



# Primary Care And Primary Healthcare In Obesity Management

Crotty M<sup>i</sup>, Donaghue C<sup>ii</sup>, Moran N<sup>iii</sup>, O'Reilly O<sup>iv</sup>. Chapter adapted from: Campbell-Scherer D, Walji S, Kemp A, Piccinini-Vallis H, Vallis M. Canadian Adult Obesity Clinical Practice Guidelines: Primary Care and Primary Healthcare in Obesity Management (version 1, 2020). Available from: <https://obesitycanada.ca/guidelines/primarycare>  
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- i) General Practitioner and Clinical Lead, My Best Weight, Dublin / ASOI
- ii) Practice Nurse, Edenpark Medical, Raheny, Dublin
- iii) General Practitioner and Assistant Programme Director, RCSI & HSE Dublin Northeast GP Training Programme, Dublin
- iv) General Practitioner, Centric Health, Limerick

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## OBESITY MANAGEMENT IN PRIMARY CARE IN IRELAND: A CALL TO ACTION



- We call for obesity to be acknowledged as a complex chronic disease and included in the Structured Chronic Disease Management Programme for General Medical Scheme (GMS)/General Practice Visit Card (GPVC) patients in Ireland.
- We call for obesity medications to be included for reimbursement under GMS/Drugs Payment Scheme/ Long Term Illness (LTI) schemes to ensure equal access to evidence-based treatments based on healthcare need rather than of ability to pay.
- We call for adequate resourcing and implementation of the Model of Care for the Management of Adult Overweight and Obesity as developed by the National Clinical Programme for Obesity.
- We call for continuing medical education for primary care healthcare professionals to address the gaps in skills, knowledge of evidence and attitudes in order to adequately support people living with overweight and obesity.
- We call for increased research and funding of research into primary care-based management of overweight and obesity in Ireland.

## KEY MESSAGES FOR HEALTHCARE PROFESSIONALS IN PRIMARY CARE



- **Primary care teams 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 stigmatising and using overly simplistic narratives like “eat less and move more”.**

- **Prescribing clinicians must be aware of weight-promoting medications and consider alternatives for people living with overweight and obesity.** When weight-promoting medications must be used, clinicians should discuss the risks with patients and institute monitoring for weight gain.
- **Healthcare professionals and patients need to be aware of the risks of weight cycling and adopt strategies that focus on sustained changes to maintain health and health-promoting 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 professionals (HCPs) ask patients 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 multi-component programmes, where available (Level 2 services – Community Specialist Ambulatory Care), with personalised 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<sup>10</sup>:
6. Interventions that target a specific ethnic group should consider the diversity of psychological and social practices with regards to excess weight, food, and physical activity, as well as socio-economic circumstances, as they may differ across and within different ethnic groups (Level 1b, Grade B)<sup>11</sup>.
  7. Longitudinal primary care interventions should focus on incremental, personalised, small behaviour changes (the “small change approach”) to be effective in supporting people to manage their weight (Level 1b, Grade B)<sup>12</sup>.
  8. Primary care multi-component programmes should consider personalised obesity-management strategies as an effective way to support people living with obesity (Level 1b, Grade B)<sup>7,8,13</sup>.
  9. Primary care interventions that are behaviour-based (nutrition, exercise, lifestyle), alone or in combination with pharmacotherapy, should be utilised to manage overweight and obesity (Level 1a, Grade A)<sup>14-16</sup>.
  10. Group-based nutrition and physical activity sessions (e.g., interventions at Level 2 of the Irish Model of Care)<sup>17</sup> and those informed by the Diabetes Prevention Program and the Look AHEAD (Action for Health in Diabetes) programme should be used as an effective management option for adults with overweight and obesity (Level 1b, Grade A)<sup>18-21</sup>.
  11. Intensive weight management within routine primary care, as informed by the primary care-led interventions for remission of type 2 diabetes (e.g., Diabetes Remission Clinical Trial) should be considered as a management option for adults with overweight and obesity (Level 1a, Grade A, adapted from Chapter 8 [Medical Nutrition Therapy in Obesity Management](#))<sup>10</sup>.

## RECOMMENDATIONS - Continued

12. 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>22</sup>. Virtual group consultations also offer a novel and potentially scalable approach<sup>22,23</sup>.

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

13. Educators of undergraduate, graduate and continuing education programmes for primary HCPs 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>24</sup>.

## KEY MESSAGES FOR PEOPLE LIVING WITH OBESITY



- **Prevention of weight gain is important and potentially more realistic than weight loss, given the many factors that make it difficult to sustain weight reduction in the longer term.** Setting value-based functional goals shifts the focus from weight to health and, most importantly, quality of life, and may help with sustainable changes.
- **Individualised nutrition counselling can result in some reductions in weight and improvements in health.**
- **Mindfulness, acceptance and commitment therapies, added to multi-component behavioural interventions, may be considered in developing a personal obesity-management strategy.**
- **Many medical issues, such as disrupted sleep, pain, mechanical problems, metabolic conditions and psychiatric conditions, can contribute to challenges with obesity management.** People should seek medical help if they are struggling with weight maintenance or weight 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, characterised by excess or dysfunctional adiposity that impairs health. It is underpinned by the intricate interplay between a broad spectrum of root causes related to biological influences, social determinants of health, sociocultural practices and beliefs, environmental effects, public policy and psychological factors. Currently, there are widespread significant misperceptions as to the nature of both the aetiology and effective management of this disease, 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 professional (HCP) knowledge, skills and practice standards and improved organisation 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 synthesise evidence on effectiveness, or how interventions work in primary care. Primary care refers to general practitioner (GP) practices, 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 Chapter 16 [Commercial Products and Programmes in Obesity Management](#).

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 organisation of care for people living with obesity, and on the primary care management of obesity. We recognise that 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 organise 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 in Ireland has received so little systematic attention.

## Management of obesity in primary care and primary healthcare

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

In a series in *The Lancet*, Dietz and colleagues highlighted that obesity is not being well managed in current health systems<sup>25</sup>. They cite concerns in several areas: training of the healthcare workforce, unfounded assumptions of people living with obesity, lack of experience working in multi-disciplinary teams and lack of training in behaviour-change support<sup>25</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 sub-optimal<sup>26</sup>. In a Canadian national survey in 2009, half of adults living with overweight or obesity had asked a HCP about weight management<sup>27</sup>. Of these, approximately three-quarters consulted their GP, one-quarter a dietitian and one-seventh a nutritionist, 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.

The ACTION-IO Study, a survey of 14,502 people living with obesity and 2,785 HCPs across 11 countries, showed that there was a median of three and mean of six years between the time people living with obesity began struggling with excess weight or obesity and when they first discussed their weight with a HCP<sup>28</sup>. Most people living with obesity (68%) would like their HCP to initiate a conversation about weight, but only 3% were offended by such a conversation.

Access to bariatric care remains very poor throughout Ireland and although data does not exist regarding services in primary care, we know that current provision of publicly funded bariatric surgery meets less than 0.1% of the need<sup>29</sup>. This equates to 18 per million of the population annually, compared to European averages ranging from 72 to 928 per million. Torti and colleagues conducted a qualitative study of primary care patients living with obesity to explore their perceptions of the role of primary care HCPs<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 HCP, there is a need for primary care delivery redesign to facilitate, rather than hinder, HCPs addressing obesity with their patients. Part of this redesign is increasing HCP skills in starting the conversation to sensitively address obesity with a patient. It is not realistic to expect primary care HCPs to deliver intensive behavioural obesity-management counselling to all their patients with obesity. Thus, the process of ordering referrals and coverage for obesity-management specialists and community-based programmes should be made easier to increase referral processes and access to care for patients<sup>26,30</sup>.

Tsai and Waddens’ systematic review of the management of obesity in primary care practice highlights how little research has been conducted in the area<sup>31</sup>. They found that primary care physician counselling alone has limited ability to achieve clinically meaningful weight loss<sup>31</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. This important finding further highlights the need for reimbursement of obesity medications under the GMS/DPS/LTI schemes and multi-modal management facilitated by full implementation of the Model of Care. We must acknowledge obesity as a complex and progressive chronic disease and include it in the Structured Chronic Disease Management Programme for GMS/GPVC patients. Given the increasing prevalence of obesity in Ireland with associated health complications, it must be our priority to identify practical strategies to support implementation of evidence-based treatment services in primary care<sup>29</sup>.

Changing obesity management in primary care represents an adaptive challenge requiring a change in HCPs’ beliefs and practices. It involves addressing weight bias and stigma in clinical consultations and care settings. In O’Donoghue and colleagues’ qualitative work examining “What is the Irish healthcare experience like for people living with obesity?” participants reported high levels of weight bias and stigmatisation<sup>32</sup>. This emphasises the need for continuing medical education for HCPs to address the gaps in skills, knowledge of evidence and attitudes in order to adequately support people living with obesity. Prevalence of weight bias in the Irish primary care setting was examined for the first time by O’Reilly *et al.* in a 2021 study of a nationally representative cohort of GP trainees. Findings were consistent with those from international studies and demonstrated a lack of bias. However, between 6% and 25% of trainees had persistently biased responses, and it was postulated that “implicit stigmatising behaviours

could be more prevalent than the explicit bias results imply<sup>33</sup>. Further work is needed to understand how bias and stigma influence access to and quality of care for people with obesity in Ireland.

Additionally, there is a need for structuring clinical encounters to address patients' self-bias (internalised stigma), creating efficient approaches to personalised consultations that result in sustained shifts in behaviours and actions, which are scalable to serve all people living with obesity.

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

As highlighted in Chapter 1 [Reducing Weight Bias in Obesity Management, Practice and Policy](#), there is evidence that both HCPs 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<sup>34-36</sup>. Primary care HCPs 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. HCPs 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 HCPs, the health system and society as blaming and contributing to internalised 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 patients have done to manage their weight<sup>2</sup>. The study also highlights HCPs' struggles with knowing how to help, and feelings of ineffectiveness when care focuses solely on body weight. The sensitivity of the topic also hinders HCPs' confidence in raising it with people<sup>2</sup>. Thille conducted a robust qualitative study using interactional stigma theory to analyse audio-recorded primary care dialogues about weight<sup>37</sup>. In addition to stressing the importance of asking permission to discuss weight<sup>38</sup>, she proposed several actions to mitigate anti-obesity stigma in primary care consultations:

1. Explicitly acknowledge multiple determinants of weight as is done with other biomeasures, disrupting the stigmatising personal failure/success stereotypes attached to body composition;
2. Prior to talking about outcomes, assess healthy behaviours and routines that affect health separately, to identify the extent to which behavioural interventions may help improve overall health; and
3. Redefine success as sustained healthy behaviours regardless of body size or weight. Figure 1 gives a range of "non-scales successes" which may be relevant<sup>37</sup>.

Figure 1: **Redefining Success**  
(reproduced with kind permission of Dr. Michael Crotty, My Best Weight)



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

- Assess your own weight-bias attitudes and beliefs<sup>39-41</sup>:  
- <https://implicit.harvard.edu/implicit/selectatest.html>  
- <https://www.youtube.com/watch?v=ZLzHFgEOAQ>
- Consider the patient's previous weight-bias experiences and assess for internalised weight bias;
- Recognise that having obesity is a product of many factors;
- Uncouple weight from health and explore all causes of presenting problems, not just weight;
- Emphasise importance of behaviour goals rather than weight-loss goals;
- Remove all materials from the waiting area that stereotype people with obesity;
- Education for administrative and clinical primary care team members in the use of person-first language;
- 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.

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

As has been highlighted in Chapter 6 [Clinical Assessment of People Living with Obesity](#), 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.

The increased use of medications to treat a variety of medical conditions can contribute to overweight and obesity. It is therefore important for primary care clinicians be familiar with the weight effects of commonly prescribed medications. [Table 1](#) below lists several classes of medications commonly used in practice in Ireland which may be weight promoting and possible alternatives, including anti-psychotics, anti-convulsants, anti-depressants and mood stabilisers, beta-blockers and anti-hypertensives, hypoglycaemic agents, contraceptives and corticosteroids.

Upon initiation of an anti-depressant, close monitoring of weight changes is needed as early changes in body weight are highly predictive of long-term changes. A population-based cohort study in the *BMJ* in 2018 assessed anti-depressant use and incidence of weight gain during 10 years of follow-up<sup>42</sup>. It concluded that anti-depressant treatment is associated with a sustained increase in risk of weight gain over at least five years. The strong temporal association between initiation of anti-depressant drugs and weight gain was greatest during the second and third years of treatment. During the second year of treatment, the risk of  $\geq 5\%$  weight gain was 46.3% higher than in a general population comparison group. This association was consistent across a wide range of clinical, social and demographic characteristics. Associations with longer-term weight gain appear to vary hugely within and between anti-depressant classes. The potential for weight gain should be considered with the patient when anti-depressant treatment is initiated.

Despite the fact that anti-psychotics are associated with more weight gain than anti-depressants, anti-depressants may have a higher global weight-gain burden as there are more individuals with depression than schizophrenia. A recent review found a 2 kg – 5 kg weight gain associated with tricyclic anti-depressants, monoamine oxidase inhibitors and selective serotonin reuptake inhibitors<sup>43</sup>. There is some evidence that metformin may be helpful to counteract anti-psychotic-induced weight gain in adults<sup>44</sup>. More research into strategies to mitigate this medication-induced weight gain is needed.

Pregabalin, which has been widely prescribed in Ireland, may also be associated with clinically significant weight gain. A meta-analysis by Cabrera and colleagues concluded that the majority of patients treated with pregabalin (150 mg/day – 600 mg/day) for one year, maintained weight within  $\pm 7\%$  baseline weight. One in six patients gained  $\geq 7\%$  weight from baseline, and generally exceeded 7% two to 12 months after treatment onset<sup>45</sup>.

With regards to contraceptive medications, concerns about weight gain can deter the initiation of contraceptive use, and weight gain is the most frequently reported reason for early discontinuation. The 2019 Faculty of Sexual and Reproductive Healthcare statement on weight gain, whilst recognising limited studies are available in particular with placebo comparison, concludes that “women can be reassured that the evidence indicates that it is likely that use of the intrauterine contraceptive device, etonogestrel implant, progesterone only pill or combined hormonal contraceptive does not cause weight gain”<sup>46</sup>. Depomedoxyprogesterone acetate appears to be associated with some weight gain, particularly in women aged under 18 years with a body mass index (BMI)  $\geq 30$  kg/m<sup>2</sup>. Women who gain more than 5% of their baseline body weight in the first six months of use may be more likely to experience continued weight gain. Appropriate advice regarding typical patterns of weight gain amongst women of reproductive age may help allay users' concerns and reduce discontinuation of contraceptive methods<sup>46</sup>.

A Cochrane review from 2000 concluded that hormone replacement therapy appropriately prescribed does not cause weight gain<sup>47</sup>.

In summary, the authors encourage GPs 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. 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. After asking permission, 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-neutral medications are not an option, health-behaviour interventions, with or without adjunctive therapy, could be considered to mitigate weight gain<sup>48</sup>.

## Supporting individuals' ability to engage in care

Health literacy is a crucial factor in people's ability to engage in self-care for obesity and indeed all chronic disease management. Weight management requires both an understanding of what is required to lose 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 randomised 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

**Table 1: Summary of Weight-Promoting Medications and Alternative Therapies**

Note: \*The information below lists medications associated with high or low risk for weight gain. However, as with all medication side effects, there is significant individual variability with weight responses to medications, and some people may experience unexpected weight gain or weight loss that is atypical for a medication.

Category	Class	Name	Weight gain	Possible alternative therapy*
Hypoglycaemic agents <sup>49-56</sup>	Insulins	Insulin	↑↑	<ul style="list-style-type: none"> <li>• Biguanide (metformin)</li> <li>• GLP1 analogues (e.g., liraglutide, semaglutide)#</li> <li>• SGLT-2i (e.g., dapagliflozin, empagliflozin)#</li> <li>• DPP4i (e.g., linagliptin, sitagliptin)#</li> </ul>
	Thiazolidinedione	Pioglitazone	↑	
	Sulphonylurea	Gliclazide	↑	
Anti-depressants/ mood stabilisers <sup>55,57-63</sup>	Tricíclicos	Amitriptyline	↑↑	<ul style="list-style-type: none"> <li>• Serotonin and noradrenaline reuptake inhibitor (SNRI) (e.g., venlafaxine, duloxetine)</li> <li>• Alternative MAOI (e.g., moclobemide, tranylcypromine)</li> <li>• Other anti-depressants (e.g., trazodone, bupropion, vortioxetine)</li> </ul>
		Clomipramine	↑↑	
		Lofepramine	↑↑	
		Nortriptyline	↑↑	
	Atypical	Mirtazapine	↑↑↑	
	MAOIs	Phenelzine	↑	
	Selective serotonin re-uptake inhibitors (SSRIs)	Paroxetine	↑	
Lithium	Lithium	↑↑	<ul style="list-style-type: none"> <li>• Fluvoxamine</li> <li>• Sertraline</li> <li>• Citalopram</li> <li>• Escitalopram</li> <li>• Fluoxetine</li> </ul>	
Anti-psychotics <sup>55,62,64,65</sup>		Clozapine	↑↑↑	<ul style="list-style-type: none"> <li>• Ziprasidone</li> <li>• Lurasidone (not reimbursed in Ireland)</li> <li>• Aripiprazole</li> <li>• Amisulpride</li> <li>• Cariprazine</li> </ul>
		Olanzapine	↑↑↑	
		Chlorpromazine	↑↑	
		Risperidone	↑↑	
		Paliperidone	↑↑	
		Quetiapine	↑↑	
		Zuclopenthixol	↑↑	
Anti-convulsants <sup>45,60-62,66-68</sup>		Valproate	↑	<ul style="list-style-type: none"> <li>• Topiramate</li> <li>• Zonisamide</li> <li>• Lamotrigine</li> </ul>
		Carbamazepine	↑	
		Gabapentin	↑↑	
		Pregabalin	↑↑	
Corticosteroids <sup>69,70</sup>	Oral steroids	Prednisolone	↑↑↑	<ul style="list-style-type: none"> <li>• Budesonide</li> <li>• Alternative pain relief (e.g., NSAIDs, paracetamol, opioids)</li> </ul>
		Cortisone	↑↑↑	
	Inhaled steroids	Ciclesonide	↑	
		Fluticasone	↑↑	
Contraceptives <sup>66, 71,72</sup>		Depo medoxyprogesterone acetate (Depo-Provera)	↑↑	<ul style="list-style-type: none"> <li>• Etonogestral implant (Implanon)</li> <li>• Progesterone-only pill</li> <li>• Combined hormonal contraception</li> <li>• Intrauterine contraceptive device</li> </ul>
Anti-histamines <sup>73</sup>		Diphenhydramine	↑	<ul style="list-style-type: none"> <li>• Loratadine</li> <li>• Fexofenadine</li> </ul>
		Promethazine	↑	
Beta-blockers / Anti-hypertensives <sup>74,75</sup>		Propranolol	↑	<ul style="list-style-type: none"> <li>• CCBs (may cause fluid retention)</li> <li>• Vasodilating beta-blockers (e.g., bisoprolol, nebivolol, carvedilol)</li> </ul>
		Metoprolol	↑	
		Atenolol	↑	
		Clonidine	↑	

DPP4i: Inhibitors of dipeptidyl peptidase 4; GLP-1: Glucagon-like peptide-1 receptor agonists; NSAIDs: Nonsteroidal anti-inflammatory drugs; SGLT-2: Sodium glucose co-transporter 2; ACEi: Angiotensin converting enzyme inhibitors; ARBs: Angiotensin II receptor blockers; CCBs: Calcium channel blockers; MAOIs: Monoamine oxidase inhibitors; SSRIs: Selective serotonin reuptake inhibitors; SNRIs: Serotonin and noradrenaline reuptake inhibitors; ↑ up to 5 kg weight gain; ↑↑ 5 kg to 10 kg weight gain; ↑↑↑ more than 10 kg weight gain; \$See the American Diabetes Association/European Association for the Study of Diabetes recommendations and treatment algorithms to guide pharmacologic therapy in type 2 diabetes<sup>56</sup>; #the SGLT-2 inhibitors, GLP-1 agents and DPP4 inhibitors in the alternative therapy section is not intended to be a definitive list, other options are available within each class and newer agents may be available with time; ^See Faculty of Sexual and Reproductive Healthcare guidance on contraception and weight gain<sup>46</sup>.

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 focused on improving knowledge and skills (i.e., health literacy) for weight loss<sup>3</sup>.

As a general principle, obesity-management interventions should be culturally tailored to maximise 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, nutrition, physical activity and socioeconomic circumstances, as they may differ across and within different ethnic groups. There must be an openness to understanding the individual within their community, with respect and reflection on how healthcare interventions are situated in a specific socioeconomic and cultural context<sup>76</sup>. We must seek to understand how different groups perceive health 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>77</sup>.

### **What is the effectiveness of primary healthcare interventions that include personalised obesity-management strategies?**

Primary care HCPs identify many challenges with supporting patients in managing their obesity. Asselin and colleagues conducted a robust qualitative study that sought to understand HCPs' challenges with supporting people with obesity<sup>4,6</sup>. In the primary care context, obesity is embedded in many different clinical presentations. HCPs 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 HCPs 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 of Obesity Management™ (ask, assess, advise, agree, assist) are a suite of resources and evidence-based tools developed by Obesity Canada with input from patients, HCPs and obesity experts, incorporating the aforementioned work of Asselin *et al.*<sup>6</sup>. They provide a structured interview format to help facilitate discussions about obesity in primary care.

- ASKING for permission to discuss weight and explore readiness;
- ASSESSING obesity-related risks and root causes of obesity;
- ADVISING on health risks and treatment options;
- AGREEING on health outcomes and behavioural goals; and,
- ASSISTING in accessing appropriate resources and HCPs.

Adopting the 5As Team intervention resulted in HCPs increasing their comfort with initiating conversations, adopting a chronic disease approach, increasing the use of people-first language and, in many clinics, increasing the multi-disciplinary teamwork in supporting patients<sup>6</sup>. Patients wanted their HCPs to initiate conversations and to provide holistic patient-centred approaches that addressed their personal context and health complications<sup>1</sup>. There is a care gap in HCPs' ability to address these patient needs. Yet, interventions which focus on this approach have been effective.

In a systematic review of effective obesity-management practice interventions and of behavioural interventions, Kirk and colleagues highlight the importance of multi-component 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 multi-centre randomised control trial. This trial evaluated the effectiveness of a home-based weight loss and physical activity intervention for sedentary adults with obesity in Rhode Island<sup>8</sup>. GPs were trained to provide an environment supportive of weight management 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 health complications<sup>8</sup>. The patients received a 12-month home-based intervention programme with a 12-month maintenance phase. Participants were provided with a structured meal plan by a behavioural counsellor that included a prescribed energy 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, letter 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 personalised goal setting were most helpful. Key conclusions were:

1. GPs plays a critical role in identifying patients who could benefit from and who are ready for obesity support/intervention, and in referring to programmes;

2. Home-based individually tailored interventions with minimal face-to-face contact are effective in achieving clinically meaningful weight loss; and,
3. People value individualised supports.

Interventions can be delivered in settings other than clinics.<sup>8</sup> Rejeski and colleagues conducted a randomised controlled trial at a community facility where they compared three interventions: weight loss, weight loss and resistance training and weight loss and aerobic training<sup>13</sup>. Participants were older adults (60 to 75 years of age) who engaged in less than 60 minutes of moderate-to-intense exercise each week, had a BMI between 28 kg/m<sup>2</sup> and 42 kg/m<sup>2</sup> 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>13</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 realise the value in working with people to make small changes in health behaviours over time. The Small Changes approach to obesity management is an individualised intervention that encourages participants to make small, self-selected goals based on their current health-behaviour patterns<sup>12</sup>. Small Changes hypothesises that a sustained energy deficit of 200 kcal – 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 randomised control trial in primary care which evaluated the effectiveness of the Small Changes approach<sup>12</sup>. This was compared among US 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 randomised 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 kg/m<sup>2</sup>, were predominantly male and reported a high prevalence of physical and mental health complications. 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>12</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>12</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 programmes resulted in more than twice the level of engagement compared to the MOVE! programme. The authors concluded that this type of a personalised 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>12</sup>.

### **What are strategies to create primary care interventions that include personalised 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™ resources and tools were developed to summarise the evidence on obesity management in consultation with patients, HCPs and obesity experts<sup>78</sup>.

Rueda-Clausen and colleagues, in a non-randomised pre-post design study showed that implementing the 5As of Obesity Management™, resulted in a two-fold increase in the initiation of obesity management (19% vs. 39%,  $p = 0.03$ ), and led to 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>79</sup>.

One barrier is HCP confidence in adopting new approaches to obesity care. The 5As Team study co-created an intervention with interdisciplinary primary care HCPs to improve obesity care in a primary care setting. Qualitative analysis from the 5As Team programme showed important shifts addressing HCP-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 HCP-patient dialogue in a way that both addresses patients' specific root causes of obesity and barriers to obesity management and helps to increase patient self-efficacy in managing their overall health<sup>43</sup>. In an in-depth qualitative study, 20 patients were enrolled and HCP-patient encounters were videotaped. Both patients and HCPs 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:

1. Compassionate and real listening;
2. Making sense of the story;
3. Recognising strengths;
4. Shifting beliefs about obesity;
5. Focusing on whole-person health;
6. Action planning;
7. Fostering reflection; and,
8. Experimenting<sup>43</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>43</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 personalise an intervention to specific targets for each individual, in contrast to dictating a strict, pre-determined regimen.

De Vos *et al.* evaluated the long-term effectiveness of a tailor-made obesity-management intervention, which entailed nutrition and activity changes and the motivational interviewing approach, on the health and behaviour of women living with overweight and obesity<sup>9</sup>. This study was part of a randomised 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 and 60 years with a BMI > 27 kg/m<sup>2</sup> who were (according to American Rheumatology Association criteria) free of osteoarthritis were randomised to either the intervention group or the control group. Those in the intervention group met with a dietitian trained in motivational interviewing who agreed with 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, eating habits, quality of life and body fat percentage, and were followed over a 6.6-year period after

randomisation. 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 randomised 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 obesity intervention which includes motivational interviewing may induce health-behaviour changes that endure over a long period of time.

### **What role do mindfulness, and acceptance and commitment therapy, have as adjuncts to multi-component behavioural therapy in primary care interventions?**

There has been emerging interest in acceptance and commitment therapy (ACT) and mindfulness in obesity management as highlighted in Chapter 10 [Effective Psychological and Behavioural Interventions in Obesity Management](#). 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-judgemental acceptance of thoughts and feelings (ACT), with a focus on value-driven behaviours<sup>90</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: multi-faceted 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 randomised control trial studies were included in this systematic review. The authors justified this decision as a method to compare effect sizes between non-experimental and randomised control trial designs. There was also significant clinical heterogeneity between the studies. Considering just the specific outcomes of the seven randomised control trials, there was an average weight loss of 3.5 kg ( $n = 4$ , 0.1 kg – 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 meta-cognition. 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>81</sup>. These results were compared to a standard behavioural treatment based on the Diabetes Prevention Programme (DPP) where only 46% of those participants were able to maintain a 10% reduction in weight. The success of this programme may be attributed to the intensive design in which 30 75-minute group sessions were delivered<sup>81</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>80</sup>.

Palmeira and colleagues conducted a small, randomised 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>82</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 and weight-related experiential avoidance on validated measures. There was not a significant difference in self-compassion or mindfulness<sup>82</sup>. Future research should consider whether these changes would be sustained, as this was a short intervention study.

### **What do we know about the effectiveness of multi-component 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 multi-component behavioural (which they define as diet, exercise, lifestyle) and pharmacologic interventions generalisable to an Irish primary care setting<sup>14</sup>. They expanded upon the previous review for the United States Preventive Services Task Force (USPSTF) done by Leblanc and colleagues<sup>83</sup>. They identified 68 studies, of which 66 were randomised control trials, looking at the effectiveness of interventions for treating overweight and obesity in adults (BMI > 25 kg/m<sup>2</sup>). In this review, the medications included were orlistat and metformin<sup>14</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 to 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>14</sup>.

In 2014, Booth and colleagues conducted a systematic review and meta-analysis of multi-component behavioural intervention delivered in primary care setting on participants' weight loss<sup>84</sup>. This review focused on 15 randomised control trials looking at behaviour-change support delivered in primary care, some of

which were also included in the Peirson review. In this review, there was a high level of heterogeneity of participants, interventions, behavioural components and delivery model, as well as poor reporting of methodology and results<sup>84</sup>.

Lv and colleagues addressed the question as to whether multi-component behavioural interventions were effective for weight loss for people with BMI > 35 kg/m<sup>2</sup><sup>85</sup>. This systematic review identified 12 studies that tested a nutrition and/or physical activity intervention with a behavioural-modification component versus a comparator, had a less than six-month follow-up period and 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 more than one-year duration; several interventions achieved a high percent of weight loss by offering inpatient stays or stays in rehabilitation centres, which are not pragmatic or sustainable for primary care<sup>85</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 multi-component obesity-management programmes containing nutrition, physical activity and behavioural support interventions<sup>15</sup>. The types of contact, frequency and content 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 programmes 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 everyday contexts; the pooled results of the five interventions delivered by primary care teams did not show an effect on weight<sup>15</sup>. Unfortunately, the data overall are too imprecise to determine the elements of interventions which increase efficacy, including frequency and type of contact.

In 2018, LeBlanc and colleagues completed a revised systematic review for the USPSTF looking at multi-component behavioural and pharmacotherapy obesity interventions to prevent obesity-related morbidity and mortality in adults<sup>86</sup>. Following their original review in 2011<sup>83</sup>, LeBlanc highlighted there was variability in the nature of the interventions but still noted behaviour-based obesity 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>86</sup>.

Kanaya *et al.* conducted a randomised control trial of 415 patients ≥ 21 years of age with obesity and more than one cardiovascular risk factor (hypertension, diabetes or hypercholesterolemia)<sup>16</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 email, access to a study-specific website and involvement of primary care HCPs 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>16</sup>.

## Obesity pharmacotherapy in Ireland

There are four medications indicated for chronic obesity management in Ireland in addition to health-behaviour changes: liraglutide (Saxenda) 3 mg, semaglutide 2.4 mg (Wegovy), naltrexone/bupropion (Mysimba) in a combination tablet and orlistat (Xenical). All four medications have been shown to be effective in producing weight loss greater than placebo for a duration of at least one year. Medications that are not approved as pharmacotherapy for obesity management should not be used for this purpose. See Chapter 11 [Pharmacotherapy for Obesity Management](#) for more information.

These medications can be used for individuals with BMI  $\geq 30$  kg/m<sup>2</sup> or BMI  $\geq 27$  kg/m<sup>2</sup> (liraglutide, semaglutide and naltrexone/bupropion) and BMI  $\geq 28$  kg/m<sup>2</sup> (orlistat) with adiposity-related complications, in conjunction with medical nutrition therapy, physical activity and psychological interventions. They may also be used to maintain weight loss that has been achieved by health-behaviour changes, and to prevent weight regain but this indication is not covered by current licensing. Regulatory agencies recommend discontinuing pharmacotherapy for obesity if weight loss of  $\geq 5\%$  has not been achieved after three months on therapeutic dose. Obesity medications are intended as part of a long-term treatment strategy. Clinical trials consistently demonstrate regain of weight when active treatment is stopped.

Given the complex underlying pathophysiology of obesity, the individual response to obesity-management pharmacotherapy can differ from patient to patient. In choosing the most appropriate obesity pharmacotherapy, consider mechanism of action, safety, potential side effects/tolerability, contraindications, drug interactions, mode of administration and cost.

Multiple other treatment options are currently in development, which include further incretin-based therapies as monotherapy or with combinations of various peptides (e.g., GLP-1, GIP, glucagon, oxyntomodulin, amylin, PYY3-36).

## What are effective formats for primary health-care and primary care programmes 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 programme developers may find helpful.

### 1. Structure of the intervention

One of the strongest interventions in primary care aimed at type 2 diabetes prevention is the seminal DPP study<sup>18</sup>. The DPP study randomised 3,234 patients at increased risk for developing type 2 diabetes to an intensive nutrition and exercise behavioural intervention versus pharmaceutical therapies or placebo, demonstrating a significant reduction in diabetes incidence and weight<sup>18</sup>. Building upon this work, Ma and colleagues conducted a randomised control trial to evaluate an adapted version of the DPP behavioural intervention for those with overweight and obesity<sup>19</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 kg/m<sup>2</sup> and showed signs of either pre-diabetes or metabolic syndrome. Participants were randomised to a coach-led intervention or a self-directed DVD programme, 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 standardised motivational messages; however, those in the coach-led group received personalised messages on a monthly basis for feedback<sup>19</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 changes were  $-2.2 \pm 0.3$  kg/m<sup>2</sup> for coach-led vs.  $0.9 \pm 0.3$  kg/m<sup>2</sup> for usual care ( $p < 0.001$ ). The self-directed intervention achieved  $-1.6 \pm 0.3$  kg/m<sup>2</sup> vs. usual care ( $p = 0.02$ )<sup>19</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>19</sup>.

Borek *et al.* conducted a systematic review meta-analysis of group-based nutrition and physical activity obesity intervention randomised control trials focused on evaluations suitable for the general population<sup>20</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>20</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>20</sup>.

The review highlighted two studies of high quality with 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>87</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 resulted in an average weight loss of -8.5%, and exercise resulted in an average weight loss of -2.4%<sup>87</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 behaviour-change group which included both dietary and physical activity goals<sup>88</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>88</sup>.

## 2. The multi-disciplinary team

While the evidence suggests the multi-disciplinary teams are 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 programmes.

Flodgren and colleagues' Cochrane systematic review and meta-analysis reported on one study with 270 adults that focused on organisational interventions, evaluating if adults may lose more weight if cared for by a dietitian or physician-dietitian team (low certainty evidence)<sup>24</sup>. As was highlighted above in the Ma trial, a coach-led intervention supported by a dietitian and a fitness instructor was effective<sup>19</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>89</sup>. They conducted a cluster randomised 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<sup>89</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>90</sup>. Twenty-six randomised control trials were included in the final analysis, many of which were conducted within outpatient primary care clinics. Duration of interventions 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 support clients in changing dietary behaviour<sup>90</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 randomised control trial in primary care practice comparing two interventions (n = 67 each) to no intervention (n = 37)<sup>91</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. Individualised attainable goals for health, nutrition and effective caloric intake reduction were personalised to dietary history and routines, with goal setting and monitoring. For the exercise intervention, baseline status was assessed and individualised, 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 kg (-4.2 kg to -1.1 kg) and -3.5 kg (-5.1 kg to -1.8 kg), respectively. At 12 months, the nutrition-counselling group had -1.3 kg (-4.0 kg to -1.4 kg) and the nutrition plus exercise group had achieved -2.4 kg (-5.2 kg to 0.5 kg) weight change<sup>91</sup>.

In a well-conducted but small randomised control trial, Davis and colleagues leveraged a team approach in creating guidance and assessed whether a tailored weight-management programme addressing the needs of low-income African American women with overweight or obesity would produce greater weight reduction than standard medical care alone<sup>92</sup>. The tailored intervention consisted of six 15-minute, monthly active visits with their primary care physicians versus regular care<sup>92</sup>. Physicians received seven hours of training on motivational interviewing, behavioural strategies, 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 multi-disciplinary 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 kg, SD = 2.9;  $p = 0.03$ ). Although the difference in weight change was significant between the two groups, weight loss was modest (-1.8% in the tailored intervention group versus 0.2% in the standard care group), with 12.5% of the intervention group having lost 5% of their body weight at six months<sup>92</sup>.

In the recent past, access to a community-based dietitians, nurse specialists, psychologists, occupational therapists and physiotherapists for obesity care has been extremely limited in Ireland. It is hoped that with adequate resourcing and implementation of the new Model of Care for the Management of Overweight and Obesity this will change.

### 3. Strategies to scale up primary care interventions to interact asynchronously with larger numbers of patients

Chapter 17 [Emerging Technologies and Virtual Medicine in Obesity Management](#) 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>93</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>93</sup>. Note also that not all interventions were carried out in the primary care setting, nor did they all consider cultural context.

A clinical trial published in 2017 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 plus discussion group and 51% web plus email were able to achieve clinically relevant weight loss of > 5% by six months<sup>94</sup>. Weight regain occurred in half the participants by 30 months. This could be because the dietary intervention was more prescriptive and non-individualised, 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, nutrition and physical activity counselling should ideally be individually tailored.

This was evaluated in the Positive Online Weight Reduction (POWeR) study. In this large, randomised 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>22</sup>. POWeR is a 24-session, web-based, weight-management intervention completed over six months. The programme encourages swaps to healthier food options, as opposed to emphasising a food restriction or prescriptive approach. For this study, after participants enrolled, they were randomised 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). 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 kg 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 programme 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>22</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 complex chronic disease, characterised by excess or dysfunctional adiposity, that impairs health. It has multiple root causes and has a significant impact on people's lives. Obesity is not afforded the same time or resources in primary care clinical practice as other non-communicable diseases<sup>95</sup>. It is under-diagnosed and has gone untreated in the majority of patients living with obesity<sup>28</sup>.

We must shift the current focus from, predominantly, primary prevention to early diagnosis, early intervention and evidence-based treatment. The primary care team are ideally placed to carry out screening, diagnosis and management of patients with overweight and obesity. Primary care offers the potential capacity to manage obesity on a large scale but to achieve this we need to 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 addition to changes in attitude, we also need a structured change in our healthcare system, with implementation of the Model of Care, resourcing of obesity care under the Structured Chronic Disease Management Programme and reimbursement for anti-obesity medications. 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.

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.

The Primary Care And Primary Healthcare In Obesity Management chapter is adapted from the Canadian Adult Obesity Clinical Practice Guidelines (the "Guidelines"), which Obesity Canada owns and from whom we have a license. ASOI adapted the Guidelines having regard for any relevant context affecting the Island of Ireland using the [ADAPTE Tool](#).

ASOI acknowledges that Obesity Canada and the authors of the Guidelines have not reviewed the Primary Care and Primary Healthcare In Obesity Management chapter and bear no responsibility for changes made to such chapter, or how the adapted chapter is represented or disseminated. As Obesity Canada and the authors of the original Guidelines chapter have not reviewed the Primary Care and Primary Healthcare In Obesity Management chapter, such parties, according to their policy, disclaim any association with such adapted Materials. The original Guidelines may be viewed in English at: [www.obesitycanada.ca/guidelines](http://www.obesitycanada.ca/guidelines).

## Correspondence:

info@asoi.info

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