

# Primary Care and Primary Healthcare in Obesity Management

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## Update History

Version 1, August 4, 2020. The Canadian Adult Obesity Clinical Practice Guidelines are a living document, with only the latest chapters posted at [obesitycanada.ca/guidelines](https://obesitycanada.ca/guidelines).

## KEY MESSAGES FOR PRIMARY CARE PROVIDERS

- Primary care clinicians should initiate patient-centred conversations with their patients about overweight or obesity. The **5As of Obesity Management™** (Ask-Assess-Advise-Agree-Assist) approach, starting with asking permission to discuss weight, is an appropriate format to use.
- Primary care clinicians should promote a holistic approach to weight and health focusing on health behaviours and addressing root causes of weight gain, with care to avoid

stigmatizing and using overly simplistic narratives like “eat less and move more.”

- Prescribing clinicians must be aware of obesogenic medications and consider alternatives for people living with overweight and obesity. When obesogenic medications must be used, physicians should discuss the risks with patients and institute monitoring for weight gain.
- Providers and patients need to be aware of the risks of weight cycling and adopt strategies that focus on sustained changes to maintain healthy habits over time.

## RECOMMENDATIONS

For clinicians:

1. We recommend primary care clinicians identify people with overweight and obesity, and initiate patient-centred, health focused conversations with them (Level 3, Grade C).<sup>1</sup>
2. We recommend healthcare providers ensure they ask people for their permission prior to discussing weight or taking anthropometric measurements (Level 3, Grade C).<sup>2</sup>

3. Primary care interventions should be used to increase health literacy in individuals’ knowledge and skill about weight management as an effective intervention to manage weight (Level 1a, Grade A).<sup>3</sup>
4. Primary care clinicians should refer persons with overweight or obesity to primary care multicomponent programs with personalized obesity management strategies as an effective way to support obesity management (Level 1b, Grade B).<sup>4-8</sup>

5. Primary care clinicians can use collaborative deliberation with motivational interviewing to tailor action plans to individuals' life context in a way that is manageable and sustainable to support improved physical and emotional health, and weight management (Level 2b, Grade C).<sup>9</sup>

Features of primary care and primary healthcare community-based interventions for clinicians and developers:

6. Interventions that target a specific ethnic group should consider the diversity of psychological and social practices with regards to excess weight, food, physical activity as well as socio-economic circumstances, as they may differ across and within different ethnic groups (Level 1B, Grade B).<sup>10</sup>
7. Longitudinal primary care interventions should focus on incremental, personalized, small behaviour changes (the "small change approach") to be effective in supporting people to manage their weight (Level 1B, Grade B).<sup>11</sup>
8. Primary care multicomponent programs should consider personalized obesity management strategies as an effective way to support people living with obesity (Level 1B, Grade B).<sup>7,8,12</sup>

9. Primary care interventions that are behaviour-based (nutrition, exercise, lifestyle), alone or in combination with pharmacotherapy, should be utilized to manage overweight and obesity (Level 1a, Grade A).<sup>13-15</sup>

10. Group-based nutrition and physical activity sessions informed by the Diabetes Prevention Program (DPP) and the Look AHEAD (Action for Health in Diabetes) program should be used as an effective management option for adults with overweight and obesity (Level 1b, Grade A).<sup>16-18</sup>

11. Interventions that use technology to increase reach to larger numbers of people asynchronously should be a potentially viable lower-cost intervention in a community-based setting (Level 1b, Grade B).<sup>19</sup>

Educational recommendations to support development of obesity management skills in the primary healthcare clinical workforce:

12. Educators of undergraduate, graduate and continuing education programs for primary healthcare professionals should provide courses and clinical experiences to address the gaps in skills, knowledge of the evidence and attitudes necessary to confidently and effectively support people living with obesity (Level 1a, Grade A).<sup>20</sup>

## KEY MESSAGES FOR PEOPLE LIVING WITH OBESITY

- Prevention of weight gain is crucial and realistic; weight loss is potentially very difficult depending on an individual's weight drivers. Setting a value-based functional goal shifts the focus from weight to health and quality of life and may help with sustainable changes.
- Individualized nutrition counselling can result in modest reductions of weight and waist circumference.
- Mindfulness, acceptance and commitment therapies, added to multicomponent behavioural interventions, may be

considered in developing a personal weight management strategy.

- Many medical issues such as disrupted sleep, pain, mechanical problems, metabolic conditions and psychiatric conditions can contribute to challenges with weight management. People should seek medical help if they are struggling with weight maintenance or gain.
- When prescribed a new medication to treat a medical condition, particularly if the medication is intended for long-term use, patients living with obesity should inquire about the potential associated weight effects.

## Introduction

Obesity is a chronic, complex disease linked to the intricate interplay between a broad spectrum of root causes related to biological influences, social determinants of health, socio-cultural practices and beliefs, environmental effects, public policy and psychological factors. Currently, there are widespread significant misperceptions as to the nature of both the etiology and effective management of this condition, complicated by entrenched weight bias and stigma in society. Changing primary care for people living with obesity to achieve consistent, high-quality, person-centred care will

require changes in healthcare provider knowledge, skills and practice standards, and improved organization of care. In other chapters we have focused on the state of the evidence regarding the efficacy of different modes of treatment of obesity. In this chapter we will synthesize evidence on effectiveness, or how interventions work in the real world. We will focus on interventions delivered in primary care. Primary care refers to within primary care offices and organizations, and primary healthcare refers to interventions within the broader community. Additionally, we will discuss what is known about how to equip the primary care workforce to address the needs of people to improve care. Interventions delivered via

commercial settings are discussed in the [Commercial Products and Programs in Obesity Management](#) chapter of these guidelines.

Most work in this area focuses on the evaluation of complex interventions. A complex intervention (e.g., a behavioural or educational intervention) consists of interacting components, where individuals combine in collective action to execute objective components. Thus, there is variation in outcomes in different contexts. Understanding how and why an intervention is adopted requires exploration of the factors affecting:

- The ability of actors to engage with the intervention;
- Individuals' personal barriers and facilitators' in engaging with the intervention;
- Whether the implementation process meets the needs of the stakeholders; and,
- Whether the intervention itself was effective in achieving the desired outcome.

Further, for sustained system change, the intervention must be perceived by stakeholders as worthwhile and achievable within existing care structures once research funding has been completed. Achieving this understanding requires mixed-method studies with rich qualitative evaluation to elucidate the principles that are key for achieving the desired outcome. Pooling data across disparate interventions is challenging; however, understanding the underlying principles may permit transferability.

In this chapter, we will consider interventions in primary care practice and the broader primary healthcare community context that illuminate questions on the organization of care for people living with obesity, and on the primary care management of obesity. We recognize the heterogeneity of interventions, contexts, populations and outcomes limits the ability to draw robust conclusions about the "best" way to help people. However, we appreciate that clinicians confronted with a tsunami of people seeking help need to have some insights from which to provide and organize clinical care. The gap in research providing clear guidance in this area should highlight the need for research funders to reflect on why the most prevalent chronic disease affecting Canadians has received so little systematic attention.

## Management of obesity in primary care and primary healthcare

### 1. What is the nature of the care gap to be addressed?

In a recent series in the *Lancet*, Dietz and colleagues highlighted that obesity is not being well managed in current health systems.<sup>21</sup> They cite concerns in several areas: training of the healthcare workforce, unfounded assumptions of people living with obesity, lack of experience working in interdisciplinary teams and lack of training in behaviour change strategies.<sup>21</sup> There is a tremendous gap between evidence-based recommendations and current

clinical practice. Fitzpatrick et al. argued that, despite emerging national recommendations and policies since 2008, obesity management in primary care is still suboptimal.<sup>22</sup> Indeed, a Canadian national survey in 2009, with half of respondents living with overweight or obesity, revealed that only a third of adults had ever asked a healthcare professional about losing weight.<sup>23</sup> Of these, approximately three quarters consulted their family physician, one quarter a dietitian, and one seventh a nutritionist or a nurse or nurse practitioner. Some had consulted multiple professionals. Fewer than one third of people with overweight/obesity had ever been advised to lose weight by a physician without specifically asking about weight gain.

Additionally, access to bariatric care remains very poor throughout Canada.<sup>24</sup> Torti and colleagues conducted a qualitative study of primary care patients living with obesity to explore their perceptions of the role of primary care providers.<sup>1</sup> Patients had clear expectations that their primary care clinician initiate discussion around weight concerns in the context of a coordinated and person-centred approach to care, addressing the multiple conditions and drivers related to their weight and health.<sup>1</sup> As most patients want to discuss their weight concerns with their physician, there is a need for primary care delivery redesign to facilitate, rather than hinder, physicians addressing obesity with their patients. Part of this redesign is increasing physician skills in starting the conversation to sensitively address obesity with a patient. It is not realistic to expect primary care physicians to deliver intensive behavioural weight management counselling to all their patients with obesity. Thus, the process of ordering referrals and coverage for obesity management specialists (e.g., registered dietitians, psychologists) and community-based programs should be made easier to increase referral options for physicians and access to care for patients.<sup>25</sup> Tsai and Waddens' systematic review of the management of obesity in primary care practice highlights how little research has been conducted in this area.<sup>26</sup> They found that primary care physician counselling alone has limited ability to achieve clinically meaningful weight loss.<sup>26</sup> More benefit is seen with primary care physician counselling plus pharmacotherapy, or intensive counselling from a dietitian or a nurse together with meal replacement therapy. Given the obesity epidemic and increased risk for chronic diseases, identifying practical strategies to support implementation of evidence-based treatment services in primary care should be a high priority in healthcare reform.

Changing obesity management in primary care represents an adaptive challenge requiring a change in healthcare providers' beliefs and practices. It involves addressing weight bias and stigma in clinical consultations and care settings. Additionally, there is a need for structuring clinical encounters to address patients' self-bias (internalized stigma), creating efficient approaches to personalized consultations that result in sustained shifts in behaviours and actions, which are scalable to the magnitude of the problem.

### 2. What are the implications of weight bias and stigma in the primary care system and how can they be rectified?

As highlighted in the [Reducing Weight Bias in Obesity Management, Practice and Policy](#) chapter of these guidelines, there is evidence

indicating that both healthcare professionals and patients living with obesity endorse weight bias attitudes and beliefs about obesity. Studies also show that patients with obesity perceive biased treatment in healthcare, and this impacts how they access healthcare services for obesity and for their other health problems. Primary care professionals should be mindful that most patients with obesity will have experienced weight bias and stigma in healthcare settings and that this may affect patients' behaviours and responses to healthcare interventions. Healthcare professionals should avoid making assumptions or judgements about patients' health and behaviours based on their weight.

Kirk and colleagues conducted a qualitative study on obesity management where they highlight "blame as a devastating relation of power, tensions in obesity management and prevention and the prevailing medical management discourse."<sup>2</sup> They highlighted the clinical messages of "eat less and move more" promoted by health professionals, the health system and society as blaming and contributing to internalized stigma. This collision between the lived realities of the complex biological and social drivers for obesity and this simplistic, ineffective messaging leads to profound frustration for patients, in part because clinicians seemingly ignore all that they have done to manage their weight.<sup>2</sup> They also highlight health professionals' struggles with knowing how to help, and feelings of ineffectiveness when care focuses solely on body weight. The sensitivity of the topic also hinders providers' confidence in raising it with people.<sup>2</sup> Thille conducted a robust qualitative study using interactional stigma theory to analyze audio-recorded primary care dialogues about weight.<sup>27</sup> In addition to stressing the importance of asking permission to discuss weight, she proposed several actions to mitigate anti-fat stigma in primary care consultations:

- 1) Explicitly acknowledge multiple determinants of weight as done with other biomeasures, disrupting the stigmatizing personal failure/success stereotypes attached to body composition;
- 2) Prior to talking about outcomes, assess healthy behaviour routines that affect health separately to identify the extent to which behavioural interventions may help improve overall health.
- 3) Re-define success as sustained healthy behaviour change (e.g., increased consumption of fruit and vegetables) regardless of body size or weight.<sup>27</sup>

The following is a list of a few practical weight bias reduction strategies that primary care providers can use in their practice:

- [Assess your own weight bias attitudes and beliefs](#);<sup>28</sup>
- Consider the patient's previous weight bias experiences; assess for internalized weight bias;
- Recognize that having obesity is a product of many factors;
- Uncouple weight from health – explore all causes of presenting problems, not just weight;

- Emphasize importance of behaviour goals rather than weight loss goals;
- Remove all materials from the waiting area that stereotype people with obesity;
- Have gowns, blood pressure cuffs and other diagnostic equipment designed to fit larger bodies; and
- Install grab bars in washrooms and provide seating that will accommodate/support larger body sizes and shapes.

### **3. What are key considerations to identify root causes of obesity and reduce iatrogenic causes of weight gain from medical therapies and to support individuals' capacity to engage in care?**

As has been highlighted in the [Assessment of People Living with Obesity](#) chapter of these guidelines, the root causes of obesity are myriad. Of particular importance are psychological and mental health conditions, chronic pain, mechanical issues including sleep and metabolic conditions, and cultural, social and political context. Importantly, the increased use of medication to treat a variety of medical conditions has contributed to increasing rates of overweight and obesity that have been observed. It is therefore imperative for primary care physicians to also be familiar with the weight effects of commonly prescribed medications. We will review antipsychotic and contraceptive medications.

As part of a meta-analysis meant to provide evidence-based hierarchies of the comparative efficacy, side effects and risk of discontinuation of 15 different antipsychotic drugs, Leucht et al. included an evaluation of their weight effects.<sup>29</sup> Apart from haloperidol, ziprasidone and lurasidone, all others appeared to produce more weight gain than placebo, with olanzapine producing significantly more weight gain than the others. This is an important consideration that should be balanced with efficacy and necessity when prescribing these medications. These medications are largely responsible for the increasing prevalence of metabolic disorders in patients with concurrent mental health disorders.

There is some lower-quality evidence that metformin may be helpful to counteract antipsychotic-induced weight gain in adults.<sup>30</sup> More research into strategies to mitigate this medication-induced weight gain is needed.

Gallo and colleagues conducted a comprehensive systematic review evaluating the potential association between combination contraceptive use and changes in weight.<sup>31</sup> Of the 42 trials evaluated, only four included a placebo or no-intervention group. These studies, now dated, did not demonstrate evidence supporting an association between combination contraceptive use and weight change.<sup>31</sup> This lack of association could be due to the limited number of contraceptives evaluated. Other weight change comparisons evaluating two combination contraceptives were done, of which seven showed a difference in mean weight change or the proportion of women losing or gaining a set amount of

weight. Most comparisons did not show substantial differences in weight change.<sup>31</sup> Over 25% of the trials had a high risk of bias, with the vast majority having an unclear risk of bias due to missing information on randomization or allocation concealment.<sup>31</sup> At this time there is insufficient evidence available to determine the effect of combination contraceptives on weight. However, Gaudet et al. found, in a Canadian survey of women filling an oral contraceptive prescription, that 68% received counselling from their physician on the possibility of weight gain with the pill.<sup>32</sup> Of these, 36% reported that their weight stayed the same. Well conducted placebo controlled randomized control trials are needed to properly evaluate the link between combination contraceptives and weight change.<sup>32</sup>

With regards to progestin-only contraceptive options, Lopez et al. evaluated the effect of their use on body weight.<sup>33</sup> Of the 15 studies examined, four demonstrated a difference in weight gain when a progestin-only contraceptive option was compared to no hormonal birth control. There was little evidence of weight gain using the progestin-only birth control pill. Injectable Depo-Provera showed a greater increase in body fat at six months compared to a group with no hormonal birth control, as well as a decrease in lean body mass. In another study, injectable Depo-Provera showed greater weight gain at one, two and three years compared to an IUD group.<sup>33</sup> Concerns about weight gain can deter the initiation of contraceptive use, and weight gain is the most frequently reported reason for early discontinuation.

These are only a few of the medications implicated in producing weight gain. Wharton et al. provided a more comprehensive overview of medications that are available in Canada that have a higher propensity to cause weight gain, with estimates of their weight effect, and alternatives which instead promote more favourable weight related outcomes.<sup>34</sup> Classes of medications in this review include antipsychotics, mood stabilizers, antidepressants, antihyperglycemics, antihypertensives and corticosteroids. The authors encourage physicians to discuss the weight-related side effects of various medication options with patients to help facilitate patient-centred therapeutic decisions (shared decision making), as well as manage weight related expectations.<sup>34</sup> The authors recommend that, wherever possible, clinicians should endeavour to select those medications which are associated with a more favourable body weight response, or make medication changes in the event that patients experience weight gaining side effects. Baseline weight should be measured prior to initiating pharmacologic treatment, and weight should be monitored at regular intervals. A weight gain of >2.0 kg within four weeks, in the absence of behavioural changes, would warrant intervention. When weight-friendly medications are not an option, health behaviour interventions, with or without adjunctive therapy, could be considered to mitigate weight gain.<sup>34</sup>

## Supporting individuals' ability to engage in care

Health literacy is a crucial factor in people's ability to engage in self care for weight management. Weight reduction requires both an understanding of what is required to manage weight, as well as

insight into the factors which prevent weight loss and those which promote weight regain. Faruqi and colleagues conducted a systematic review of primary healthcare level interventions targeting health literacy and their effects on weight loss.<sup>3</sup> They identified 13 studies that evaluated interventions with a focus on nutrition and physical activity education, and psychological approaches to improve the knowledge and skills necessary for weight loss in adults. Due to a high degree of clinical heterogeneity between the studies, a meta-analysis was not conducted. Seven randomized controlled trials were identified, of which four were methodologically strong. While levels of health literacy were not specifically measured pre- and post-intervention, significant weight reductions were noted in 11 of the 13 studies. In two of the 11, the weight loss was not sustained at follow-up periods, and in a third study it was sustained in male but not in female participants. It was noted that eight of the 13 studies identified had retention rates >80%. The authors concluded that there was evidence for the effectiveness of interventions that focussed on improving knowledge and skills (i.e. health literacy) for weight loss.<sup>3</sup>

As a general principle, weight management interventions should be culturally tailored to maximize support for individuals engaging in self care. By this we mean that interventions that target a specific ethnic group should consider the diversity of psychological and social practices with regards to excess weight, food, physical activity and socio-economic circumstances, as they may differ across and within different ethnic groups.

Perez and colleagues conducted a systematic review of 22 treatment interventions that targeted U.S. Latino adults who were assessed as having overweight or obesity.<sup>10</sup> Significant results were found in 13 of the 22 studies identified. Research studies that appeared to be most successful in relation to culture were those which included key community members, such as *promotorias* (community health workers), and interventions that were set within the community and implemented culturally-appropriate strategies (e.g., using translated materials and social support within the community).<sup>10</sup> The interventions in this review that yielded large effect sizes were all conducted in distinct settings (healthcare, community centre, home, church). Most interventions were led by bicultural/ bilingual professionals.<sup>10</sup> While this review focused on Latino populations in the United States, there is extensive evidence in the social sciences on how culture matters, and critical perspectives on concepts such as cultural competency or cultural safety. A leader in this area is L. Kirmayer from the Cross-Cultural Psychiatry Institute at McGill. He reviews key concepts in this area in his article "Rethinking Cultural Competence."<sup>35</sup> Foundationally, there is a need to adopt "cultural humility." This implies an openness to understanding the individual within their community, with respect and reflection on how healthcare interventions are situated in a specific socio-economic and cultural context. Conversations have to be broader than tailoring interventions in a cosmetic way without understanding the socio-cultural hierarchies in which interventions and healthcare delivery are designed.<sup>35</sup> We must seek to understand how different groups perceive problems, be it in terms of body size, illnesses, meaning of health or meanings of social determinants of health. There has also been extensive work

done in the area of culture and body size with key points reflecting on the Western ideals of slimness. It is important that we focus on health and not on body size.<sup>36</sup>

#### **4. What is the effectiveness of primary healthcare interventions that include personalized obesity management strategies?**

Primary care providers identify many challenges with supporting patients in managing their obesity. Asselin and colleagues conducted a robust qualitative study as part of the 5As Team program that sought to understand providers' challenges with supporting people with obesity.<sup>4-6</sup> In the primary care context, obesity is embedded in many different clinical presentations. Providers frequently avoided bringing up weight because they perceived it as a sensitive topic; they brought it up obliquely when discussing other medical issues. There was a lack of confidence in addressing the issue, and concern that it could take too much time.<sup>4</sup> They found that care was hindered when different providers provided conflicting messaging and recommendations to patients. This could be negotiated in clinical environments with strong interdisciplinary team structures with effective communication, relationships and understanding of roles.<sup>5</sup> The 5As Team intervention did result in providers increasing their comfort with initiating conversations, adopting a chronic disease approach, increasing the use of people-first language and, in many clinics, increasing the interdisciplinary providers' teamwork in supporting patients.<sup>6</sup> Patients wanted their providers to initiate conversations and to provide holistic patient-centred approaches that addressed their personal context and comorbidities.<sup>1</sup> There is a care gap in providers' ability to address these patient needs. Yet, interventions which focus on this approach have been effective.

In a systematic review of effective weight-management practice interventions and of behavioural interventions, Kirk and colleagues highlight the importance of multicomponent interventions that incorporate physical activity, nutrition and behavioural strategies.<sup>7</sup> Based upon several systematic reviews, they concluded that multi-component interventions lead to greater weight loss, whereas single-component interventions are more effective in improving the targeted behaviour, for example, nutrition or physical activity.<sup>7</sup> The clinical heterogeneity in studies does not permit meta-analysis.

Subsequently, Eaton and colleagues highlighted the relevance of delivering these interventions in primary care in their high-quality multicentre randomized control trial. This trial evaluated the effectiveness of a home-based weight loss and physical activity intervention ("Choose to Lose") for sedentary adults with obesity in Rhode Island.<sup>8</sup> Family physicians identified patients who were motivated to lose weight and increase physical activity, and referred them to the intervention. The family physicians were trained to provide an environment supportive of weight loss and increasing physical activity, and to incorporate brief support and teaching in their visits. They were updated regarding progress during the study, and supported management of related comorbidities.<sup>8</sup>

The patients received a 12-month home-based intervention program with a 12-month maintenance phase. Participants were

provided with a structured meal plan by a lifestyle counsellor that included a prescribed calorie deficit, as well as a plan to increase physical activity. They were asked to track their progress on self-monitoring forms provided. The standard arm intervention received three face-to-face meetings, and the enhanced intervention arm also included regular phone calls, mail-outs and feedback.<sup>8</sup>

Weight loss occurred in both groups; however, almost half of the enhanced intervention group achieved clinically meaningful weight loss of at least 5% baseline body weight at 12 months (47.8 % vs. 11.6%;  $p < 0.001$ ). At 24 months 33.3% of the enhanced intervention and 24.6% of the standard intervention had >5% weight loss, with differences between the groups no longer significant. There was an increase in self-reported physical activity with the enhanced group reporting 126.1 minutes of moderate-to-vigorous exercise weekly, compared to 73.7 minutes in the standard group ( $p = 0.04$ ). While there was a reduction to 101.3 minutes in the enhanced group at the 24-month mark, it was still more than the control arm at 75 minutes ( $p = 0.04$ ).<sup>8</sup>

Interviews with the participants post-intervention highlighted that the monthly telephone calls and personalized goal setting were most helpful. Key conclusions were:

- a) The primary care physician plays a critical role in identifying patients who could benefit from and who are ready for weight loss support/intervention, and in referring to programs;
- b) Home based individually tailored interventions with minimal face to face contact are effective in achieving clinically meaningful weight loss; and
- c) People value individualized supports.

Interventions can be delivered in settings other than clinics.<sup>8</sup> Rejeski and colleagues conducted a randomized controlled trial at a YMCA community facility where they compared three interventions, weight loss, weight loss and resistance training, and weight loss and aerobic training.<sup>12</sup> Participants were older adults (60–75 years of age) who engaged in less than 60 minutes of moderate-to-intense exercise each week, had a body mass index (BMI) between 28 and 42, and had documentation of cardiovascular disease or a diagnosis of metabolic syndrome. All groups lost weight from baseline: average baseline adjusted change of  $-6.1\%$  (95% confidence interval [CI]:  $-7.5\%$  to  $-4.7\%$ ).<sup>12</sup>

One constructive strategy in the primary care setting that can be used to promote people's ability to actively engage in their care is to realize the value in working with people to make small changes in health behaviours over time. The Small Changes approach to weight management is an individualized intervention that encourages participants to make small, self-selected goals based on their current health behaviour patterns.<sup>11</sup> Small Changes hypothesizes that an energy deficit of 200–300 kcal per day may be sufficient to produce weight reduction and longer-term weight loss maintenance. This treatment approach is believed to reduce the sense of deprivation as well as increase self-efficacy and empowerment, all of which may positively impact adherence and long-term success.

The Aspiring to Lifelong Health in VA (ASPIRE-VA) Trial conducted by Lutes and colleagues is the only randomized control trial in primary care which evaluated the effectiveness of the Small Changes approach.<sup>11</sup> This was compared among U.S. veterans to the Veteran Health Administration's (VHA) usual MOVE! program for weight loss. Veterans with overweight and obesity were recruited from two VHA medical centres and randomized to either the Small Changes group (ASPIRE-Group), the Small Changes phone group (ASPIRE-Phone) or the usual care group (MOVE!). Participants had an average BMI of 36.5, were predominantly male and reported a high prevalence of physical and mental health comorbidities. Health coaches were non-clinicians who had at least a bachelor's degree but no psychology, behaviour change or coaching experience. They attended a three-day training workshop and received ongoing education and supervision.<sup>11</sup>

Participants in both Small Changes arms met with health coaches weekly for the first three months, biweekly in months four to nine, and then monthly for months 10 to 12. Usual care (MOVE!) participants met weekly for 12 weeks, with options for continued follow-up care thereafter. The primary outcome was weight change from baseline at 12 months, and secondary outcomes included physiological, behavioural and psychosocial outcomes as well as levels of participation and adherence.<sup>11</sup>

Participants in all three arms of the trial lost significant weight at 12 months ( $p < 0.01$ ). Those in the ASPIRE-Group arm lost significantly more weight at 12 months than those in the other two treatment arms. (ASPIRE-Group -2.8 kg, 95% CI -3.8 to -1.9; ASPIRE-Phone -1.4 kg, 95% CI -2.4 to -0.5; MOVE! -1.4 kg, 95% CI -2.3 to -0.4). The percentages of people who lost at least 5% of their baseline body weight at 12 months were 23.8% in the ASPIRE-Group, 21.7% in the ASPIRE-Phone group and 20.2% in the MOVE! group ( $p = 0.79$ ). Both ASPIRE programs resulted in more than twice the level of engagement compared to the MOVE! program. The authors concluded that this type of a personalized goal-setting approach can effectively promote weight loss, and that when delivered in a group setting was the most effective at producing clinically meaningful weight loss at 12 months.<sup>11</sup>

### **5. What are strategies to create primary care interventions that include personalized obesity management plans for patients that address the patient's individual life context and root causes and support action planning?**

The 5As of Obesity Management™ (Ask, Assess, Advise, Agree, Assist) are a suite of resources and evidence-based tools for use in primary care. These tools were developed to summarize the evidence on obesity management in consultation with patients, healthcare providers and obesity experts through the Canadian Obesity Network (now Obesity Canada), supported by the Canadian Institutes of Health Research and the Public Health Agency of Canada.<sup>37</sup>

Rueda-Clausen and colleagues in a non-randomized pre-post design study showed that implementing the 5As of Obesity Management resulted in a twofold increase in the initiation of obesity

management (19% vs. 39%,  $p=0.03$ ), and caused a statistically significant increase in the perceived follow-up/coordination efforts (self-reported Patient Assessment of Chronic Illness Care components,  $45 \pm 22$  vs.  $67 \pm 12$  points,  $p=0.002$ ), as well as two components of the 5As framework: Assess ( $50 \pm 29$  vs.  $66 \pm 15$  points,  $p=0.03$ ) and Assist ( $54 \pm 26$  vs.  $72 \pm 13$  points,  $p=0.01$ ).<sup>38</sup>

One barrier is provider confidence in adopting new approaches to obesity care. The 5As Team study co-created an intervention with interdisciplinary primary care providers to increase the obesity care in a primary care setting. Qualitative analysis from the 5As Team program showed important shifts addressing provider-identified gaps in their practice, and increased their confidence in conducting obesity assessments, and interdisciplinary work.<sup>5</sup>

There has been interest in unpacking the primary care clinical consultation for people living with obesity. One key element is to support the provider-patient dialogue in a way that both addresses patients' specific root causes of obesity and barriers to weight management, and helps to increase patient self-efficacy in managing their overall health.<sup>39</sup> In an in-depth qualitative study 20 patients were enrolled, and provider patient encounters were videotaped. Both patients and providers were also interviewed separately, and the impacts of the encounter were examined through patient journals and follow-up patient interviews twice over approximately two months. Eight key processes were identified which foster compassionate care relationships and sensible care plans that ultimately support patients in making manageable changes to improve their overall health. These processes include:

- (a) Compassionate and real listening;
- (b) Making sense of the story;
- (c) Recognizing strengths;
- (d) Shifting beliefs about obesity;
- (e) Focussing on whole person health;
- (f) Action planning;
- (g) Fostering reflection; and
- (h) Experimenting.<sup>39</sup>

This collaborative deliberation approach resulted in patients experiencing increased hope, self-efficacy, self-compassion, self-acceptance and sustainable change to improve health. Patients also reported perceived improvements in dimensions of physical health including sleep, increased strength, energy and stamina, and decreased pain and fatigue.<sup>39</sup>

Within the theoretical structure of collaborative deliberation, motivational interviewing is an approach that makes use of higher autonomous motivation, self-efficacy, and flexible eating restraints, and contributes to better maintenance of nutrition and exercise

outcomes in the long term. Based on enhancing intrinsic motivational patterns, Motivational interviewing is identified as an effective method to contribute to long-term maintenance of behavioural changes and in particular, long-term maintenance of weight loss and regular physical activity. Moreover, it is a strategy that can be used to personalize an intervention to specific targets for each individual, in contrast to dictating a strict, predetermined regimen.

DeVos et al. evaluated the long-term effectiveness of a tailor-made weight-loss intervention, which entailed nutrition and exercise changes, using the motivational interviewing approach, on the health and lifestyle of women living with overweight and obesity.<sup>9</sup> This study was part of a randomized controlled trial on the prevention of knee osteoarthritis called the PROOF (Prevention of knee Osteoarthritis in Overweight Females) study. Females between the ages of 50–60 with a BMI over 27 and who were free of osteoarthritis according to the American Rheumatology Association, were randomized to either the intervention group or the control group. Those in the intervention group met with a dietitian who used motivational Interviewing to set individually tailored behaviour specific goals with follow-up over 2.5 years. Participants were also invited to participate in 20 exercise sessions with a physiotherapist. Those in the control group did not receive any intervention and were instead invited to undertake any health promoting activity on their own. Patient outcomes included weight change from baseline, categorical weight loss, changes in physical activity, nutritional habits, QoL and body fat %, and were followed over a 6.6-year period after randomization. Average weight loss in the intervention group at six and 12 months was significantly greater than the control group, but differences in weight change were small and not significant after 24 months.<sup>9</sup> At 6.6 years, 19% of the intervention group lost 5 kg or 5% of their baseline body weight compared with 22% in the control group. At 6.6 years 60.7% of all participants agreed to follow-up, with no significant differences in attrition between the two randomized groups. This cohort was healthier, had higher socioeconomic status, and were more adherent to the nutrition and exercise intervention. In the overall cohort with available follow-up data 51% of women had a body weight below their baseline body weight, and 19% were 5 kg or 5% below their baseline body weight with follow-up data. At 6.6 years there was no significant difference between the groups in terms of weight. There was a long-lasting, very modest intervention effect on change in physical activity with significant differences in favour of the intervention at all time points except 12-months (Cohen's effect size  $d = 0.16$  to  $0.19$  between six and 80 months).<sup>9</sup> Because this intervention was especially aimed at long-term maintenance of health behaviour changes, it provides support that a tailor-made weight-loss intervention using motivational interviewing may induce health behaviour changes that endure over a long period of time.

## **6. What role do mindfulness and acceptance and commitment therapy have as adjuncts to multicomponent behavioural therapy in primary care interventions?**

There has been emerging interest in acceptance and commitment therapy (ACT) and mindfulness in obesity management as high-

lighted in the [Effective Psychological and Behavioural Interventions in Obesity Management](#) chapter. Mindfulness interventions focus on cultivating an awareness of the moment with curiosity and acceptance of thoughts, reactions and external events. This is similar to the non-judgmental acceptance of thoughts and feelings (ACT), with a focus on value-driven behaviours.<sup>40</sup>

A systematic review by Rogers et al. assessed the efficacy of interventions in which mindfulness-based therapy was the focus. Studies were included if they involved multiple sessions, and if included participants were 18-years of age or older and had a BMI of at least 25 kg/m<sup>2</sup>. With this inclusion criteria, the authors found three types of mindfulness implementation: multifaceted mindfulness, acceptance and commitment therapy, and mindful meditation. These interventions varied in intensity, ranging from four to 40 sessions, and from 20 minutes to a full-day workshop.<sup>9</sup>

Questionably, both observational and randomized control trials studies were included in this systematic review. The authors justified this decision as a method to compare effect sizes between non-experimental and randomized control trial designs. There was also significant clinical heterogeneity between the studies. Considering just the specific outcomes of the seven randomized control trials, there was an average weight loss of 3.5 kg ( $n = 4$ , 0.1 - 10.1 kg). Effect sizes for anxiety and eating behaviours were medium, and for eating attitudes and BMI effect sizes were small. No significant effect sizes were observed for quality of life and metacognition. The within-group heterogeneity was low for all factors aside from eating behaviours, which was considered high.<sup>9</sup>

The only studies that included follow-ups were those for acceptance and commitment therapy. It was found that, post-intervention, most of the participants maintained their weight loss over four and six months. Included in these findings was a study by Forman et al., who found 64% of participants were able to maintain a 10% reduction in weight six months after post-treatment.<sup>41</sup> These results were compared to a standard behavioural treatment based on the Diabetes Prevention Program (DPP) where only 46% of those participants were able to maintain a 10% reduction in weight. The success of this program may be contributed by the intensive design in which 30, 75-minute group sessions were delivered.<sup>41</sup> However, Rogers found that more than 12 hours of treatment total did not result in higher effect sizes on individual outcomes compared to interventions lasting less than 12 hours of treatment total.<sup>40</sup>

Palmeira and colleagues conducted a small randomized control trial to test the efficacy of a combined mindfulness and acceptance and commitment compression intervention to reduce weight self-stigma, unhealthy eating patterns, and increased quality of life in women with overweight and obesity treated in primary care practice.<sup>42</sup> They described the intervention well. There was a significant increase in health-related quality of life and physical exercise, with a decrease in weight self-stigma, unhealthy eating behaviours, BMI, self-criticism, weight related experiential avoidance on validated measures. There was not a significant difference in self-compassion or mindfulness.<sup>42</sup> Future research should consider

whether these changes would be sustained, as this was a short intervention study.

## **7. What do we know about the effectiveness of multicomponent behavioural interventions alone or in combination with health behaviour changes and pharmacological interventions in primary care settings?**

Peirson and colleagues conducted a systematic review meta analysis of the effectiveness of multicomponent behavioural (which they define as diet, exercise, lifestyle) and pharmacologic interventions generalizable to the Canadian primary care setting.<sup>13</sup> They expanded upon the previous review for the United States Preventive Services Task Force (USPSTF) done by Leblanc and colleagues.<sup>43</sup> They identified 68 studies, of which 66 were randomized control trials, looking at the effectiveness of interventions for treating overweight and obesity in adults (BMI > 25). In this review the medications included were orlistat and metformin.<sup>13</sup> They concluded that, for intervention participants, the relative risk for loss of greater than 5% body weight was 1.77 (95% CI 1.58 to 1.99; NNT: 5, 95% CI 4 to 7). Intervention participants with pre-diabetes had a lower incidence of type 2 diabetes (RR 0.62 95% CI 0.50-0.77; NNT: 17, 95% CI 13 to 29). There was no difference between behavioural and pharmacologic interventions for any weight outcome for orlistat and metformin. Newer agents were not included in this 2014 review.<sup>13</sup>

In 2014 Booth and colleagues conducted a systematic review and meta-analysis of multicomponent behavioural intervention delivered in primary care setting on participants weight loss.<sup>44</sup> This review focused on 15 randomized control trials looking at behaviour change techniques delivered in primary care, some of which were also included in the Peirson review. In this review, there was a high level of heterogeneity or participants, interventions, behavioural components and delivery model, as well as poor reporting of methodology and results.<sup>44</sup>

Lv and colleagues addressed the question as to whether multicomponent behavioural interventions were effective for weight loss for people with BMI >35 kg/m<sup>3</sup>.<sup>45</sup> This systematic review identified 12 studies that tested a dietary and/or physical activity intervention with a behavioural modification component versus a comparator, had a >6 month follow up period, and had a weight-related primary outcome. There was significant clinical and statistical heterogeneity, so appropriately no meta-analysis was performed. There were some interventions which resulted in a comparatively greater proportion of participants achieving clinically significant weight loss. These tended to be more intensive and with more than one-year duration, several interventions achieved a high percent of weight loss by offering inpatient stays or stays in rehabilitation centre, which are not pragmatic or sustainable for primary care.<sup>45</sup>

In an evaluation of longer studies with at least 12 months of follow-up, Hartmann-Boyce and colleagues conducted a systematic review of the effectiveness of multicomponent weight management programs containing dietary, physical activity and behaviour change interventions.<sup>14</sup> The types of contact, frequency and con-

tent were heterogeneous; interestingly, similar components were seen between the behavioural interventions, most of which were effective. They used meta-regression to evaluate the characteristics of the programs that affect mean weight loss. Of the 37 included studies, 14 were assessed as low risk of bias. Few studies in this analysis assessed the effectiveness in every-day contexts; the pooled results of the five interventions delivered by primary care teams did not show an effect on weight.<sup>14</sup> Unfortunately, the data overall are too imprecise to determine the elements of interventions which increase efficacy, including frequency and type of contact.

More recently, LeBlanc and colleagues completed a revised systematic review for the USPSTF looking at multicomponent behavioural and pharmacotherapy weight loss interventions to prevent obesity-related morbidity and mortality in adults.<sup>46</sup> Following their 2011 original,<sup>43</sup> LeBlanc highlighted there was variability in the nature of the interventions but still noted behaviour-based weight-loss interventions with or without pharmacology resulted in more weight loss than usual conditions. They provide an excellent summary of the studies of interventions for weight loss, excluding studies of populations selected on the presence of a chronic disease where weight loss or weight management is indicated for chronic disease management.<sup>46</sup>

Kanaya et al. conducted a randomized control trials of 415 patients  $\geq$  21 years of age with obesity and more than one cardiovascular risk factors (hypertension, diabetes or hypercholesterolemia).<sup>15</sup> There were three arms in the study: a behavioural weight-loss intervention with support provided by weight-loss coaches mainly through in-person individual and group sessions (in-person group, n = 138), a behavioural weight-loss intervention with support provided by telephone (remote group, n = 139), and self-directed weight loss (n = 138). Both behavioural interventions included regular patient contact by e-mail, access to a study-specific website and involvement of primary care providers in monitoring patient progress (weight loss) and providing encouragement (not specified). At two years, both behavioural interventions showed greater weight loss than a self-directed approach; however, the two behavioural interventions did not differ. They concluded that behavioural interventions delivered in-person or remotely were better than a self-directed approach for weight loss at two years in patients with obesity.<sup>15</sup>

## **8. What are effective formats for primary healthcare and primary care programs for obesity management?**

While there is insufficient evidence to conclude the optimal formats for programming, a great deal of good work has been done that can inform current efforts to design such programming. In this section, we will consider different elements we can learn from existing high-quality work that program developers may find helpful.

### **I. Structure of the intervention**

One of the strongest interventions in primary care aimed at diabetes prevention is the seminal Diabetes Prevention Program (DPP)

study.<sup>16</sup> The DPP study randomized 3,234 patients at increased risk for developing diabetes to an intensive nutrition and exercise lifestyle intervention versus pharmaceutical therapies or placebo, demonstrating significant reduction in diabetes incidence and weight.<sup>16</sup> Building upon this work, Ma and colleagues conducted a randomized control trial to evaluate an adapted version of the DPP lifestyle intervention for those with overweight and obesity.<sup>17</sup> Patients were recruited from a primary care clinic in Silicon Valley and were included if they were at least 18 years of age, had a BMI of at least 25, and showed signs of either prediabetes or metabolic syndrome. Participants were randomized to a coach-led intervention or a self-directed DVD program, or were assigned to usual care. Those within each of the intervention groups completed a three-month intervention phase, and a 12-month maintenance phase. The intervention phase included 12 weekly sessions, delivered either by a coach or through DVDs, as well as an initial session on goal-setting and self-monitoring. Maintenance included standardized motivational messages, however those in the coach-led group received personalized messages on a monthly basis for feedback.<sup>17</sup> Both interventions led to clinically significant reductions in body weight, improvements in waist circumference and improvements in fasting blood glucose compared to usual care over a 15-month period. At month 15, BMI was: Coach-led: (-2.2 kg +or- 0.3) vs. usual care (0.9 +or- 0.3),  $p < 0.001$ . The self-directed intervention achieved: (-1.6 kg +or-0.3) vs usual care  $p = 0.02$ .<sup>17</sup> Clinically significant 7% weight loss was achieved by 37% of participants in the coach-led group and 35.9% in the self-directed group. This was significantly higher compared to usual treatment at 14.4%. One limitation to this study is that the participants were from a high-income demographic. Future studies should consider this intervention with those of different socioeconomic status.<sup>17</sup>

Borek et al. conducted a systematic review meta-analysis of group-based nutrition and physical activity weight loss intervention randomized control trials focused on evaluations suitable for the general population.<sup>18</sup> Of the 47 studies included, 38% were assessed as low risk of bias. They highlighted additional challenges in good-quality reporting of interventions.<sup>18</sup> They noted that trials most commonly reported the duration of the intervention, and the frequency and number of group sessions. However, there was a paucity of reporting on the training of group facilitators, continuity of facilitators' assignment to group, continuity of group membership and details of how participants were allocated to groups. There was variability in the number of sessions and their duration, as well as the content of the interventions. They did not find that the setting of interventions was significantly associated with intervention effectiveness, nor were they able to determine whether contact time was significantly associated with intervention effectiveness.<sup>18</sup>

The review highlighted two studies of high quality, low risk of bias and considerable potential.

1. The Nutrition and Exercise in Women (NEW) study, by Foster-Schubert and colleagues, compared the impact of dietary weight loss, moderate-to-vigorous intensity aerobic exercise, both nutrition and exercise interventions combined, and treatment

as usual.<sup>47</sup> Percentage weight loss was measured through Dual-energy X-ray absorptiometry scan. Final analysis included 439 adult women, and at 12 months the nutrition and exercise combined intervention resulted in an average weight loss of -10.8% of total fat, which was significantly higher than control. Nutrition changes only resulted in an average weight loss of -8.5%, whereas exercise resulted in an average weight loss of -2.4%.<sup>47</sup> This suggests that group-based interventions including both nutrition and exercise result in clinically meaningful weight loss.

2. The Woman on the Move Through Activity and Nutrition (WOMAN) study by Kuller and colleagues compared a health education group with a lifestyle change group which included both dietary and physical activity goals.<sup>48</sup> They found that between six and 30 months, participants lost the greatest amount of weight. However this was not maintained at the end of the 48-month trial; average weight loss was 3.4 kg.<sup>48</sup>

## II. Is there any evidence on the optimal mix of providers delivering the intervention?

While the evidence suggests the interdisciplinary team may be important, there is insufficient data to understand the optimal structures of these teams. Across all the systematic reviews, there were highly variable types of patient contact, including web-based, telephone, individual and group sessions. This heterogeneity resulted in data too imprecise to draw conclusions about the format of effective programs.

Flodgren and colleagues' Cochrane systematic review and meta-analysis reported on one study with 270 adults that focused on organizational interventions, evaluating if adults may lose more weight if cared for by a dietitian or physician-dietitian team (low certainty evidence).<sup>20</sup> As was highlighted above in the Ma trial, a coach-led intervention supported by a dietitian and a fitness instructor was effective.<sup>17</sup>

Holtrop and colleagues further explored the role of care managers in primary care to help patients coordinate their care and self-manage diabetes and obesity.<sup>49</sup> They conducted a cluster randomized trial in 10 primary care clinics in Michigan. The care management intervention focused on training existing staff and new care managers. It also involved the addition of care management software and modifications to the existing electronic medical record. A new care manager was appointed. The intervention also included training on behaviour change strategies, behavioural health, assessments, a community resource guide and ongoing practice sessions for continuous practice improvement. Data were collected on a broad range of chronic disease metrics. In the patients without diabetes, they found 26% of the intervention patients lost more than 5% of their weight in a year (95% CI 2% to 28%) compared to 10% of the comparison patients. This was not found in the patients with diabetes.<sup>49</sup>

A systematic review by Mitchell and colleagues evaluated whether individual consultations by dietitians in primary health settings

were effective with respect to anthropometry, clinical indicators, and dietary intake.<sup>50</sup> Twenty-six randomized control trials were included in the final analysis, many of which were conducted within outpatient primary care clinics. Duration of intervention ranged from three months to 12 months. Eighteen of the 25 studies yielded a positive effect size in anthropometric, clinical and/or dietary intake indicators, depending on the study's focus. Interventions that focused on weight reduction or limiting gestational weight demonstrated effectiveness. When designing a nutrition-based intervention, the authors suggest that dietitians should aid clients in changing dietary behaviour.<sup>50</sup> A limitation of this systematic review is that it did not include studies with low risk of bias; 14 had high risk of bias and 12 had unclear or inadequate reporting and could not be classified.

Molenaar and colleagues conducted a well-done randomized control trial in primary care practice comparing two interventions (N=67 each) to no intervention (N=37).<sup>51</sup> A one-on-one nutritional counselling intervention was delivered by a dietitian over seven sessions (40 minutes, followed by 20 minutes in duration) over six months, with a follow-up at 12 months. This intervention was compared to a nutritional and exercise counselling intervention where, in addition to the nutritional intervention, participants received six individual counselling sessions with a physiotherapist over six months, and a follow-up at 12 months. The nutritional intervention focused on the significant health benefits of 5%–10% weight loss with emphasis on small, realistic changes and realistic expectations. Individualized attainable goals for health, nutrition and effective caloric intake reduction were personalized to dietary history and routines, with goal setting and monitoring. For the exercise intervention, baseline status was assessed, and individualized attainable goals were crafted with participants. Adherence was very good for the six-month intensive period at 82% with attrition due to medical reasons, logistical problems, personal reasons and unmet needs of the counselling sessions. Both the nutritional and nutritional-plus-exercise groups lost more weight than the control at six months: -2.7 (-4.2 to -1.1) kg and -3.5 (-5.1 to -1.8) kg respectively. At 12 months the nutrition counselling group had achieved -1.3 (-4.0 to -1.4) kg and the nutrition plus exercise group had achieved -2.4 (-5.2 to 0.5) kg.<sup>51</sup>

In many primary care clinical contexts in Canada access to dietitians can be limited. In a well-done small randomized control trial, Davis and colleagues leveraged a team approach in creating guidance and assessed whether a tailored weight management program addressing the needs of low-income African American women with overweight or obesity would produce greater weight reduction than standard medical care alone.<sup>52</sup> The tailored intervention consisted of six 15-minute, monthly active visits with their primary care physicians versus regular care. Physicians received seven hours of training on motivational interviewing, behaviour strategies for weight loss, appropriate dietary recommendations, food label reading and strategies related to healthy food preparation. Each participant underwent a comprehensive baseline assessment that evaluated a variety of health behaviours related to nutrition and physical activity, as well as other dimensions of health such as mood, self-efficacy and stress. Patients assigned to

the tailored intervention group received written recommendations from a health psychologist, a registered dietitian and an exercise physiologist. These recommendations were specifically tailored to the individual, with consideration of their socioeconomic background and cultural perspective, and were delivered by the physician. Physicians provided feedback to the multidisciplinary team, which formed the basis of further recommendations. Twenty percent of participants left the study. The intervention group lost significantly more weight than those in the standard care group (-2.0 kg, SD = 3.2, vs. +0.2 SD = 2.9;  $p = 0.03$ ). Although the difference in weight change was significant between the two groups, weight loss was modest (-1.78% in the tailored intervention group versus +0.19% in the standard care group), with 12.5% of the intervention group having lost 5% of their body weight at six months.<sup>52</sup>

### **III. What do we know about strategies to scale up primary care interventions to interact asynchronously with larger numbers of patients?**

The [Emerging Technologies and Virtual Medicine in Obesity Management](#) chapter of these guidelines explores the evidence around the use of technology to support asynchronous interactions with larger numbers of patients. In this section we will highlight only a few of the items as relevant for the primary care practice context.

In 2014, Bennet et al. conducted a systematic review to evaluate the efficacy of web-based electronic interventions, specifically in minority adults living with overweight or obesity.<sup>53</sup> Six trials were identified that met the inclusion criteria of being conducted among racial/ethnic minorities. Greater weight loss was achieved in the intervention group compared to the control group. Greater weight loss outcomes were achieved with the e-health intervention relative to controls, but the weight loss effect was of low magnitude.<sup>53</sup> Note also that not all interventions were carried out in the primary care setting, nor did they all consider cultural context.

More recently, a clinical trial by Hageman et al. compared the effectiveness of a web-based only intervention, with web-based interventions supplemented with either a peer-led discussion support group or professional email counselling for achieving change in body weight. This trial found that an estimated 42% of web-only, 38% of web + discussion group, and 51% web + email were able to achieve clinically relevant weight loss of > 5% by six months.<sup>54</sup> Weight regain occurred in half the participants by 30 months. This could be because the dietary intervention was more prescriptive and non-individualized, and therefore unsustainable. The use of web-based interventions may still be a cost-effective option in the community to achieve relevant weight loss, particularly in those communities where resources are few. To mitigate weight regain, dietary and physical activity counselling should ideally be individually tailored.

This was evaluated in the recent Positive Online Weight Reduction (POWeR) study. In this large randomized control study, Little et al. assessed the clinical effectiveness and cost-effectiveness of an internet-based behavioural intervention with regular face-to-face or remote support in primary care, compared with brief advice.<sup>19</sup>

POWeR is a 24-session web-based weight management intervention completed over six months. The program encourages swaps to healthier food options, as opposed to emphasizing a food restriction or prescriptive approach. For the purpose of this study, after participants enrolled, they were randomized to POWeR alone (the control group), POWeR + F (face-to-face nurse support for up to seven visits) or POWeR + R (remote nurse support via up to five emails or phone calls). The messaging was sensible. Completion rate was 81%. At 12 months, the control group (POWeR) maintained a weight loss of 2.7 kg, the POWeR + F group achieved an additional 1.5 kg weight loss (95% CI 0.6 to 2.4;  $p = 0.001$ ), and POWeR + R achieved an additional 1.3 mg weight reduction (95% CI 0.34 to 2.2;  $p = 0.007$ ). There was no statistical significance in weight loss between the three groups, however, clinically significant weight loss of at least 5% from baseline weight was achieved in 20% of the POWeR group, 29.2% of the POWeR+F group (95% CI 0.96 to 2.51) and 32.4% of the POWeR+R group (95% CI 1.31 to 2.74). The authors concluded that this web-based behavioural program results in clinically significant weight loss in 20% of individuals, with an additional 10% of participants maintaining valuable weight loss when combined with brief support.<sup>19</sup> Maintenance beyond one year is still unclear, however the messaging is sensible and more easily tailored. This is a practical, low-cost strategy with potential for widespread implementation in the community setting.

## Conclusion

Obesity is a chronic, relapsing disease with multifaceted root causes and significant impact on people's lives and health. The prevalence of obesity suggests that it must be addressed early, effectively and continually in primary care, where there is potential capacity to manage obesity on a larger scale. The benefits of doing so are myriad – not only in reducing the tsunami of chronic disease in our healthcare systems, but also in improving peoples' lives by reducing suffering and improving mental, physical and emotional health. To begin to do this, we need to change hearts and minds. We need to respect and treat obesity as a medical disease, educate medical practitioners about it in their training and support their ability to do this work in practice. In recent years, tremendous work has been accomplished in helping us to better understand the pathophysiology of this disease, and in developing new and effective approaches and treatments to address it. With effective translation of this new knowledge into action, we can progress with optimism. We hope that this chapter will serve to support the transformational effort needed to improve care for people living with overweight and obesity.

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The summary of the Canadian Adult Obesity Clinical Practice Guideline is published in the *Canadian Medical Association Journal*, and contains information on the full methodology, management of authors' competing interests, a brief overview of all recommendations and other details. More detailed guideline chapters are published on the Obesity Canada website at [www.obesitycanada.ca/guidelines](http://www.obesitycanada.ca/guidelines).

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