but significantly improved A1C (standardized mean difference −0.29%) and mental health outcomes. However, there was a limited association between the effects on A1C and mental health, and no intervention characteristics predicted benefit on both outcomes (119).

Screening

Key opportunities for routine screening of psychosocial status occur at diagnosis, during regularly scheduled management visits, during hospitalizations, with new-onset complications, or when problems with glucose control, quality of life, or self-management are identified. Patients are likely to exhibit psychological vulnerability at diagnosis, when their medical status changes (e.g., end of the honeymoon period), when the need for intensified treatment is evident, and when complications are discovered. Depression affects about 20–25% of people with diabetes (120) and increases the risk for myocardial infarction and postmyocardial infarction (121) and all-cause mortality (122). There appears to be a bidirectional relationship between depression and both diabetes (123) and metabolic syndrome (124).

Diabetes-related distress is distinct from clinical depression and is very common (125–127) among people with diabetes and their family members (118). Prevalence is reported as 18–45%, with an incidence of 38–48% over 18 months. High levels of distress are significantly linked to A1C, self-efficacy, dietary and exercise behaviors (13,126), and medication adherence (128). Other issues known to impact self-management and health outcomes include, but are not limited to, attitudes about the illness, expectations for medical management and outcomes, anxiety, general and diabetes-related quality of life, resources (financial, social, and emotional) (129), and psychiatric history (130). Screening tools are available for a number of these areas (23,131,132).

Referral to Mental Health Specialist

Indications for referral to a mental health specialist familiar with diabetes management may include gross disregard for the medical regimen (by self or others) (133), depression, overall stress related to work-life balance, possibility of self-harm, debilitating anxiety (alone or with depression), indications of an eating disorder (134), or cognitive functioning that significantly impairs judgment. It is preferable to incorporate psychological assessment and treatment into routine care rather than waiting for a specific problem or deterioration in metabolic or psychological status (23,125). In the Second Diabetes Attitudes, Wishes and Needs (DAWN2) study, significant diabetes-related distress was reported by 44.6% of the participants, but only 23.7% reported that their health care team asked them how diabetes impacted their life (125).

Although the clinician may not feel qualified to treat psychological problems (135), optimizing the patient-provider relationship as a foundation can increase the likelihood that the patient will accept referral for other services. Collaborative care interventions and use of a team approach have demonstrated efficacy in diabetes and depression (136,137). Interventions to enhance self-management and address severe distress have demonstrated efficacy in diabetes-related distress (13).

IMMUNIZATION

Recommendations
- Provide routine vaccinations for children and adults with diabetes as for the general population. **C**
- Annually provide an influenza vaccine to all patients with diabetes ≥6 months of age. **C**
- Administer pneumococcal polysaccharide vaccine 23 (PPSV23) to all patients with diabetes ≥2 years of age. **C**
- Adults ≥65 years of age, if not previously vaccinated, should receive pneumococcal conjugate vaccine 13 (PCV13), followed by PPSV23 6–12 months after initial vaccination. **C**
- Adults ≥65 years of age, if previously vaccinated with PPSV23, should receive a follow-up ≥12 months with PCV13. **C**
- Administer hepatitis B vaccination to unvaccinated adults with diabetes who are aged 19–59 years. **C**
- Consider administering hepatitis B vaccination to unvaccinated adults with diabetes who are aged ≥60 years. **C**

As for the general population, all children and adults with diabetes should receive routine vaccinations (138,139). Influenza and pneumonia are common, preventable infectious diseases associated with high mortality and morbidity in vulnerable populations, such as the young and the elderly, and in people with chronic diseases. Although there are limited studies reporting the morbidity and mortality of influenza and pneumococcal pneumonia specifically in people with diabetes, observational studies of patients with a variety of chronic illnesses, including diabetes, show that these conditions are associated with an increase in hospitalizations for influenza and its complications. People with diabetes may be at an increased risk of the bacteremic form of pneumococcal infection and have been reported to have a high risk of nosocomial bacteremia, with a mortality rate as high as 50% (140). In a case-control series,

influenza vaccine was shown to reduce diabetes-related hospital admission by as much as 79% during flu epidemics (141). There is sufficient evidence to support that people with diabetes have appropriate serologic and clinical responses to these vaccinations. The Centers for Disease Control and Prevention (CDC) Advisory Committee on Immunization Practices recommends influenza and pneumococcal vaccines for all individuals with diabetes (http://www.cdc.gov/vaccines/recs).

Pneumococcal Vaccines in Older Adults

The ADA endorses a recent CDC advisory panel that recommends that both PCV13 and PPSV23 should be administered routinely in series to all adults 65 years of age or older (142).

Pneumococcal Vaccine-Naïve People

Adults 65 years of age or older who have not previously received pneumococcal vaccine or whose previous vaccination history is unknown should receive a dose of PCV13 first, followed by PPSV23. A dose of PPSV23 should be given 6–12 months following a dose of PCV13. If PPSV23 cannot be given within this time period, a dose of PPSV23 should be given during the next visit. The two vaccines should not be coadministered, and the minimum interval between vaccine dosing should be 8 weeks.

Previous Vaccination With PPSV23

Adults 65 years of age or older who previously have received one or more doses of PPSV23 should also receive PCV13 if they have not yet received it. PCV13 should be given no sooner than 12 months after receipt of the most recent PPSV23 dose. For those for whom an additional dose of PPSV23 is indicated, this subsequent PPSV23 dose should be given 6–12 months after PCV13 and at least 5 years since the most recent dose of PPSV23.

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